Question:

A 29-year-old motor cyclist involved in a high speed RTA is brought to the Accident and emergency unit by the paramedics. He is conscious but is complaining of severe discomfort in his lower abdominal region. On examination, he appears to be in hypovolaemic shock with a blood pressure of 100/70 mmHg and a pulse rate of 114/min. Local palpation reveals marked tenderness over the suprapubic region and the iliac crests bilaterally. Further examination reveals the pelvis to be unstable, suggestive of a fracture. Bruising is noted over the penis, scrotum and the perineum. A per rectal examination reveals a high riding prostate.

Which one of the following is correct?

A) Injury to the spermatic cord

B) Injury to the peripheral sacral nerves

C) Injury to the cauda equina

D) Injury to the prostate

E) Injury to the urethra

Answer:E

Explanation:

The signs and symptoms in this patient are highly suggestive of a urethral injury. Hypovolemia is due to the loss of blood from the associated pelvic fracture. Urethral injury should be suspected in the setting of pelvic fractures, straddle-type injuries, traumatic catheterization, or any penetrating injury to the perineal region. Amongst others, the important symptoms of urethral injury include pain, inability to pass urine and haematuria (macroscopic or microscopic). Physical examination may reveal blood at the urethral meatus and a high-riding prostate may be identified upon rectal examination. Extravasation of blood may occur along the fascial planes leading to bruising in the perineum, scrotum and penis. The urethra may be injured anywhere along its course. The membranous urethra is more prone to injury from pelvic fractures because the puboprostatic ligaments fix the apex of the prostate gland to the bony pelvis and thus cause shearing of the urethra when the pelvis is displaced. The bulbar urethra is susceptible to blunt force injuries because of its path along the perineum. Straddle-type injuries from falls or kicks to the perineal area can result in injury to the bulbar urethra. The penile urethra is less likely to be injured from external trauma because of its mobility, but iatrogenic injury may occur during catheterization or cystoscopy. If urethral injury is suspected, the patient should be discouraged from passing urine. Urethral catheterisation should be avoided. Retrograde urography is the investigation of choice in suspected urethral injuries. If surgical intervention is required, then suprapubic catheterisation may be required. Complications of urethral injuries include infection, bleeding, stricture, erectile dysfunction and urinary incontinence.

Question:

A 22-year-old professional hockey presents to his General practitioner with a 2-week history of difficulty in straightening his left elbow. He gives a history of sustaining an injury to the left arm during a game of hockey when he was hit directly across the back of the arm by the opponent’s stick. He states that he felt a tearing sensation and severe pain in his arm immediately after the injury. On examination, he is unable to extend his arm. A palpable gap is felt at the posterior compartment of the arm just above the olecranon process. He has full range of movements in his wrist and fingers.

Which one of the following is correct?

A) Supracondylar fracture

B) Rupture of triceps tendon

C) Radial nerve injury

D) Musculocutaneous nerve injury

E) Rupture of common extensor origin

Answer:B

Explanation:

The signs and symptoms in this patient are suggestive of a rupture of the triceps tendon. The most common method of injury to the triceps tendon is from fall on the outstretched hand with the elbow in mid flexion, with or without a concomitant direct blow to the posterior aspect of the elbow or arm. Triceps tear or rupture can occur (in decreasing order of frequency) in one of three anatomic locations: (i) the tendon attachment to the bone; (ii) the musculotendinous junction, or (iii) in the muscle substance. The pathagnomonic features of triceps tendon rupture are inability or weakness of extension of the elbow and a palpable gap in the substance of the muscle. Depending on the duration of the injury, bruising, ecchymosis, and localised tenderness may be present. Further imaging studies may be necessary to help to define the exact extent of the injury.

Question:

A 39-year-old bartender presents to her General Practitioner with a four-month history of being generally unwell, loss of appetite, abdominal discomfort and increased bowel movements. She also states that she passes air occasionally when she attempts to pass urine. Her menstrual periods are regular. She smokes about 20 cigarettes per day. On examination, her temperature is 39.8°C and she is tender over her right iliac fossa. Per rectal examination is unremarkable but a few small ulcers are noticed around the perianal region. Her white cell count is 14.4 and her C-reactive protein level is 98. Colonoscopy reveals skip lesions of linear ulcers and transverse fissures giving cobble stone appearance of the mucosa. CT scan reveals an enterovesical fistula.

Which one of the following is correct?

A) Pelvic inflammatory disease

B) Carcinoma of the caecum

C) Crohn’s disease

D) Coeliac disease

E) Ulcerative colitis

Answer:C

Explanation:

This patient is manifesting the clinical features of Crohn’s disease. Crohn’s disease is an auto-immune condition characterised by trans-mural inflammation of the gastro-intestinal tract. The precise aetiology of Crohn's disease remains unclear; however, an altered response by the body’s immune system to normal intestinal bacteria, smoking (smokers have a higher risk of Crohn's disease than nonsmokers), environmental factors, familial predisposition, and pathogenic bacteria and viruses has all been implicated. The disease can affect any part of the gastrointestinal tract from the mouth to the anus, although it frequently affects the terminal ileum (terminal ileitis). The most common presentation of patients with Crohn’s disease is related to the chronic inflammatory process involving the ileo-caecal region which includes low-grade fever, loss of appetite, loss of weight, anaemia and general fatigability. The patients may have crampy or constant pain over the umbilical region or over the right iliac fossa. The pain may be relieved by defecation. Diarrhea may be troublesome, which is usually non-bloody and intermittent. If the colon is involved, patients may present with diffuse abdominal pain accompanied by mucus, blood and pus in the stool. Some of the extra intestinal manifestations of Crohn’s disease include skin rashes, erythema nodusum, arthritis and inflammation of the eye such as uveitis and episcleritis. On endoscopic examination, Crohn’s disease is characterised by skip lesions (patchy areas of inflammation) and by deep serpiginous ulcers. Some important complications of Crohn’s disease include fistula formation (e.g., entero-colic, entero-cutaneous), abscesses (e.g., perianal), haemorrhage, and intestinal obstruction. This patient has developed an enterovesical fistula which causes her to pass air when she attempts to pass urine. The management of Crohn’s disease depends on the severity and the stage of the disease. The treatment may be conservative (including medical) or surgical.

Question:

A 63-year-old lady presents to her general practitioner with a three-month history of abdominal pain, tiredness, loss of appetite and weight loss. She also states that she has excessive sweating at night. On examination, she appears pale and weak, and her temperature is 37.8 °C. She is tender over the epigastrium and the left hypochondrium. Lymph nodes are found to be enlarged in her neck, axillae and groins. Liver function test reveals an elevated lactate dehydrogenase level. She was referred to the hospital to have an ultrasound of the abdomen, which revealed gross splenomegaly, together with free fluid in the abdomen and pelvis. There has been no history of trauma to her abdomen nor has she had any foreign travels. During laparotomy, the surgeons identified an enlarged spleen with several capsular tears and rupture and decided to do a splenectomy.

Which one of the following is correct?

A) Carcinoid tumour

B) Kaposi’s sarcoma

C) Non-Hodgkin’s lymphoma

D) Infectious mononucleosis

E) Multiple myeloma

Answer:C

Explanation:

The symptoms and signs in this patient are clearly suggestive of Non-Hodgkin's lymphoma, a malignancy of the lymphatic system. Approximately eighty-five percent of Non-Hodgkin's lymphomas are derived from a clone of B-cells and the remainder has a T-cell origin. Non-Hodgkin lymphoma may develop in any organ associated with the lymphatic system such as the spleen, lymph nodes and tonsils. The disease spreads from one lymph node group to another and the patients develop systemic symptoms with advanced disease. The common clinical presentations of Non-Hodgkin lymphoma include unexplained fever, night sweats, anorexia, weight loss, fatigue and the development of painless, generalized lymphadenopathy. Abdominal involvement of the disease may lead to abdominal pain, hepatomegaly or splenomegaly, nausea and vomiting. Lactate dehydrogenase levels are usually elevated in patients with Non-Hodgkin lymphoma. Ann Arbor staging criteria (Stage I - involvement of a single lymph node area; Stage II - involvement of two or more lymph node regions on same side of the diaphragm; Stage III - involvement of lymph node regions on both sides of the diaphragm +/- spleen; Stage IV - disseminated extralymphatic spread) is used to stage the disease.

Question:

All the following conditions may have an increased level of prostate specific antigen EXCEPT:

Which one of the following is correct?

A) Seminoma of testis

B) Following catheterization

C) Prostatitis

D) Carcinoma of prostate

E) Benign prostatic hypertrophy

Answer:A

Explanation:

The prostate specific antigen (PSA) is an enzyme produced by the prostate. Its normal function is to liquefy gelatinous semen after ejaculation, thus allowing the spermatozoa to more easily navigate through the cervix. The PSA test measures the blood level of Prostatic Specific Antigen. PSA levels under 4 ng/mL are generally considered normal; however, in individuals below the age of 50 sometimes a cut-off of 2.5 ng/mL is used as the upper limit of normal. The common causes of high PSA levels are carcinoma of the prostate, enlargement of the prostate (BPH)) and prostatitis. It can also be elevated after urinary catheterization and may be raised for 24 hours after ejaculation.

Question:

A 64-year-old gardener is brought by the paramedics to the Accident and Emergency unit after he was stung by bees about 30 minutes ago whilst he was trying to clear some beehives closer to the garden shed he was working. On examination, he is sweaty, appears pale and is very short of breath. His GCS is 14/15 (E4; M6; V4). His tongue and lips are mildly swollen and he is noticed to develop urticarial rashes over this chest and upper arms. His temperature is 37.2° C, respiratory rate is 20/min, blood pressure is 110/68 mmHg and his pulse rate is 118 beats/minute. Chest examination reveals good bilateral air-entry but has an inspiratory stridor and extensive wheeze.

Which one of the following is correct?

A) Nebulised Salbutamol - 5mg

B) Intravenous Chlorpheniramine Maleate - 10 mg

C) Intramuscular Atropine - 500 micrograms

D) Intramuscular adrenaline 1:1,000 - 0.5 ml

E) Intravenous Hydrocortisone - 100mg

Answer:D

Explanation:

This patient has got the classical features of an anaphylactic shock. The clinical signs of anaphylactic shock include shortness of breath, increased respiratory rate, inspiratory stridor, wheeze, tachycardia, angioneurotic oedema (classically swollen lips, tongue, face and neck leading to breathing difficulties) and sometimes evidence of peripheral shutdown (such as a delayed capillary refill). Patients diagnosed to have an anaphylactic shock should be placed in a comfortable, reclining position. High flow of oxygen should be administered and intravenous access secured. If the patient is hypotensive, then intravenous fluids (such as colloids or crystalloids) may be administered. Adrenaline is the first choice drug in the management of anaphylactic shock. An anti-histamine drug such as chlorpheniramine may be effective in controlling the symptoms. Hydrocortisone is useful in the treatment of anaphylactic shock although its role in limited in the acute stages due to its delayed action. An inhaled ß2 agonist such as salbutamol is useful to treat the bronchospasm associated with the anaphylaxis. Atropine does not have any role in the management of anaphylactic shock.

Question:

A 21-year-old professional squash player presents to the Accident and Emergency unit with severe, stabbing pain just above his right knee joint. He states that the pain was of sudden onset and happened when he took a sharp stride during a match. On examination, he walks with a limp and is unable to extend the leg. There is a swelling over the supra-patellar region and is identified to have a low-lying patella. Knee jerk is absent.

Which one of the following is correct?

A) Fracture of patella

B) Tear of adductor magnus muscle

C) Injury to the posterior cruciate ligament

D) Tear of quadriceps tendon

E) Tear of biceps femoris tendon

Answer:D

Explanation:

A quadriceps tear may occur in both young athletes and older patients. The usual mechanism of injury is from kicking, sprinting or whilst being engaged in a sports activity which exerts sudden strain to the quadriceps tendon. Patients with tear of the quadriceps tendon typically present with acute knee pain, swelling, and functional loss following a stumble or a fall. The common clinical presentations include painful gait, inability to extend the knee, inability to straight leg raise and supra patellar swelling. There may be a palpable defect in the suprapatellar area and a low-lying patella, but swelling initially may obscure this finding. Neurological examination of the thigh and knee may be normal except for decreased quadriceps motor function and an absent knee jerk.

Question:

Which among the following tendons form the ulnar (medial) border of the anatomical snuff box?

Which one of the following is correct?

A) Tendon of Extensor digitorum longus

B) Tendon of Extensor indicis proprius

C) Tendon of Extensor pollicis longus

D) Tendon of Abductor pollicis longus

E) Tendon of Extensor pollicis brevis

Answer:C

Explanation:

The anatomical snuffbox lies distal to the radial process of the radius. The floor of the snuff box is formed by the scaphoid and the trapezium. Three tendons form the ulnar (medial) and radial (lateral) boundaries of the anatomical snuff box. The tendon of extensor pollicis longus is forms the ulnar border while the tendons of abductor pollicis longus and extensor pollicis brevis form the radial border. The radial artery lies in the snuff box and runs in the space between the first and second metacarpals to contribute to the superficial and deep palmar arches. The cephalic vein arises within the anatomical snuffbox, while the dorsal cutaneous branch of the radial nerve can be palpated by stroking along the extensor pollicis longus tendon.

Question:

A six-year-old boy is brought to the Accident and Emergency department with a painful and swollen right elbow after he fell awkwardly from a bouncy castle. On examination, there is tenderness around the elbow region with obvious deformity. Radial pulse is present but feeble. He is unable to flex his right index finger and has loss of sensation over the thenar eminence and the thumb. Radiological investigation reveals a supra-condylar fracture of the right humerus with the upper fragment penetrating the skin. Which nerve is most likely to be injured in this child?

Which one of the following is correct?

A) Radial nerve

B) Median nerve

C) Posterior interosseous nerve

D) Ulnar nerve

E) Musculocutaneous nerve

Answer:B

Explanation:

The nerve most likely to be injured in this child is the median nerve. The median nerve is formed by the C5 to C7 roots from the lateral cord of the brachial plexus and from the C8 and T1 roots from the medial cord. In the arm, it runs in close proximity to the brachial artery and may be injured following supra-condylar fractures of the humerus. Thus the radial pulse may be feeble or absent. In the cubital fossa, the median nerve passes between the two heads of the pronator teres. It then travels between the muscle bellies of flexor digitorum superficialis and flexor digitorum profundus before emerging between flexor digitorum superficialis and flexor carpi radialis. The median nerve then passes through the carpel tunnel, where it may be compressed to cause the carpal tunnel syndrome.

Question:

A 63-year-old gentleman undergoes repair of his right popliteal artery aneurysm under the care of the vascular surgeons. The popliteal fossa was opened during the procedure to gain access to the popliteal artery. He has an uneventful post-operative recovery and is due to be discharged soon. Shortly before discharge he complains of loss of sensation over the lateral aspect of his right ankle, foot and the lateral aspect of his little toe. His knee and ankle jerks are normal. He has full range of movements in his ankle including dorsiflexion, inversion and eversion.

Which one of the following is correct?

A) Tibial nerve

B) Posterior femoral cutaneous nerve

C) Saphenous nerve

D) Common peroneal nerve

E) Sural nerve

Answer:E

Explanation:

Popliteal fossa is a diamond-shaped region in the posterior aspect of the knee. It is bounded superomedially by semimembranosus and semitendinosus muscles, superolaterally by the biceps femoris muscle, inferolaterally by the lateral head of the gastronemius muscle and inferomedially by the medial head of the gastronemius muscle. The important contents of the popliteal fossa include the popliteal artery and vein, tibial nerve, common peroneal nerve, short saphenous vein, sural nerve and the posterior femoral cutaneous nerve. The fossa is covered by the popliteal fascia, which is perforated by the short saphenous vein and the sural nerve. The sural nerve is the most superficial structure that is most likely to be encountered when the popliteal fossa is explored during surgery. The sural nerve is formed by union of the medial sural cutaneous and the peroneal anastomotic branch of the lateral sural cutaneous nerves. It then runs along the posterolateral aspect of the leg along with the short saphenous vein, lies lateral to the tendo calcaneus and lies in the area between the lateral malleolus and the calcaneus. It then runs forward below the lateral malleolus and continues as the lateral dorsal cutaneous nerve along the lateral side of the foot and little toe, communicating on the dorsum of the foot with the intermediate dorsal cutaneous nerve, a branch of the superficial peroneal nerve. The sural nerve is the sensory nerve to the lateral aspect of the ankle, foot and the lateral side of the 5th toe, and damage to the nerve may result in loss of sensation to these areas.

Question:

From the following statements regarding normal wound healing, choose the ONE statement which is INCORRECT:

Which one of the following is correct?

A) Wound healing can proceed in the absence of polymorphonuclear leucocytes

B) Monocytes are essential for wound healing

C) Collagen is formed by two polypeptide chains

D) Type IV collagen is predominantly seen in the basement membrane

E) The normal ratio of Type I to Type III collagen is the skin is approximately 4:1

Answer:C

Explanation:

Acute wound healing occurs as a sequential cascade of overlapping processes that requires the co-ordinated completion of a variety of cellular activities including phagocytosis, chemotaxis, mitogenesis and the synthesis of ECM components. These activities do not occur in a haphazard manner but, rather, in a carefully regulated and systematic cascade that correlates with the appearance of different cell types in the wound during various stages of the healing process. Although polymorphonuclear leucocytes (PMNL) are important in the early stages of wound healing process, healing can nevertheless proceed in the absence of PMNS (and also lymphocytes) but monocytes are essential for wound healing. Blood monocytes on arriving to the wound site undergo a phenotypic change to become tissue macrophages. Collagen is a rod-shaped molecule composed of three polypeptide chains that form a rigid triple helical structure (that is 15ºA in diameter and 300ºA in length). Collagen is also peculiar in that it is almost devoid of sulphur containing amino acids such as tryptophan and cysteine, but is rich in hydroxylsyine and hydroxyproline. There are five main types of collagen in the human body. Their common distribution is as follows: Type I: Bone, skin, tendon, uterus, arteries Type II: Hyaline cartilage, eye tissues Type III: Skin, arteries, uterus and bowel wall Type IV: Basement membrane Type V: Basement membrane and other tissues The normal ratio of Type I to Type III collagen in the skin is approximately 4:1.

Question:

Which among the following treatment options is NOT used in the management of Keloid scars?

Which one of the following is correct?

A) Topical silicone gel

B) Steroid injections

C) Radiotherapy

D) Intralesional surgical excision

E) Systemic steroids

Answer:E

Explanation:

Keloids are benign dermal proliferative tumours unique to humans. It represents a dysregulated response to cutaneous wounding in genetically susceptible individuals, resulting in the excessive deposition of extracellular matrix, especially collagen. Although the exact mechanism remains unclear, various theories have been purported regarding its aetiology including: Familial tendency such as an autosomal dominant or recessive inheritance; abnormality of ketatinocyte control over fibroblasts (epithelial-mesenchymal interactions); hormonal influence; altered immunological response; enhanced role of transforming growth factor – ß (TGF- ß ); and down-regulation of apoptosis related genes. In addition, keloids are also associated with various connective tissue diseases and some authors have found a relationship with cell membrane proteins such as human leukocyte antigens. The management of keloid scar remains challenging. Various treatment options such as topical silicone gel application, intralesional excision (excision through the substance of the keloid), steroid injections and radiotherapy have been attempted and widely used but none has gained lasting or universal acceptance. However, combination of the above treatment options is generally considered to give better results. Systemic steroids do not have any role in the treatment of keloid scars.

Question:

A 44-year-old man who had undergone repair of his perforated duodenal ulcer 3-weeks ago presents to his General Practitioner with a 24-hour history of right upper quadrant abdominal pain, fever with chills and rigors, and shortness of breath. He says that the pain is radiating to his right shoulder tip. On examination, his temperature is 39.2º C, pulse rate is 110/min and blood pressure is 124/78mmHg. Abdominal examination reveals tenderness over the right hypochondric region. Chest X-ray reveals right-sided basal atelectasis and mild pleural effusion.

Which one of the following is correct?

A) Pyonephrosis

B) Subphrenic abscess

C) Emphyema of right lung

D) Sclerosing cholangitis

E) Acute cholecystitis

Answer:B

Explanation:

Subphrenic abscess usually arises 3 to 6 weeks following abdominal surgery, mainly to the biliary tract, duodenum or stomach, or following a perforated viscus or anastamotic leakage. The subphrenic space is in direct contact with the para-colic gutter, and hence peritoneal contaminants such as bile, blood or bowel contents in the para-colic gutter spread to the subphrenic space. Subphrenic abscess is right-sided in about 50%, left-sided in 25% and bilateral in 25% of patients. Some clinical features of subphrenic abscess include pyrexia with chills and rigors, tachycardia, anorexia, loss of appetite and loss of weight. Diaphragmatic irritation may affect the lung, resulting in chest pain, dyspnoea and non-productive cough. Basal atelectasis, pneumonia and pleural effusion are recognised complications of this condition. Ultrasound scan is the investigation of choice to diagnose subphrenic abscess, and, if an abscess is identified, ultrasound guided percutaneous drainage catheter may be placed at the same time.

Question:

A 91-year-old man who lives in residential care is brought to the Accident and Emergency department with a 24-hour history of sudden onset abdominal pain. On examination, he appears pale, cold and clammy. His blood pressure is 98/68 mmHg and his pulse is 94/min and irregular. Abdomen is soft and mildly tender over the umbilical region. Bowel sounds are absent. He was noticed to pass a few episodes of dark (bloody) coloured motions during the day. Analysis of arterial blood gas reveals a pH of 7.22, bicarbonate of 18 and a base deficit of -10.

Which one of the following is correct?

A) Mesenteric infarction (Ischaemic bowel disease)

B) Sigmoid volvulus

C) Acute small bowel obstruction

D) Toxic megacolon

E) Leaking abdominal aortic aneurysm

Answer:A

Explanation:

The history, signs and symptoms are classical of mesenteric infarction, also known as ischaemic bowel disease. The majority of the patients who develop ischaemic bowel are elderly and a significant number of them will be in atrial fibrillation. Clinical features of this condition vary with some patients being asymptomatic or manifesting minimal symptoms during the initial period of developing ischemic bowel; other patients may present with persistent, generalized abdominal pain. Vomiting may or may not be present. Some patients may present with shock; the shock may be out of proportion to the clinical symptoms. The ischaemic bowel may shed the ‘non-viable mucosa’, which mixed with mucus, results in dark-coloured (also known as ‘plum-coloured) stools. The inflammatory markers such as the white cell count and C-reactive protein may be elevated. Arterial blood gas analysis is a very useful investigation, which may reveal a metabolic acidosis. This condition is a surgical emergency as the patient rapidly become toxic and may die from septic shock unless the infracted bowel (‘dead gut’) is removed.

Question:

A 19-year-old man is brought to the Accident and Emergency department after he was found unconscious outside a pub. On examination, his blood pressure is 116/84 mmHg, pulse rate is 94/min and GCS is 3. He smells heavily of alcohol. He is noted to have bilateral periorbital haematomas and bruising over the right mastoid process. There is discharge of blood, mixed with a thin fluid, from his right nostril and right ear. Otoscopic examination of the right ear reveals blood behind the tympanic membrane.

Which one of the following is correct?

A) Le Fort III fracture

B) Subarachnoid bleed

C) Le Fort I fracture

D) Basal skull fracture

E) Extradural haemorrhage

Answer:D

Explanation:

This patient is most likely to have a basal skull fracture. Trauma, such as due to fall from heights and road traffic accidents, is the commonest cause of this type of fracture. Basal skull fractures commonly involve the roof of the orbits, the sphenoid bone and parts of the temporal bone. The classical signs and symptoms of basal skull fracture include, periorbital haematoma (Raccoon eyes), subconjunctival haemorrhage where the posterior margins cannot be seen, Battle’s sign (post auricular bruising and blood behind the eardrum) (although this sign may take 24-48 hours to develop in some patients) and rhinorrhoea/otorrhoea (blood mixed with CSF which doesn't clot) (this is caused due to the damage to the cribriform plates). Some recognised complications of basal skull fracture include meningitis (especially following CSF rhinorrhoea), facial palsy, and VIth nerve palsy. CT scan is the investigation of choice for the diagnosis of suspected basal skull fracture (and of other serious head injuries). Indications for CT scan include: a GCS <13; unreliable history or examination due to alcohol and/or drug ingestion; loss of consciousness for >5 minutes; persisting/progressive headache; persistent vomiting; ante- and/or retrograde amnesia; clinical suspicion of basal skull fracture, and; skull fracture with neurological signs and/or convulsions. Patients with GCS <8 have a risk of respiratory compromise; thus GCS <8 is an indication for intubation.

Question:

A ten-month-old baby boy is brought to the Paediatric Surgical Emergency unit by his parents with a 24-hour history of intermittent episodes of crying, vomiting and refusal to feed. The parents say that they have noticed the baby’s stools to be mixed with blood. On examination, a ‘sausage-shaped’ mass is palpable over the right side of abdomen. Per rectal examination reveals an empty rectum but blood is noticed in the glove of the examining finger.

Which one of the following is correct?

A) Hirschsprung’s disease

B) Intussusception

C) Duodenal atresia

D) Meconium ileus

E) Infantile hypertrophic pyloric stenosis

Answer:B

Explanation:

Intussusception is more common in boys and usually occurs under the age of one. It is associated with haemophilia, Henoch-Schonlein purpura, haemangiomas and GI lymphomas. Although the precise aetiology is not clear, intussusception is known to occur with greater frequency in children who have undergone recent abdominal surgery, either intraperitoneal or retroperitoneal operations. Intussusception is caused due to the invagination of a segment of bowel into its adjoining lower segment. The mesentery and associated vessels may also become involved with the intraluminal loop and squeezed within the engulfing segment. Clinical features of this condition include severe colicky abdominal pain (causing intermittent inconsolable cries with the child drawing up the legs) and vomiting. Between attacks, the infant may appear in good health. The infant may pass ‘redcurrant jelly’ stool. Abdominal examination may reveal a ‘sausage-shaped’ mass and per rectal examination may reveal blood.

Question:

A 37-year-old cyclist is brought to the Accident and Emergency department after he was hit by a car travelling at about 50 mph in a single carriage way. On examination, he has severe bruising over his left antero-lateral chest wall. A puncture wound is noticed at the level of left 6th ICS. There is decreased air entry over the left lower lobe of lung and bowel sounds are heard in the chest. A chest x-ray reveals fracture of the lower four ribs on the left side and a raised left dome of the diaphragm.

Which one of the following is correct?

A) Cardiac tamponade

B) Traumatic haemothorax

C) Left basal pneumonia

D) Tension pneumothorax

E) Rupture of the diaphragm

Answer:E

Explanation:

The clinical signs and symptoms in this patient are most likely to be due to a ruptured diaphragm. Direct penetrating injury to the thoraco-abdominal region is a common cause for diaphragmatic rupture. The injury could be at any level between the 4th and the 10th inter-costal space, depending on the patient’s respiratory pattern. The other causes include rib fractures and a sudden increase in thoraco-abdominal pressure, as occurs when the patient with a closed glottis is hit in the abdomen. Patients with rupture of the diaphragm may be present with hypotension, tachycardia, tachypnoea, chest pain and decreased air-entry in the lung base of the affected side. However, diaphragmatic rupture may be difficult to detect clinically, and thus may result in significant morbidity or sometimes mortality. Rupture may be seen on plain chest radiograph especially with the abnormal location of the naso-gastric tube; the accuracy of this method, however, is modest. Fracture(s) of the lower ribs on the affected side may or may not be present. The differential diagnoses for a raised left hemidiaphragm, both clinically and in plain radiography, includes, phrenic nerve palsy, atelectasis, diaphragmatic hernia and distended abdominal viscera.

Question:

A seven-year-old boy is brought to the Accident and Emergency department with a 12-hour history of vomiting, severe abdominal pain and being generally unwell. His parents say that he also had two episodes of convulsions during this period. On examination, he appears pale and dehydrated. The abdomen is rigid and tender, and the pain is worse over the right iliac fossa. His temperature is 40.4º C, blood pressure 82/64 mmHg, and pulse rate 144/min. There is no discolouration over the anterior abdominal wall. Bowel sounds are absent.

Which one of the following is correct?

A) Volvulus neonatorum

B) Acute appendicitis

C) Bacterial Peritonitis

D) Necrotizing enterocolitis

E) Meckel’s diverticulitis

Answer:C

Explanation:

The signs and symptoms in this child are suggestive of spreading/established infection in the peritoneal cavity. Bacterial peritonitis in children may occur as a result of a ruptured viscus (e.g., ruptured appendicitis or ruptured Meckel’s diverticulitis), or as a complication of abdominal surgery. The child may present with classical signs of peritonitis such as abdominal pain, pyrexia, nausea, vomiting, tachycardia, low blood pressure and decreased urine output. High pyrexia may result in febrile convulsions. Abdominal examination may reveal a board-like rigidity, guarding and rebound tenderness. Bowel sounds may be absent in established peritonitis. Plain abdominal x-rays should be performed in both supine and upright positions to identify the presence of free gas beneath the diaphragm, which may suggest a perforated viscus. The common organisms responsible for bacterial peritonitis in children include Escherichia coli, Klebsiella pneumoniae and Pseudomonas species.

Question:

A 78-year-old gentleman presents to his General Practitioner with a three-month history of non-specific lower abdominal discomfort, abdominal distension and constipation. On further questioning he says that he has noticed a change in his bowel habits, a sense of incomplete evacuation of the bowel and his stools to be mixed with blood. He has lost more than a stone in weight during this period. On examination, the abdomen is soft but a mass is felt over the left iliac fossa. Plain abdominal X-ray reveals a dilated descending and transverse colon.

Which one of the following is correct?

A) Colonic carcinoma

B) Sigmoid volvulus

C) Toxic megacolon

D) Acute colonic pseudo-obstruction

E) Diverticular disease

Answer:A

Explanation:

Elderly patients with per rectal bleeding, change in bowel habits, and weight loss should be considered to have colonic cancer unless proven otherwise. Increase in age is a risk factor for colonic cancer. The other risk factors include, a family history of colon cancer, familial adenomatous polyposis, diet rich in red meat and long standing ulcerative colitis or Crohn’s disease. The clinical presentation of patients with colonic malignancy depends on the site of the tumour: Right-sided colonic carcinoma commonly presents with anaemia, tiredness, malaise, pallor and loss of weight, whilst left sided colonic carcinoma presents with change in the bowel habits, bleeding per rectum and intestinal obstruction. Rectal caricnoma, in addition to the features seen in left-sided colonic carcinoma, is associated with a sense of incomplete evacuation of the bowel (tenesmus). Investigations for suspected colonic malignancy includes full blood cell count, renal function and electrolytes, liver function tests (to rule out hepatic involvement), plain X-ray of the abdomen, and ultrasound and CT scans. Carcinoembryonic antigen (CEA) is the commonly used tumour marker to diagnose colonic malignancy and subsequently to assess the progress, including recurrence.

Question:

A 52-year-old estate agent presents to his General Practitioner with a four-week history of upper abdominal pain and diarrhoea. He says that he has also had a few episodes of ‘dark-coloured’ vomittus during this period. General examination is unremarkable. Endoscopic examination of his upper gastro-intestinal region reveals multiple ulcers in the stomach and duodenum.

Which one of the following is correct?

A) Vasoactive intestinal peptide tumour

B) ACTH secreting tumour

C) Somatostatinoma

D) Carcinoid tumour

E) Gastrinoma

Answer:E

Explanation:

Gastrinomas primarily occur in the pancreas and duodenum, and are malignant in nearly two-thirds of cases. The patients may present with upper abdominal/epigastric pain and vomiting; the vomittus may be ‘coffee-ground’ due to bleeding from the ulcers. Ninety percent of patients with gastrinomas develop peptic ulceration. Gastrinomas may either arise sporadically or as part of Zollinger-Ellison syndrome (peptic ulceration, gastric acid hypersecretion and islet cell tumour of the pancreas). Sporadic Zollinger-Ellison occurs most frequently in the fifth decade of life. Approximately 20% of patients with Zollinger-Ellison syndrome have MEN type I syndrome. An elevated basal gastric acid output >15mEq/h and a serum gastrin >1000pg/ml are suggestive of a gastrinoma. If it is difficult to make a diagnosis, a secretin stimulation test may be indicated. Lesions are localised by somatostatin-receptor scintography. A CT scan may be indicated to exclude metastases. The treatment of this condition is either conservative (high dose proton pump inhibitors) or surgical. Surgical resection may be aided by intra-operative ultrasound and/or intra-operative endoscopy.

Question:

A 22-year-old brick layer presents to his General Practitioner with altered sensation over the medial aspect of his right hand and reduced hand function. He had sustained a fracture of the medial epicondyle of the right humerus about 10 weeks ago. On examination, there is wasting of muscles over the hypothenar eminence with loss abduction and adduction of the fingers.

Which one of the following is correct?

A) Axillary nerve

B) Radial nerve

C) Ulnar nerve

D) Median nerve

E) Musculocutaneous nerve

Answer:C

Explanation:

Ulnar nerve (C8, T1) arises from the medial cord of the brachial plexus or, more specifically, the anterior division of the lower trunk. This nerve is commonly damaged following injury to the medial epicondyle of the humerus. It can also be injured in other types of humeral fractures. Ulnar nerve injury may lead to paralysis of the small muscles of the hand; paralysis of the interossei results in loss of adduction and abduction of the fingers. Thumb adduction may be lost due to loss of innervation of adductor pollicis brevis (the other thenar muscles are supplied by the median nerve). Clawing of the little and ring fingers, known as the ‘ulnar claw hand’, is seen in low ulnar nerve injuries where the extension of the fingers is lost due to paralysis of the medial two lumbricals but the fingers become flexed due to the unopposed action of the long flexors (flexor digitorum superficialis and flexor digitorum profundus). High ulnar nerve lesions cause loss of action of the above flexors to the little and ring fingers and hence there is no clawing of the hand.

Question:

A 49-year-old gentleman presents to the Accident and Emergency department with a eight-hour history of severe epigastric and central abdominal pain radiating through to his back. The pain reduces when he leans forward. He has also had three episodes of vomiting, mostly bilious. He admits to drinking up to 50-60 units of alcohol per week. He has experienced similar but less severe episodes in the past. On examination, his temperature is 37.6ºC, pulse rate is 92/min and respiratory rate is 18/min. Abdominal examination reveals tenderness over the epigastric region with moderate degree of guarding but no evidence of peritoneal irritation. Plain radiographs of the chest (erect) and abdomen (supine) are unremarkable.

Which one of the following is correct?

A) Intestinal obstruction

B) Mesenteric ischaemia

C) Acute pancreatitis

D) Perforated peptic ulcer

E) Ruptured abdominal aortic aneurysm

Answer:C

Explanation:

The signs and symptoms in this patient are very suggestive of acute pancreatitis. Alcohol accounts for about 30-35% of all cases of acute pancreatitis. The other important cause of acute pancreatitis is obstruction secondary to gallstones (30-40%). Approximately 25% of patients presenting with acute pancreatitis may have associated cardiovascular (tachycardia) or respiratory (tachypnoea) symptoms. Pancreatitis is thought to result from early activation of pancreatic enzymes, producing auto-digestion of the pancreas and surrounding tissues. The severity of acute pancreatitis is validated using various prognostic scoring systems. Currently in the UK, the Glasgow-Imrie scoring system is widely used for assessing the severity and predicating the prognosis in acute pancreatitis (age>55 years, white blood cell count>15 × 109/l, glucose>10 mmol/l, urea>16 mmol/l, PaO2<60 mm Hg, calcium<2 mmol/l, albumin<32 g/l, lactate dehydrogenase>600 units/l, asparate/alanine aminotransferase>100 units/l. Serum C-reactive protein concentration, although not part of the Glasgow criteria, has an independent prognostic value if the peak level is >210 mg/l in the first four days of the attack). Serum amylase is a useful indicator to diagnose acute pancreatitis; a diagnosis of acute pancreatitis is likely if the level is three times the upper limit of normal although this may vary between laboratories depending on the hospital policy/guidelines. An ultrasound of the abdomen is indicated in all patients with acute pancreatitis to determine the presence/absence of biliary calculi. A CT of the abdomen should be performed on all patients with severe acute pancreatitis, preferably between days 3 and 10 following the onset of symptoms, to rule out pancreatic necrosis.

Question:

A 33-year-old motorcyclist is brought to the Accident and Emergency department after he was involved in a high-speed road traffic accident. He complains of pain over the left side of his chest and feels short of breath. On examination, his pulse rate is 122/min, blood pressure is 98/66 mmHg and his respiratory rate is 20/min. His jugular venous pressure is elevated. Heart sounds are muffled. Trachea is central and breath sounds are normal bilaterally. A chest radiograph reveals fractures of the 5th, 6th and 7th ribs on the left side. The cardiac silhouette is enlarged.

Which one of the following is correct?

A) Tension pneumothorax

B) Ruptured thoracic aorta

C) Cardiac tamponade

D) Flail chest

E) Pericarditis

Answer:C

Explanation:

Cardiac tamponade is usually caused by direct penetrating injury to the heart. It can also result from blunt injuries to the heart, which causes injury to the pericardial vessels, or high velocity injuries to the great vessels (e.g., thoracic aorta), which results in pooling of blood in the pericardium. Apart from trauma, cardiac tamponade can result from carcinomas of the breast or lung, dissecting thoracic aneurysm, myocardial infarctions, and bacterial, viral or tuberculous pericarditis. Cardiac tamponade can be difficult to diagnose clinically, especially in an Accident and Emergency setting. The classical (and diagnostic) signs of cardiac tamponade include a triad of falling blood pressure, rising jugular venous pulse and muffled heart sounds (Beck’s triad). Pulsus paradoxus may also be an associated finding. The jugular venous pulse may paradoxically rise with inspiration (Kussmaul’s sign). Chest radiograph may reveal a globular heart, a convex or straight left heart border, and a right cardiophrenic angle of < 90°. Plain chest x-ray, ECG, echocardiography and diagnostic pericardiocenthesis are useful investigations to diagnose cardiac tamponade.

Question:

A 53-year-old man is brought to the Accident and Emergency department after he was hit and run by a car in a country road. On examination, he appears restless and is short of breath. His blood pressure is 104/74 mmHg, pulse rate is 116/min, respiratory rate is 20/min and oxygen saturation is 87% on 100% oxygen by face mask. On examination of his chest, the trachea is pushed to the left, the right lung is hyper-resonant to percuss, and there is reduced air-entry in the lung fields on the right side.

Which one of the following is correct?

A) Pulmonary embolism

B) Tension pneumothorax

C) Diaphragmatic rupture

D) Ruptured right main stem bronchus

E) Pulmonary contusion

Answer:B

Explanation:

Blunt or penetrating trauma to the chest is the commonest cause for a tension pneumothorax. Other causes include central venous catheter placement, chest compressions during cardiopulmonary resuscitation, barotrauma secondary to positive-pressure ventilation (especially when using high amounts of positive end-expiratory pressure), fibre-optic bronchoscopy with closed-lung biopsy and markedly displaced thoracic spine fractures. A tension pneumothorax results from any lung parenchymal or bronchial injury that acts as a one-way valve, allowing free air to move into an intact pleural space but prevents free exit of that air. The increased volume of air in the pleural space causes the lung on the affected side to collapse and eventually causes the mediastinum to shift to the contralateral side. The shifted mediastinum impinges on and compresses the contralateral lung, and also impairs venous return. The clinical signs and symptoms of this condition include sudden onset of severe chest pain, tightness of chest, breathing difficulty, distended neck veins, cyanosis, tachycardia and decreased mental alertness. The trachea and mediastinal structures are shifted to the contralateral side. The affected lung is hyperresonant to percuss and there is usually reduced air-entry on that side.

Question:

A 42-year-old barmaid presents to the Accident and Emergency department with an 8-hour history of severe right upper quadrant pain and vomiting. She says that the pain is radiating to her right scapula and is exacerbated on breathing. She appears pale and mildly jaundiced. On examination, her pulse rate is 96/min, blood pressure is 126/82 mmHg and temperature is 37.7º C. Abdominal examination reveals tenderness over the right hypochondrium but no mass is palpable. Plain radiographs of the abdomen (supine) and chest (erect) are unremarkable.

Which one of the following is correct?

A) Acute biliary cholangitis

B) Acute cholecystitis

C) Acute pancreatitis

D) Perforated duodenal ulcer

E) Right lower lobe pneumonia

Answer:B

Explanation:

The history, signs and symptoms in this patient are suggestive of acute cholecystitis. Acute cholecystitis is more common in females over the age of 40 and with high BMI. Gallstones are the commonest cause for acute cholecystitis. Obstruction of the common bile duct due to stones leads to accumulation of bile and inflammation, resulting in an acutely inflammed gall bladder. Other risk factors for acute cholecystitis include alcohol abuse and tumours of the gall bladder. The signs and symptoms of acute cholecystitis include severe right hypochondrial pain exacerbated by respiration, nausea and vomiting, and increase in temperature. The rise in temperature is frequently mild to moderate; a very high temperature with or without chills and rigors may point to a diagnosis of acute cholangitis. A tender, inflamed gall bladder may be palpable in some patients. Likewise, jaundice may or may not be present. The differential diagnoses for acute cholecystitis include acute pancreatitis, peptic ulcer disease or perforated peptic ulcer, appendicitis, acute infective hepatitis and pleurisy.

Question:

A 54-year-old lady presents to the Surgical Emergency Assessment Unit with a 12-hour history of central colicky abdominal pain and vomiting. She has undergone a subtotal colectomy and formation of an end ileostomy for ulcerative colitis 8 years ago. Her ileostomy has not functioned for nearly 72 hours. On examination, the abdomen is mildly distended and there is tenderness over the upper abdomen. Plain abdominal radiograph reveals number of small loops in the centre of the abdomen.

Which one of the following is correct?

A) Sigmoid volvulus

B) Small bowel obstruction secondary to adhesions

C) Acute colonic pseudo-obstruction

D) Incarcerated femoral hernia

E) Bacterial peritonitis

Answer:B

Explanation:

Small bowel obstructions make up 80-85% of all intestinal obstructions. Of these, adhesions accounts for nearly 90% of all small bowel obstructions. Adhesions usually develop following laparotomy and/or ‘major’ surgeries such as resection of large sections of the bowel. However, it can also arise as a sequlae of ‘minor’ abdominal surgeries such as appendicectomies. In females, gynaecological procedures are predisposing factors for adhesion formation. In addition, pelvic inflammatory disease can also lead to adhesions even in the absence of surgical intervention to the abdomen. The cardinal features of small bowel obstruction are pain, vomiting and abdominal distension; untreated, this leads to constipation with reduction in flatus which then becomes absolute. The pain is usually colicky due to excessive peristalsis, but may become continuous if strangulation or perforation occurs. Vomiting is early in high small bowel obstruction, late in low small bowel obstruction and delayed or absent in large bowel obstruction. The management involves appropriate resuscitation of the patient and surgical exploration of the abdomen to relieve the obstruction.

Question:

A 21-year-old rugby player is brought to the Accident and Emergency department with pain in his left lower leg after he was violently kicked (in his leg) during a tackle. On examination, his pulse rate is 88/min and blood pressure is 116/74 mmHg. There is considerable bruising over the posterior aspect of his leg, and that part of the limb is tense, swollen and tender. He complains of altered sensation over the dorsum of his foot. Dorsiflexion of the foot and extension of the toes are painful and limited. Although he had normal anterior tibial and dorsalis paedis pulsations when he was brought to the department, they soon become weak and difficult to palpate. Plain radiograph of this limb does not reveal any bony injury.

Which one of the following is correct?

A) Ruptured Achilles tendon

B) Thrombosis of the popliteal artery

C) Deep venous thrombosis

D) Torn muscle bellies of gastronemius and soleus

E) Compartment syndrome

Answer:E

Explanation:

Compartment syndrome is defined as an increase in the interstitial fluid pressure within an osseofascial compartment of sufficient magnitude to cause a compromise of the microcirculation leading to necrosis of the affected nerve(s) and muscle(s). It is a well-recognised and important complication of lower limb injuries, most commonly seen after fractures and crush injury, although it can occur in the absence of bony injury. The other causes for compartment syndrome include electrical injuries, deep thermal burns, venom from snake bites, restricting tourniquets, and fluid extravasation (e.g. intravenous regional anaesthesia). The patient may present with unremitting pain that is not relieved by high doses of opioid analgesics. Severe pain in response to passive stretch of the ischemic muscles is by far the most dramatic and reliable clinical sign of compartment syndrome. Sensory loss occurs before motor loss. Early in its development, the peripheral pulses are normal as is the colour and temperature of the affected part, since it is the microvasculature that is initially affected. Loss of peripheral pulses is usually a late and often sinister sign. With progression of the condition, the limb becomes tense and swollen, and if left treated, the muscle weakness may progress to total paralysis. Left untreated, irreversible myoneural necrosis occurs within 6-8 hours. Areas of muscle may also infarct, leading to rhabdomyolysis, hyperkalaemia, hyperphosphataemia, high uric acid levels and metabolic acidosis.

Question:

A 31-year-old solicitor presents to her General Practitioner with a two-month history of crampy lower abdominal pain, diarrhoea (10-12 times/day), mouth ulcers and loss of appetite. She reckons that she has lost nearly a stone in weight during this period. She smokes about 10-15 cigarettes per day. On abdominal examination, she is tender over her right iliac fossa and a mass is palpable over this region. A few abscesses with associated sinuses are noticed in her perianal region.

Which one of the following is correct?

A) Carcinoma of the colon

B) Crohn’s disease

C) Pelvic inflammatory disease

D) Diverticulitis

E) Diverticulitis

Answer:B

Explanation:

The signs and symptoms in this patient are very suggestive of Crohn’s disease. Crohn’s disease can affect the whole of the GI tract, leading to ulcers in the mouth. Risk factors for Crohn’s disease include a strong positive family history, a variety of food, smoking (increases the risk by three folds), and infective agents such as mycobacterium and cell wall deficient organisms such as pseudomonas. The clinical presentation of this condition includes cramp-like or constant pain over the umbilical region/right iliac fossa, low-grade fever, loss of appetite, loss of weight, anaemia and general fatigability. Diarrhea may be troublesome, which is usually non-bloody and intermittent. If the colon is involved, patients may present with diffuse abdominal pain accompanied by mucus, blood and pus in the stool. Perianal fissures or fistulae (e.g., entero-colic, entero-cutaneous), intra-abdominal abscesses and adhesions, and intestinal obstruction may develop with progression of the disease.

Question:

A 42-year-old female presents to the Surgical Emergency Assessment Unit with a 48-hour history of abdominal pain, vomiting and being generally unwell. She says that she has also noticed her stools to be pale and urine dark in colour. On examination, she is jaundiced and is tender over the right upper quadrant. An ultrasound examination reveals a dilated proximal common bile duct with intra hepatic duct dilatation. A MR cholangiopancreatogram confirms a fistula between the gallbladder and the common bile duct, and a large calculi is found in the common bile duct just distal to the fistula.

Which one of the following is correct?

A) Carcinoma of the ampulla of Vater

B) Carcinoma of the head of the pancreas

C) Carcinoma of the gall bladder

D) Mirizzi Syndrome

E) Hepatocellular carcinoma

Answer:D

Explanation:

Mirizzi syndrome is caused due to impaction of gallstones either in the cystic duct or the Hartmann pouch of the gallbladder, which leads to compression of the common hepatic duct from the outside and results in symptoms of obstructive jaundice. Impaction of gallstone(s) in the Hartmann pouch or cystic duct results in the Mirizzi syndrome either by: (i) chronic and/or acute inflammatory changes leading to contraction of the gallbladder and stenosis of the common hepatic duct, or (ii) cholecystocholedochal fistula formation due to direct pressure necrosis of adjacent duct walls from large impacted stones. Patients may present with pain over the right upper quadrant of the abdomen, vomiting, fever, recurrent cholangitis, cholecystitis or pancreatitis. Pale stools and dark urine result from obstruction of the flow of bile into the intestine. Exploration of the common bile duct by either open or laparoscopic cholecystectomy and placement of a T-tube is a recognised method of managing this condition.

Question:

The General Practitioner refers a 65-year-old male to the cardiology out-patient clinic with an 8-10 month history of angina and excertional breathlessness. However, in the past 3-4 weeks, his symptoms have worsened with few episodes of syncope, palpitations and difficulty in breathing whilst at rest. On examination, his blood pressure is 110/70 mmHg and pulse rate is 68 beats per minute. Auscultation of his chest reveals an ejection systolic murmur in the aortic area radiating to the carotids. Crepitations are heard in both lung bases and clinically he is manifesting early evidence of cardiac failure. He is further investigated with an echocardiogram that reveals a mean gradient of 70 mm Hg across the aortic valve with a jet velocity of 4.5 m/sec. What will be the most appropriate management of this patient’s condition?

Which one of the following is correct?

A) Commence on nitrates and diuretics

B) Review in out-patient clinic in 3 months and repeat echocardiogram

C) Plan for endotracheal intubation and cardiac catheterisation

D) Refer to cardiac surgeons for aortic valve replacement

E) Permanent pacemaker

Answer:D

Explanation:

Aortic stenosis, the obstruction of blood flow across the aortic valve, may result from a congenital unicuspid or bicuspid valve, rheumatic fever, or degenerative calcific changes of the valve. When the aortic valve becomes stenotic, resistance to systolic ejection leads to the development of a systolic pressure gradient between the left ventricle and the aorta. This patient has the characteristic signs, symptoms and echocardiographic features of severe aortic stenosis (which is defined as: (i) a valve area <1.0 cm2 and valve area index of <0.6 cm/m2 (ii) mean gradient >40 mm Hg, and (iii) an aortic jet velocity >4 m/s). A follow-up review may by considered in patients with asymptomatic mild to moderate aortic stenosis. However, surgical intervention should be considered in patients with angina, syncope, palpitations, reduced LV function and symptoms of LVF (orthopnoea, PND and dyspnoea on exertion). Thus in the above patient, the definitive management would be an aortic valve replacement. In patient with ischemic heart disease, prior to aortic valve replacement, an angiogram to study the coronary arteries will be beneficial in order to consider the need for a coronary artery bypass grafting (CABG) along with the aortic valve replacement in one sitting.

Question:

A 68-year-old man presents to his General Practitioner with a 6-8 week history of weight loss, tremors, restlessness and palpitations. Since the symptoms are suggestive of a thyroid disorder, he decides to investigate his thyroid function. The results reveal a free T3 of 3.4 pmol/L (normal: 3.4-7.2 pmol/L), free T4 of 30 pmol/L (normal: 9-25 pmol/L) and a TSH of 0.1 mU/L (normal: 0.5-6 mU/L). On reviewing the patients’ records, it appears that he was started on a new medication recently in the cardiology out-patient clinic to treat his heart condition. Which among the following drugs is the most likely cause for his abnormal thyroid function tests?

Which one of the following is correct?

A) Sotalol

B) Digoxin

C) Amiodarone

D) Flecanide

E) Procainamide

Answer:C

Explanation:

Amiodarone is the most likely drug to cause this abnormal thyroid function tests. Amiodarone, a potent anti-arrhythmic drug used to treat ventricular and supraventricular tachyarrhythmias, contains iodine and has widespread action on thyroid functions (e.g., decreases peripheral conversion of T4 to T3; inhibits entry of T4 and T3 into the peripheral tissue, and; direct cytotoxic effect of amiodarone and its metabolites on the thyroid follicular cells). Some important symptoms of amiodarone-induced-thyrotoxicosis (AIT) include fatigue, muscle weakness, heat intolerance, increased sweating, diarrhoea, anxiety, nervousness, palpitations, unexplained weight loss and oligomenorrhoea in women. Two forms of AIT have been described. Type 1 AIT is caused by iodine-induced excess thyroid hormone synthesis and release (known as the Jod-Basedow phenomenon). Type 2 AIT occurs in patients with a previously normal thyroid gland and is caused by a destructive thyroiditis that leads to the release of pre-formed thyroid hormones from the damaged thyroid follicular cells.

Question:

The general practitioner refers a 39-year-old male, who is an intravenous drug abuser, to the medical assessment unit with a 2-week history of fever, joint pains, night sweats and being generally unwell. He has also got painful nodules in his finger tips and has noticed bluish discolouration in the tips of the 2nd, 3rd and 4th toes of his right foot. On examination, his temperature is 39.4°C and the pulse rate is 94 beats per minute. Fundoscopic examination of his eye reveals retinal haemorrhages with pale centres. Small, non-tender erythematous macules are noticed in his palms. A pan-systolic murmur can be heard in the mitral area on auscultation of the chest. Abdominal examination reveals mild splenomegaly. What is the most likely diagnosis in this patient?

Which one of the following is correct?

A) Infective endocarditis

B) Rocky mountain spotted fever

C) Wegener’s granulomatosis

D) Systemic lupus erythematosus

E) Antiphospholipid syndrome

Answer:A

Explanation:

The history, signs and symptoms in this patient are very suggestive of infective endocarditis. A diagnosis of infective endocarditis can be made using Duke criteria. The major criteria are: (i) positive blood cultures of the typical organism (e.g., streptococcus, staphylococcus aureus and enterococcus) in 2 separate cultures drawn 12 hours apart or persistently positive blood cultures, and (ii) positive echocardiogram (vegetations, abscess and dehiscence of prosthetic valve) findings or new valvular lesions. The minor criteria include: (i) predisposing lesions or IV drug abuse (2) temperature > 38.0° C (3) vascular or immunological lesions such as Janeway lesions (non-tender, small erythematous or haemorrhagic macules or nodules in the palms or soles which are due to type III hypersensitivity reaction) , Osler’s nodes (painful, red, raised lesions on the finger tips/pulps) and Roth’s spots (retinal haemorrhages with white or pale centres composed of coagulated fibrin) (4) positive blood cultures not meeting the major criteria, and (5) echocardiogram consistent with endocarditis but not meeting major criteria. The patient needs to have two major criteria or one major and three minor criteria or five minor criteria to confirm a diagnosis of infective endocarditis.

Question:

A 58-year-old gentleman who is known to consume large amounts of alcohol is brought to the Accident and Emergency unit after he was found collapsed outside a pub. His accompanying friend states that prior to collapse he had vomited 4-5 times, the last couple of episodes being blood-stained/pure blood. He also complained of severe pain in his epigastric region during this period. Since the morning the patient has consumed 15-17 pints of alcohol (prior to the development of his symptoms). On examination, he appears pale and in a lot of discomfort. His blood pressure is 94/78 mmHg, pulse rate is 110/min and his respiratory rate is 20/min. Abdominal examination reveals upper abdominal guarding and the presence of subcutaneous emphysema over the epigastric region extending to the chest. A plain erect chest radiograph reveals air under the diaphragm and in the mediastinum.

Which one of the following is correct?

A) Thoracic aortic dissection

B) Boerhaave syndrome

C) Acute inferior myocardial infarction

D) Ruptured abdominal aorta

E) Acute pancreatitis

Answer:B

Explanation:

This patient has got the classical clinical history, signs and symptoms of Boerhaave syndrome, which is the spontaneous rupture of a non-diseased oesophagus, usually caused after episodes of vigorous vomiting – frequently seen in alcoholics. The dramatically raised intra-oesophegeal pressure caused by vigorous vomiting and associated failure of the cricopharyngeal sphincter to relax may lead to sudden spontaneous rupture of the oesophagus. The most common anatomical location of the tear is at the left postero-lateral wall of the lower third of the oesophagus, 2-3 cm proximal to the gastro-oesophageal junction, along the longitudinal wall of the oesophagus. The signs and symptoms include, sudden pain in the thorax and epigastrium following forceful protracted vomiting, pain radiating to the neck, progressive dyspnoea, tachypnoea, cyanosis, hypotension and shock. Subcutaneous emphysema may be present, palpable in the neck or chest, but this sign may take time to develop. The triad of vomiting, chest pain, and subcutaneous emphysema is also known as ‘Mackler triad’; however, this should not always be relied on since only one or two of the above symptoms may be present in a majority of patients in the early stages. Examination of chest may reveal decreased breath sounds on the side of perforation, usually the left. Chest X-ray may reveal an abnormal left cardiac border with free fluid within the left hemithorax, as well as air in the mediastinum and under the diaphragm. It is vital to recognise this condition early and treat appropriately, since it is associated with about 30% mortality.

Question:

Which among the following IS NOT a recognised feature of Pancoast’s syndrome?

Which one of the following is correct?

A) Pain in the shoulder region radiating toward the axilla and scapula

B) Facial nerve palsy

C) Wasting of the intrinsic muscles of the hand

D) Compression of major vessels in the thoracic inlet

E) Horner’s syndrome

Answer:B

Explanation:

The most important aetiology for Pancoast’s syndrome is from tumours located at the apex or superior sulcus of the lungs (predominantly non-small cell lung carcinoma) growing by local extension, and involving the brachial plexus (most commonly the lower roots) and cervical sympathetic nerves (stellate ganglion). This results in: (i) pain in the shoulder region radiating toward the axilla and scapula (ii) pain and atrophy of small muscles of the had due to ulnar nerve involvement (iii) paraesthesiae in the medial side of the arm (iv) Horner’s syndrome (ptosis, miosis, hemianhidrosis and enophthalmos), and (v) oedema of the arms due to compression of the major vessels in the thoracic intlet. Tumour invasion into the first or second thoracic vertebral bodies or intervertebral foramina can result in spinal cord compression. In rare instances, there may also be unilateral recurrent laryngeal nerve palsy producing unilateral vocal cord paralysis and/or phrenic nerve involvement. Facial nerve involvement is not seen in Pancoast’s syndrome.

Question:

Which among the following IS NOT a radiological feature in patients with severe mitral stenosis?

Which one of the following is correct?

A) Left atrial enlargement

B) Prominence of the main pulmonary arteries

C) Pulmonary haemosiderosis

D) Boot-shaped heart

E) Splaying of the subcarinal angle

Answer:D

Explanation:

A valve area <1cm2 indicates severe mitral stenosis (normal mitral valve orifice is 4-6 cm2 in adults). The early radiological changes seen in severe mitral stenosis include straightening of the left heart border (when the left atrial pressure and volume are normal, this segment of the left heart border is concave) and prominence of the main pulmonary arteries. Medial hypertrophy and intimal sclerosis of the pulmonary arteries leads to pulmonary hypertension. Haemosiderosis means deposition of iron, which can be seen within the alveoli. In X-ray, haemosiderosis appears as fine nodulation most prominent in lower lung field, although this may be difficult to visualise. As the left atrium enlarges, the oesophagus is displaced backward leading to the appearance of splaying of the carina. Boot-shaped heart (in a plain radiological film) is seen in patients with Tetralogy of Fallot and not in mitral stenosis.

Question:

Which among the following statements regarding Duke’s staging for Cancer of the Colon IS INCORRECT?

Which one of the following is correct?

A) Dukes’s stage A is carcinoma limited to the submucosa

B) The 5-year survival rate following surgical resection for Duke’s A tumours is about 90%

C) Duke’s stage C means spread of carcinoma to the regional lymph nodes

D) The 5-year survival rate of patients with Duke’s stage D tumours is approximately 30-40%

E) Duke’s stage B means the involvement of tumour through the serosa

Answer:D

Explanation:

The Duke’s staging system is one of the established and widely used staging systems all over the world for Cancer of the Colon. Duke’s stage A is carcinoma-in-situ or tumour limited to the mucosa or the submucosa (has a 90% 5-year survival rate following surgical resection); Duke’s stage B means cancer that extends into the muscularis mucosa or through the serosa (transmural extension) (the 5-year survival rate is about 70-85% following resection, with or without adjuvant therapy); Duke’s stage C means tumour cells involving the regional lymph nodes (the 5-year survival rate is approximately 30-60% following resection and adjuvant chemotherapy); and Duke’s stage D means cancer that has metastasized to distant sites such as the liver, lung or bone (the 5-year survival rate is very poor and is approximately 5-10%).

Question:

Which among the following conditions DOES NOT lead to an elevation in the prolactin levels?

Which one of the following is correct?

A) Addison’s disease

B) Hypothyroidism

C) Polycystic ovarian syndrome

D) Chronic renal failure

E) Cirrhosis of the liver

Answer:A

Explanation:

Prolactin, produced by the anterior pituitary, is primarily responsible for milk production during lactation. Some recognised causes for an elevation in the prolactin levels include primary hypothyroidism, prolactinoma (a benign tumour of the pituitary gland), chronic renal failure, cirrhosis of the liver, polycystic ovarian syndrome, pregnancy, stress, exercise and nipple /sexual stimulation. Some drugs that can cause an elevation in the prolactin levels include dopamine-receptor antagonists (such as metoclopramide and phenothiazines), dopamine-depleting agents (such as methyldopa), tricyclic antidepressants, oestrogens, opiates, H2-blockers such as cimetidine and cocaine. Prolactinomas can be classified as microprolactinomas (<10 mm diameter) and macroprolactinomas (>10 mm diameter). Prolactin level greater than 3,000 mU/L is suggestive of a prolactinoma.

Question:

A 61-year-old man presents to the medical out-patient clinic with a three-month history of cough with expectoration, left-sided chest pain and weight loss. He also complains of shoulder pain radiating to his left arm and has weakness in the small muscles of the hand. He smokes 15-20 cigarettes a day. Examination of his chest reveals decreased air entry in the left infraclavicular, suprascapular and scapular regions. There are no palpable nodes. Plain radiograph of the chest reveals a homogenous opacity in the left upper zone. His sputum cytology is positive for adenocarcinoma. He is noted to have a constricted pupil and ptosis in his left eye. What is the most appropriate management at this stage?

Which one of the following is correct?

A) Left upper lobectomy with hilar and mediastinal lymph node dissection

B) Palliative chemotherapy

C) Consideration for induction chemotherapy, concurrent chemoradiation and surgery

D) Left upper lobectomy followed by postoperative local radiation

E) Palliative local irradiation to mediastinum and left upper lobe

Answer:C

Explanation:

Non–small cell lung cancer (NSCLC), accounting for approximately 75% of all lung cancers, is divided further into adenocarcinoma (35-40%), squamous cell carcinoma (25-30%), and large cell carcinoma (10-15%). Adenocarcinoma, most commonly seen in non-smokers, arises in a peripheral location within the lung from bronchial mucosal glands. Tumours located at the apex or superior sulcus of the lungs usually grow by local extension and involve the brachial plexus and cervical sympathetic nerves (stellate ganglion) resulting in Pancoast’s syndrome. This patient has got many features suggestive of a Pancoast’s syndrome. Although until recently lung tumours involving the brachial plexus were generally considered to be inoperable, recent studies have shown that induction chemotherapy (e.g., three courses of split-dose cisplatin and etoposide or paclitaxel) followed by concurrent chemoradiotherapy (e.g., a course of cisplatin/etoposide combined with 45 Gy hyperfractionated accelerated radiotherapy) and surgery may improve the survival of such patients. As such, this patient has to be discussed in a multidisciplinary team meeting to explore the treatment options.

Question:

A 69-year-old gentleman who underwent a right cervical lymph node sampling for suspected metastasis of a squamous cell carcinoma from the floor of mouth about three months ago presents to his General Practitioner with weakness in his right shoulder. On examination, he is noted to have some muscle wasting in his right shoulder and neck, and his right shoulder appears to be drooping. He is unable to shrug this shoulder and the scapula becomes prominent when he is asked to externally rotate the shoulder against resistance.

Which one of the following is correct?

A) Long thoracic nerve

B) Median pectoral nerve

C) Transverse cervical nerve

D) Supraclavicular nerve

E) Spinal accessory nerve

Answer:E

Explanation:

This patient has got the classical features of injury to the spinal accessory nerve. The superficial course of the spinal accessory nerve in the posterior cervical triangle makes it susceptible to both trauma and surgical injuries. Iatrogenic injury to the nerve can result from surgeries to this region such as during radical neck dissection (for removal of pathological lymph nodes), cervical lymph node biopsy, cannulation of the internal jugular vein and carotid endarterectomy. The spinal accessory nerve provides motor innervation to the sternocleidomastoid and the upper part of the trapezius muscles. The sternocleidomastoid muscle helps in the side to side movement of the neck and tilts and rotates the head, whilst the trapezius muscle elevates, laterally rotates and retracts the scapula. Patients with injury to the spinal accessory nerve (and subsequent dysfunction of the trapezius) present with an asymmetric neckline, drooping shoulder and winging of the scapula (also seen in serratus anterior muscle involvement due to weak or paralysed long thoracic nerve). However, long thoracic nerve injury does not cause drooping of the shoulder.

Question:

A 60-year-old male is admitted under the care of the physicians with a 4-week history of fever, joint pains and night sweats. He had taken a 2-week course of Co-amoxiclav prescribed by his general practitioner but with little effect. On examination, his temperature is 39.2°C and the pulse rate is 104 beats per minute. He is noted to have tender nodules in his hands and a bluish discoloration in noted in his left 2nd toe. On auscultation, a loud pan-systolic murmur is heard in the mitral area. Urinalysis is positive for nitrates, red cells and cast. He does not have any significant past medical history but he states that he had a root canal treatment with his dentist about 6 weeks ago. Which is the most likely organism causing his condition?

Which one of the following is correct?

A) Staphlococcus aureus

B) Streptococcus viridans

C) Enterococci

D) Staphylococcus epidermidis

E) Pseudomonas aeruginosa

Answer:B

Explanation:

This patient is most likely to have infective endocarditis. He has at least three Duke minor criteria (Osler’s nodes, embolic episode in the extremities, temperature >39° C, evidence of glomerulonephritis and a (new) cardiac murmur). Streptococcus viridans is the most likely organism to cause native valve endocarditis. Staphalococcus aureus and staphylococcus epidermidis are the commonest organisms causing endocarditis following early prosthetic valve replacement. Endocarditis due to enterococci is associated with genitourinary and GI procedures.

Question:

Which among the following IS NOT a feature of mild aortic stenosis?

Which one of the following is correct?

A) A jet velocity of <3.0 m/sec

B) Angina pectoris

C) An audible fourth heart sound

D) A mean aortic valve gradient of <25 mmHg

E) A valve area >1.5 cm2

Answer:C

Explanation:

The symptoms of aortic stenosis usually develop gradually. Angina pectoris may be seen in about 30-40% of patients and even in those with mild aortic stenosis. In advanced disease, patients experience the classic triad of chest pain, heart failure, and syncope. Other important symptoms include palpitations, fatigue, visual disturbances, dyspnoea and/or syncope on exertion, and other symptoms of left ventricular failure (e.g., nocturnal cough, orthopnoea, paroxysmal nocturnal dyspnoea and haemoptysis). An audible fourth heart sound indicates severe aortic stenosis, which is caused due to left ventricular hypertrophy. A third heart sound may be audible once the left ventricle dilates and fails. The echocardiogram features of mild aortic stenosis are: a jet velocity <3.0 m/sec, a mean gradient of <25 mmHg and a valve area of >1.5 cm2; that of moderate aortic stenosis are: a jet velocity <3-4 m/sec, a mean gradient of 25-40 mmHg and a valve area of 1.0-1.5 cm2 and; that of severe aortic stenosis are: a jet velocity >4 m/sec, a mean gradient of >40 mmHg and a valve area of <1.0 cm2.

Question:

A 49-year-old man is brought to the Accident and Emergency unit with severe upper abdominal pain and breathlessness after he was punched and kicked several times in his chest and abdomen following an altercation with rival football supporters in a car park outside the stadium. On examination, he is noted to have severe bruising over his left antero-lateral chest wall. His blood pressure is 108/74 mmHg, his pulse rate is 104/min and his respiratory rate is 20/min. There is decreased air-entry in the left lung base and it is dull to percuss. Bowel sounds are heard in his chest. An erect chest X-ray shows reveals multiple rib fractures on the left side and an elevated left hemi-diaphragm.

Which one of the following is correct?

A) Pericardial effusion

B) Oesophageal rupture

C) Diaphragmatic rupture

D) Haemopneumothorax

E) Atelectasis

Answer:C

Explanation:

This patient has got the signs and symptoms of a diaphragmatic rupture. Diaphragmatic injuries result from either blunt or penetrating trauma. A traumatic diaphragmatic rupture is more commonly diagnosed on the left side, perhaps because the liver obliterates the defect or protects it on the right side. Blunt abdominal trauma can lead to diaphragmatic rupture if there is a sudden, severe increase in thoraco-abdominal pressure (as happens if the glottis is closed at the time of injury). Patients with rupture of the diaphragm may be present with hypotension, tachycardia, tachypnoea, chest pain and decreased air-entry in the lung base of the affected side. However, diaphragmatic rupture may be difficult to detect clinically, and thus may result in significant morbidity or sometimes mortality. Rupture may be suggested on plain chest radiograph by the abnormal location of the naso-gastric tube but the accuracy of this method is only modest. While conventional CT scan is not very accurate, helical CT scan and multisection CT scan are useful investigations, particularly in trauma settings. MR scan is also a valuable investigation to undertake (has high sensitivity and specificity) although it is not feasible in most trauma situations and hence mostly used in stable patients. An exploratory laparotomy or laparoscopy may be necessary to confirm or rule out the diagnosis.

Question:

Which among the following patients IS NOT considered to be at an increased risk if developing a thromboembolic episode following surgery?

Which one of the following is correct?

A) A 71-year male undergoing elective abdominal aortic aneurysm repair

B) A 39-year old female with a high BMI and on the oral contraceptive pill undergoing a laparoscopic cholecystomy

C) A 37-year-old male undergoing repair of an unilateral inguinal hernia

D) A 46-year old female undergoing radical mastectomy for advanced breast cancer

E) A 22-year old male undergoing internal fixation of his femur for fractured femoral shaft following a road traffic accident

Answer:C

Explanation:

Some of the recognised risk factors for the development of a thromboembolic episode (deep venous thrombosis and pulmonary embolism) include: Advancing age (> 60 yrs), surgery of >30 minutes duration (in any age group) or <30 minutes (if patients >40 years old), immobilisation, trauma, obesity, oral contraceptive pill, previous history of thromboembolism, congenital or acquired hypercoagulable states (e.g., protein-C, protein-S deficiency), pregnancy, cardiac failure and malignancies (particularly pelvic malignancies). Graduated compression, thromboembolic deterrent (TED) stockings, calf or foot pumps (intermittent pneumatic compression), subcutaneous low molecular weight heparin and systemic anticoagulation are all used as prophylaxis depending on the risk. Incidence of thromboembolic complications is further reduced by early mobilisation and shorter operating times. Thromboembolic complications occur as DVT in approximately 10% of operations (detected by imaging techniques), with 1% (of the total) developing a PE and death in approximately 0.1% of operations.

Question:

A 48-year-old woman, who drinks about 50-60 units of alcohol per week, presents to the Accident and Emergency department with severe abdominal pain and 2-3 episodes of vomiting blood. On examination, she appears pale, tired and unwell. Her temperature is 37.1ºC, pulse rate is 110/min and blood pressure is 104/72 mmHg. Abdominal examination reveals dilated veins in the anterior abdominal wall, mild ascites, a large spleen and a small nodular liver.

Which one of the following is correct?

A) Hepatocellular carcinoma

B) Chronic pancreatitis

C) Myeloproliferative disorder

D) Budd-Chiari syndrome

E) Portal hypertension

Answer:E

Explanation:

The history, signs and symptoms in this patient is most suggestive of portal hypertension. Portal hypertension is defined as an increase in the portal vein pressure of more than 10mmHg (the normal portal vein pressure is in the range of 5-10 mmHg). Amongst other causes, cirrhosis of the liver is one of the important causes of portal hypertension and currently accounts for up to 90% of cases in the UK. Collateral channels develop in portal hypertension between the portal system and systemic circulation such as in the lower end of oesophagus (resulting in oesophageal varices), distal rectum, and anterior abdominal wall (resulting in dilated tortuous veins in the anterior abdominal wall known as caput medusae). Some of the signs and symptoms of portal hypertension include abdominal pain, ascites, jaundice, splenomegaly, and signs of cirrhosis such as spider naevi, gynaecomastia, palmar erythema and testicular atrophy; signs of shock may be present if there is bleeding from sites of porto-systemic anastamosis, particularly oesophageal varices leading to haematemesis and/or malena.

Question:

A 31-year-old motorcyclist is brought to the Accident and Emergency unit following a high speed road traffic accident. On examination, he is noticed to have bruising in his right arm. He is unable to actively extend his wrist or the fingers of this hand. Plain X-ray of the arm reveals a fracture of the mid part of the humerus. Which of the below mentioned nerves is most likely to be damaged following a mid-humeral fracture?

Which one of the following is correct?

A) Anterior interosseous nerve

B) Axillary nerve

C) Radial nerve

D) Median nerve

E) Musculocutaneous nerve

Answer:C

Explanation:

The clinical signs and the type of bony injury are consistent with an injury to the radial nerve. The radial nerve (C5 to T1) is largest branch of the posterior cord and is most frequently injured following fracture of the mid-humerus. The course of this nerve is as follows: After leaving the axilla, the radial nerve gives three sensory branches and innervates the three heads of the triceps muscle and the anconeus. It then winds down the humerus in the spiral groove, after which it gives muscular branches to the brachioradialis, the extensor carpi radialis longus and the supinator muscles, before bifurcating into sensory and motor branches. The sensory branch, the superficial radial nerve travels along the radial aspect of the forearm and provides sensation to the 1st web space region. At the elbow, the motor branch of the radial nerve becomes the posterior interosseous nerve and enters the extensor compartment through the supinator muscle under the arcade of Frohse. There it supplies the remaining extensors of the wrist, thumb and fingers. If the nerve is injured in the region of the spiral groove, all the long extensors of the wrist and fingers are affected, resulting in wrist drop.

Question:

Which amongst the following investigations is considered to be the gold standard for the diagnosis of pulmonary embolism?

Which one of the following is correct?

A) Computed tomography pulmonary angiogram

B) 12-lead Electrocardiogram

C) Measurement of D-dimers

D) Trans-oesophageal echocardiography

E) Ventilation-perfusion scan (V/Q scan)

Answer:A

Explanation:

The clinical signs and symptoms of pulmonary embolism (PE) are non-specific and hence patients suspected to have a PE need to undergo appropriate investigations to confirm or rule-out the diagnosis. Chest X-ray during the early stages is frequently normal, although patchy shadowing of the affected segment may be seen in a few hours. The most common ECG abnormalities of PE are tachycardia and non-specific ST-T wave abnormalities. The classic ‘S1Q3T3’ pattern (‘S’ waves in lead I, ‘Q ‘wave and an inverted ‘T’ wave in lead III) is seen in only about 20% of patients with proven PE. The D-dimer test misses about 10% of patients with PE, whilst only 30% of patients with a positive D-dimer finding have a confirmed diagnosis of PE. Although a ventilation-perfusion scan scan is an important diagnostic modality, about four percent of patients with no evidence of perfusion defects and, thus a normal V/Q scan, may still have a PE. Thus, at present, a computed tomography pulmonary angiogram is the ‘gold standard’ (and thus a definitive test) to diagnose a PE, particularly where V/Q scan is equivocal, such as when there is pre-existing pulmonary disease.

Question:

Which among the following statements IS CORRECT regarding methicillin-resistant staphylococcus aureus (MRSA) infection in the UK?

Which one of the following is correct?

A) MRSA is the cause of about 80% of staphylococcal bacteraemias in the UK

B) Is spread as a blood-borne infection

C) MRSA infection is associated with nearly 40% of all deaths involving hospital acquired infection

D) Not all MRSA strains remain sensitive to glycopeptide antibiotics

E) Identification of nasal and perineal colonisation of MRSA before surgery requires hospital admission and intravenous treatment for five days

Answer:D

Explanation:

MRSA is the cause for nearly 40% of all staphylococcal bacteraemias in the UK. It is spread by contact and hence scrupulous hand hygiene is an effective way to prevent spread of this infection. MRSA is associated with about 20% of all deaths involving hospital acquired infection. Intravenous vancomycin or teicoplanin (glycopeptide antibiotics) continues to remain the treatment of choice in most MRSA infections in the hospital, although in certain instances combination antibiotic therapy may be indicated. Vancomycin resistant staphylococcus aureus is is a strain of staphylococcus aureus that has become resistant to vancomycin. They may require treatment with the carbapenem group of antibiotics such as imipenem or meropenem, although recently resistance to these antibiotics have been reported. Nasal and perineal colonisation with MRSA is not an indication for hospital admission and intravenous treatment although the surgery may be deferred until the swabs are clear (some hospitals require three clear swabs). Such colonisation can be treated with topical antimicrobial agents such as mupirocin (also known as Bactroban).

Question:

A 43-year-old man is referred by his general practitioner to the ophthalmology out-patients clinic with a 2-3 month history of double vision and difficulty reading with his right eye. He was admitted to the intensive care unit with a severe head injury secondary to road traffic accident 3-months ago. On closer questioning, the patient states that his symptoms started after the accident. On examination, he is noted to have a head-tilt towards his left shoulder. His visual acuity using the Snellen chart is 6/6 in both eyes. There is no nystagmus but he complains of double vision (diplopia) whilst looking downwards and out. Further examination reveals vertical and torsional diplopia. Which among the following ocular muscles is most likely to be involved?

Which one of the following is correct?

A) Superior oblique muscle

B) Inferior oblique muscle

C) Superior rectus muscle

D) Inferior rectus muscle

E) Lateral rectus muscle

Answer:A

Explanation:

This patient has got diplopia on downward and outward gaze (vertical and torsional diplopia - torsional rotation of the eye means keeping the eye oriented straight up and down when the head tilts from side to side), and thus the superior oblique muscle is most likely to be affected. The muscle is probably affected due to paralysis of the trochlear nerve (from the head injury). The long course of the nerve makes it especially susceptible to injury in association with severe head injury. The superior oblique muscle abducts the eye and moves the eye downwards (it intorts, depresses, and abducts the globe). It originates from the posterior orbit and travels along the supero-medial wall of the orbit to the trochlea. Its tendon passes through a pulley-like structure at the superior orbital rim and then courses back toward the globe, inserting upon the postero-supero quadrant of the eye.

Question:

Which among the following statements regarding renal function IS CORRECT?

Which one of the following is correct?

A) The optimum urine output in an adult in the post-operative period should be 0.1ml/kg/hr

B) Oliguria in the post-operative period is defined as a urine output of less than 25mls/hour for 2 consecutive hours

C) Intravenous furosemide should be promptly instituted in a post-operative surgical patient with low urine output for >3 hours

D) A rise in serum creatinine is one of the earliest signs of impending renal failure

E) Pre-existing renal disease is an important causes for post-operative renal dysfunction

Answer:E

Explanation:

An ideal urine output in an adult (and in the post-operative period) is >0.5ml/kg/hr. If the urine output falls below this level, the cause should be investigated immediately and appropriate management instituted. Oliguria in the post-operative period is defined as a urine output of less than 30ml/hr for 4 consecutive hours. The commonest cause of poor urine output and subsequent renal dysfunction in the post-operative patient is hypovolaemia and thus adequate fluid therapy should be considered first. Intravenous diuretics should not be given during the initial management of oliguria or a suspected renal dysfunction. A fall in urine output is one of the early signs of renal dysfunction; changes in serum creatinine occur later when established renal damage has occurred (e.g., acute tubular necrosis). The commonest causes of post-operative renal dysfunction are hypovolaemia, hypotension, sepsis, nephrotoxic drugs and pre-existing renal disease.

Question:

Which among the following IS NOT a necessary component when obtaining informed consent from a patient before an invasive intervention or a surgical procedure?

Which one of the following is correct?

A) Explanation of the likely benefits and the probabilities of success

B) The purpose of a proposed investigation or treatment

C) Advice about whether the proposed treatment is experimental

D) Comparative figures for the surgeons rate of complications against the national rate of complications

E) Other options for treatment or management of the condition

Answer:D

Explanation:

Patients have a right to information about their condition and the various treatment options available to them althugh the amount of information providing to each patient will vary (according to the nature of the condition, complexity of the treatment, the risks associated with the treatment or procedure etc). According to the General Medical Council, UK, some of the information which should be provided to the pateint include, amongst others: (i) details of the diagnosis and prognosis (and the likely prognosis if the condition is left untreated); (ii) options for treatment or management of the condition, including the option not to treat; (iii) options for further investigation prior to treatment; (iv) the purpose of a proposed investigation or treatment; (v) the likely benefits and the probabilities of success; (vi) advice about whether a proposed treatment is experimental; (vii) plan to monitor and re-assess the patient's condition and any side effects; (viii) the name of the doctor who will have overall responsibility for the treatment and, where appropriate, names of the senior members of his or her team; and (ix) a reminder that patients have a right to seek a second opinion and that they can change their minds about a decision at any time. Although the patient should be informed of the surgeon’s own complication rate for the procedure, it is not necessary to provide a comparative figure against the national rate of complications of the procedure.

Question:

A 79-year-old gentleman with complex medical problems is undergoing excision of a basal cell carcinoma from his peri-orbital region as a local anaesthetic procedure. Which among the following medications should be preferably stopped prior to the surgery?

Which one of the following is correct?

A) Prednisolone

B) Aspirin

C) Propronolol

D) Glicazide

E) Bendrofluthiazide

Answer:B

Explanation:

Very few medications have to be stopped in a patient undergoing a minor, local anaesthetic, day-case procedure such as excision of basal cell carcinoma from the forehead. The risk of stopping a long-term medication pre-operatively is usually greater than continuing it intra-operatively. Withdrawal of corticosteroids may result in Addisonian crisis (tachycardia, hypotension, oliguria and confusion). Patients on long-term corticosteroid therapy may develop adrenal dysfunction during the peri- or post-operative period, and, as such, they may require an increased dose of steroids (or intravenous steroid treatment). Anti-platelet agents such as aspirin may be stopped at least five days prior to surgery to prevent excessive blood loss during surgery. However, if the risks (of stopping aspirin) are greater than the benefits then it is advisable to obtain a medical or anaesthetic opinion. The other important drug that may have to be stopped before surgery (particularly major surgeries) are anti-coagulants such as warfarin (patients will have to commenced on intravenous heparin during the pre-, peri- and post-operative period whilst monitoring the APTT levels). Beta-blockers, anti-diabetic agents and thiazide diuretics do not have to be stopped in patients undergoing a minor, local anaesthetic, day-case procedure.

Question:

Which among the following management plan IS ESSENTIAL for a Type II diabetic patient undergoing bilateral hernia repair as a day-case procedure under general anaesthetic?

Which one of the following is correct?

A) Should omit their normal diabetic medication on the night before surgery

B) Should be prescribed an insulin/dextrose sliding scale starting at 6 am on the day of surgery

C) Should be placed first in the operating list

D) Should be kept nil by mouth at least six hour before the procedure

E) Should omit their normal diabetic medication in the evening following surgery

Answer:D

Explanation:

Diabetic patients are suitable for most surgeries performed in the day-case (day surgery) unit (as a day-case procedure) although it is important for them to have a good glycaemic control in the days and weeks before surgery. Type II diabetic patients can take their normal diabetic medications on the night before surgery. If the surgery is in the morning, then it is preferable to keep them nil by mouth from at least 2 a.m. In the morning, their blood glucose level has to be checked by finger prick and if it is high or normal then they can be given their normal oral diabetic medication. If they are known to have poor glycaemic control, then it may be advisable to monitor their blood glucose hourly (by finger prick) until the time of surgery. However, patients with type I diabetes should be ideally prescribed an insulin/dextrose sliding scale starting at 6 am on the day of surgery and their blood glucose monitored closely. It is not essential that patients with type II diabetes are placed first in the list but, if possible, they should be operated first (but not essential). Following surgery, if not nauseated, the patient should be encouraged to eat early and can be recommenced on their diabetic medication as normal.

Question:

A 21-year-old female is referred by her General Practitioner to the rapid access breast clinic with a lump in her right breast. She says that it has been present for about 10-weeks and is painless. There is no bleeding or discharge from her nipples. On examination, there is a 2-cm sized, firm, mobile and smooth lump in the upper outer quadrant of her right breast. There is no palpable axillary lymphadenopathy. Her paternal aunt died from breast cancer at the age of 62.

Which one of the following is correct?

A) Mondor’s disease

B) Paget’s disease

C) Cystosarcomma phylloides

D) Fibroadenoma

E) Fibrocystic disease

Answer:D

Explanation:

Fibroadenoma is the most commonly diagnosed breast tumour in women under 30 years of age. They are benign tumours originating from the breast lobule. They show proliferation of both epithelium and connective tissue elements, and is considered as an 'Aberration of Normal Development and Involution (ANDI)'. Most fibroadenomas measure 2-3 cm in diameter and is common between the ages of 16 to 24; the incidence decreases towards menopause. Fibroadenomas are usually mobile, firm and smooth lumps (but sometimes may be lobulated). It may be multiple in approximately 10% of the cases. The diagnosis is confirmed by triple assessment: (i) clinical examination (ii) radiological assessment (mammography or ultrasound scan), and (iii) cytological/histological (fine needle aspiration, core biopsy). Over a 5-year period, 50% increase in size, 25% remain stable and 25% decrease in size. Risk of malignant transformation is approximately 1 in 1,000.

Question:

Which among the following IS NOT a predictive indicator for the risk of occurrence of a peri-operative life-threatening cardiac event in a patient with known ischaemic heart disease?

Which one of the following is correct?

A) Age >70 years

B) Right pneumonectomy for advanced squamous cell carcinoma of the lung

C) Mitral regurgitation

D) Aortic stenosis

E) Ruptured abdominal aortic aneurysm repair

Answer:C

Explanation:

Patients with a history of ischaemic heart disease are at an increased risk of developing peri-operative and post-operative cardiac events such as myocardial infarction and cardiac failure. The Goldman’s Cardiac Risk Index is a prognostic indicator for predicting the likelihood of developing a peri-operative life-threatening cardiac event in a patient with ischaemic heart disease. The risk factors include: age > 70 years, raised jugular venous pressure, presence of third heart sound, myocardial event in the proceeding six months (not angina pectoris), surgery on the abdomen or thorax, symptomatic aortic stenosis, poor general condition and emergency surgery. Cardiopulmonary exercise test (which measures metabolic parameters while the patient exercises on a bicycle ergometer) is an objective method of assessing cardiac risk and provides more information than a tread mill test. Serum Brain Natriuretic Peptide (BNP) is another laboratory marker that is being evaluated as a test to predict cardiac events.

Question:

Which among the following group of lymph nodes DOES NOT carry lymphatic drainage from the thyroid gland?

Which one of the following is correct?

A) Brachiocephalic lymph nodes

B) Direct drainage into the thoracic duct

C) Deep cervical lymph nodes

D) Para-tracheal lymph nodes

E) Pectoral group of lymph nodes

Answer:E

Explanation:

There are numerous lymphatic vessels that drain lymph from the thyroid gland. Due to this there is a high propensity for metastasis of thyroid malignancies. The lymph from the thyroid gland is drained by: (i) the pre-laryngeal nodes (that lie above thyroid isthmus) via the tracheal plexus; (ii) the pre-tracheal nodes (that lie along the recurrent laryngeal nerve); (iii) the para-tracheal nodes (that also lie along the recurrent laryngeal nerve); (iv) the brachiocephalic nodes (that lie in superior mediastinum); (v) deep cervical nodes via the superior thyroid vessels; and (vi) directly to the thoracic duct. The pectoral nodes, which lie at the inferior border of the pectoralis minor, drain most of the breast (and not the thyroid).

Question:

A 56-year-old male presents to his General Practitioner with a three-week history of sweating, headache, constipation and itchy lesions over his back. On examination, his blood pressure is 166/94 mmHg and his pulse rate is 104/min. Twenty-four hour urinary catecholamines, metanephrines and vanillyl-mandellic acid are found to be elevated. A CT and a 131I-meta-iodo-benzyl-guanidine scan confirms a phaeochromocytoma. He is subsequently found to have a medullary carcinoma of the thyroid.

Which one of the following is correct?

A) Multiple Endocrine Neoplasia I

B) Carcinoid tumour

C) Multiple Endocrine Neoplasia IIA

D) Secondary hyperparathyroidism

E) Multiple Endocrine Neoplasia IIB

Answer:C

Explanation:

Multiple Endocrine Neoplasia II (MEN II) is an autosomal dominant disorder caused by mutations in the RET proto-oncogene. MEN II has 3 distinct subtypes - MEN IIA, MEN IIB, and familial medullary thyroid carcinoma-only. MEN IIA describes the association of medullary thyroid carcinoma, phaeochromocytomas and parathyroid tumours. MEN IIB is characterised by MEN IIA plus Marfanoid features and mucosal neuromas. In MEN IIB, the medullary cancer is very aggressive with most patients dying before developing either a phaeochromocytoma or hyperparathyroidism. A patient with medullary carcinoma of the thyroid may present with diarrhoea due to elevated prostaglandin or calcitonin levels. Patients with hypercalcemia may present with constipation, polyuria, polydipsia, depression, nephrolithiasis, glucose intolerance, gastroesophageal reflux, loss of bone density and fatigue. Patients with pheochromocytomas may present with hypertension, tachycardia, sweating and headaches. Cutaneous lichen amyloidosis in patients with MEN IIA manifests as multiple pruritic scaly skin lesions in the scapular area of the back.

Question:

The General Practitioner refers a 71-year-old gentleman to the urology out-patient clinic with a 3-4 month history of painless haematuria, increased frequency but difficulty in micturition and loss of weight. He also complains of generalised tiredness and occasional palpitations. He smokes about 16-20 cigarettes a day. Prior to his retirement, he worked in a petrochemical industry. On examination, he appears pale and anaemic. Abdominal examination is unremarkable. Per rectal examination reveals a normal prostate gland.

Which one of the following is correct?

A) Renal cell carcinoma

B) Squamous cell carcinoma of the renal pelvis

C) Angiomyolipoma

D) Renal tuberculosis

E) Carcinoma of the bladder

Answer:E

Explanation:

The history of smoking, working in a petrochemical industry, and other pertinent signs and symptoms in this patient is very suggestive of a carcinoma of the bladder. Carcinoma of the bladder epithelium is the most common tumour of the genitourinary tract, with transitional cell carcinoma accounting for 90% of all bladder malignancies (about 5% are squamous carcinomas and 2% are adenocarcinomas). The peak incidence is in the seventh decade, and there is a male to female preponderance of 3:1. Some of the recognised risk factors for the development of carcinoma of the bladder includes cigarette smoking (more than 20 cigarettes/day increases the risk of developing bladder cancer by 2-6 times), working in the aniline dye industry, rubber industry, petrochemical industry, printing factory, schistosomiasis infestation of the bladder, local radiation therapy, some chemotherapeutic drugs and long-term catheterization in paraplegic patients. Some recognised bladder carcinogens include benzidine, aromatic amines and nitrosamines, as well as various dyes and solvents. Patients with carcinoma of the bladder may present with painless haematuria, dysuria, frequency and urgency of micturition. The patient may have symptoms of anaemia such as palpitations, dry and pale tongue and generalized tiredness. Investigations include urine microscopy and culture (to rule out any infection) and cystoscopy. Endoscopic resection of the mass followed by a 4-6 week course of radiotherapy to the bladder and the pelvic side walls is useful in treating a majority of the tumours. A combination chemotherapy regimen comprising of cisplatinum, methotrexate and vinblastin (and adriamycin in some cases) is useful in the treatment of metastatic disease.

Question:

An 18-year-old rugby player is brought to the Accident and Emergency department with a painful right shoulder, when he fell awkwardly during a tackle. On examination, there is fullness in the deltopectoral groove and lowering of the anterior axillary fold. The acromion process appears to be prominent. His arm is slightly abducted and externally rotated.

Which one of the following is correct?

A) Acromioclavicular joint subluxation

B) Fracture of the greater tuberosity of the humerus

C) Anterior dislocation of the shoulder

D) Posterior dislocation of the shoulder

E) Ruptured coraco-acromial ligament

Answer:C

Explanation:

Anterior (subcoracoid) dislocation is the commonest type of shoulder dislocation (this is in contrast to the hip where posterior dislocation is the most common). The usual mechanism of injury is a fall onto the outstretched arm when the arm is abducted and externally rotated. It can also result from various sporting injuries, commonly basketball and rugby. Pain is severe, and the patient is unwilling to attempt movements of the shoulder. A swelling may be noticed in the deltopectoral groove (displaced head) with an undue prominence of the acromion process. The arm is held in slight abduction and external rotation. There may be flattening and loss of contour of the shoulder just below the acromion process, and lowering of the anterior axillary fold. If the axillary nerve is damaged, patients may present with loss of sensation over the upper, outer aspect of the arm (Regimental badge area). Posterior dislocation of the shoulder, although uncommon, may occur as a result of direct blow to the shoulder joint causing the humeral head to be displaced from the glenoid cavity. It may result from violent trauma such as an electric shock or an epileptic convulsion. The arm is usually held (or fixed) in internal rotation (note: external rotation in anterior dislocation), which cannot be rotated outwards even as far as the neutral position. The normal shoulder contour is lost and the anterior aspect of the shoulder appears flat (in contrast to fullness observed in anterior dislocation).

Question:

Which amongst the following measurements IS NOT a part in the staging for multiple myeloma based on the Durie-Salmon staging system?

Which one of the following is correct?

A) Presence of enlarged lymph nodes or splenomegaly

B) Level of monoclonal immunoglobulin in the blood or urine

C) Serum calcium levels

D) Haemoglobin level

E) Number and severity of bone damaged seen in plain radiography

Answer:A

Explanation:

The Durie-Salmon system is the most widely used staging system for malignant myeloma. In this system, the clinical stage of the disease (stages I, II and III) is based on the following four measurements: (i) Levels of abnormal monoclonal immunoglobulin in the blood or urine (large amounts of monoclonal immunoglobulin indicates the presence of many malignant plasma cells that are producing this abnormal protein); (ii) Serum calcium levels (elevated serum calcium levels indicate advanced bone damage); (iii) The number and severity of bone lesions (multiple areas of bone damage seen on plain radiography suggests advanced disease); and (iv) Haemoglobin level (low haemoglobin indicates myeloma cells have replaced normal red blood cell-producing marrow cells). Further sub-classifications A and B are based on the renal function as determined by the serum creatinine levels.

Question:

A 15-year-old girl presents to her General Practitioner with a one-week history of malaise, fever and some painful swelling in her neck. She has previously been well and has not travelled abroad recently. Her temperature is 37.9°C and his pulse rate is 84 beats/min. On examination of her oral cavity, the tonsils appear inflamed and white exudate can be seen bilaterally. Enlarged lymph nodes are palpable in the cervical region. General examination is otherwise unremarkable. She is diagnosed with bacterial tonsillitis and she is prescribed a course of oral amoxicillin. Three days later she returns to the General Practitioner with a generalised, non-itchy rash that has worsened in the last 24 hours. The rash is macular, partially confluent and is most marked over her arms and trunk. She has no other new symptoms although the malaise and the swelling in the neck have not improved with the antibiotics. What is the most likely cause of the rash?

Which one of the following is correct?

A) Stevens-Johnson syndrome

B) Measles

C) Infectious mononucleosis

D) Scarlet fever

E) Systemic lupus erythematosus

Answer:C

Explanation:

This patient has got the classical history and clinical signs of infectious mononucleosis, also known as kissing disease or glandular fever. Infectious mononucleosis is a self limiting condition caused by infection of B lymphocytes by Epstein Barr Virus (EBV). It occurs most commonly in children and teenagers with symptoms of malaise, fever, pharyngitis, lymphadenopathy and sometimes mild hepatosplenomegally. A rash rarely forms as part of the primary illness but often occurs if an antibiotic, particularly amoxicillin, is prescribed for suspected bacterial infection. The development of the rash does not indicate allergy to the medication and the aetiology of this condition is not fully understood.

Question:

Which among the following statements concerning pyloric stenosis IS CORRECT?

Which one of the following is correct?

A) The incidence is around 1 in 80,000 live births

B) Is not a congenital condition

C) Is caused due to a constriction band around the gastric antrum

D) May be detected clinically by projectile bilious vomiting

E) Leads to hyperkalaemic metabolic acidosis

Answer:B

Explanation:

Pyloric stenosis, also known as infantile hypertrophic pyloric stenosis, is the most common cause of intestinal obstruction in infancy. The incidence is estimated to be about 2-4 per 1000 live births. Pyloric stenosis has a male-to-female predominance of 4:1, with 30% of babies being first-born males. The condition is not present at birth but develops over a number of weeks after birth (and is therefore not a congenital condition). The aetiology of this condition is due to a marked hypertrophy and hyperplasia of the circular and longitudinal muscular layers of the pylorus, leading to a narrowing of the gastric antrum. Palpation of the abdomen may reveal an olive shaped mass. Visible peristalsis may be seen on inspection of the abdomen. The vomit is not bilious in nature since the stenosis occurs proximal to the ampulla of Vater (where pancreatic duct opens into the duodenum). This condition leads to hypokalaemic, hypochloremic, metabolic alkalosis due to the loss of hydrogen, potassium and chloride ions in the vomit. The kidneys continue to exchange hydrogen and potassium for sodium in an effort to conserve sodium and water in the presence of dehydration and thus hypokalaemia and alkalosis develop.

Question:

A 23-year-old man is brought to the Accident and Emergency department with a gunshot injury to his right upper thigh. On examination, the wound lies about 4-cm below the inguinal ligament. The vascular status of the limb is normal. Local neurological examination reveals numbness over the anterior thigh and medial aspect of his leg. Although he is able to flex the hip, he is unable to extent the knee on the affected side. The knee jerk is diminished but the ankle jerk is preserved.

Which one of the following is correct?

A) Pudendal nerve

B) Sciatic nerve

C) Lateral cutaneous nerve of thigh

D) Saphenous nerve

E) Femoral nerve

Answer:E

Explanation:

The femoral nerve arises from the lumbar plexus (L2-4). It exits the pelvis by passing beneath the medial inguinal ligament to enter the femoral triangle, after penetrating the psoas muscle. In the femoral triangle, it lies just lateral to the femoral artery and vein. It may be injured by gunshot wounds, direct penetrating wounds, traction during surgery, catheterisation of the femoral artery, massive haematoma within the thigh, nerve injury secondary to femoral nerve block, psoas abscess, fractured pelvis, or by dislocation of the hip. Apart from trauma, it may be affected in patients with diabetes mellitus (diabetic neuropathy) and lumbar spondylosis. The femoral nerve innervates the iliopsoas, which helps in flexion of the hip, and the quadriceps, which helps in extension of the knee. The motor branch to the iliopsoas originates in the pelvis proximal to the inguinal ligament and injury at or above this level leads to loss of hip flexion. The sensory branch of the femoral nerve, the saphenous nerve, innervates the skin over the medial aspect of the thigh and the anterior and medial aspects of the calf. Hence femoral nerve injury results in numbness over the medial aspect of the thigh and the antero-medial aspect of the leg. Motor loss includes weakness of the quadriceps muscle and decreased patellar reflex (knee jerk) (the ankle jerk is preserved since it is innervated by the tibial nerve [S1-S2]). In long-standing, sub-acute injuries, the patient finds that the knee gives way on walking and has difficulty climbing stairs.

Question:

Which among the following statements concerning atropine IS INCORRECT?

Which one of the following is correct?

A) It is a muscarinic receptor agonist

B) Leads to an increased heart rate

C) Is mostly excreted in the urine

D) Has a half-life of about 2-3 hours

E) Decreases bronchial and salivary secretions

Answer:A

Explanation:

In normal physiological condition, the sino-atrial node is under the influence of the sympathetic and parasympathetic nervous systems. Atropine is a muscarinic receptor antagonist (a competitive antagonist for the muscarinic acetylcholine receptor), which works by abolishing the parasympathetic influences (blocks acetylcholine released from the post-ganglionic vagus nerve endings in the cardiac tissue) resulting in an increased heart rate. Atropine a naturally occurring alkaloid and is absorbed from the gastro-intestinal tract, and is excreted in the urine. Atropine undergoes hepatic metabolism and has a plasma half-life of about 2-3 hours. When used as pre-medication for anaesthesia, atropine decreases bronchial and salivary secretions (leading to dry mouth), blocks the bradycardia associated with some drugs used in anaesthesia (such as halothane, suxamethonium and neostigmine), and helps prevent bradycardia from excessive vagal stimulation. Other anticholinergic effects of atropine include dilatation of the pupil, urinary retention, inhibition of sweating (anhidrosis) and constipation.

Question:

A 28-year-old lady is referred from the fertility centre to the medical out-patient clinic with a history of secondary amenorrhoea for 8 months and galactorrhoea for 6 months. She takes paracetamol tablets occasionally for headaches and does not have any significant past medical history. She had her menarche at 14 years of age. She has been living with her partner for 5 years and is now keen to start a family. Her baseline blood investigations were unremarkable. The LH, FSH and TFT levels are within normal limits but her prolactin level is 1,500 mU/L (normal range: <450mU /L). An MRI scan of the pituitary gland reveals a hypointense lesion suggestive of a microadenoma. What will be most appropriate treatment at this stage to restore her gonadal function and fertility?

Which one of the following is correct?

A) Somatostatin

B) In-vitro fertility therapy

C) Octreotide

D) Bromocriptine

E) Pituitary surgery

Answer:D

Explanation:

Dopamine agonist therapy using bromocriptine will be useful to reduce the prolactin levels. Bromocripine treatment can induce normal ovulatory cycle and fertility. It has been shown that treatment with bromocriptine will shrink pituitary microadenomas by up to 90% within one year of starting the therapy. Somatostatin and octreotide are used in the treatment of growth hormone producing tumours.

Question:

Which among the following statements concerning pathologies of the breast IS CORRECT?

Which one of the following is correct?

A) A breast cyst is considered to be an aberration of normal development and involution

B) Fibroadenomas have a high preponderance for lymphatic spread

C) Early menopause is a risk factor for the development of a breast cancer

D) Invasive ductal carcinoma account for about 20% of breast cancers

E) The nipple-areolar complex is spared when undertaking a simple mastectomy procedure

Answer:A

Explanation:

Breast cysts are one of the important causes for referral to the breast clinic. They are considered to be an aberration of normal development and involution (ANDI) with a prevalence of about 7%. Breast cysts are classically seen in peri-menopausal women although they may be seen in younger women or older women on hormone replacement treatment. Fibroadenomas are benign tumours (hence no lymphatic spread) originating from the breast lobule and show proliferation of both epithelium and connective tissue - another form of ANDI. They are considered to be an aberration of lobular development. Some of the recognised risk factors for the development of a breast cancer include nulliparity or first pregnancy after the age of 30 years, late menopause, early menarche, a history of previous breast cancer, first-degree relative with breast cancer and prolonged exposure to oestrogen (oral contraceptive and hormone replacement therapy). Invasive ductal carcinoma accounts for about 80% of all breast cancers. In simple mastectomy, both the breast tissue and nipple-areolar complex are removed (excised).

Question:

Which among the following statements regarding the functions of the extraocular muscles IS INCORRECT?

Which one of the following is correct?

A) The inferior oblique muscle abducts the eye and moves it upwards

B) The superior rectus muscle abducts the eyes and moves it laterally

C) The superior oblique muscle abducts the eye and moves it downwards

D) The medial rectus muscle moves the eye medially

E) The inferior rectus muscle adducts the eye and moves it downwards

Answer:B

Explanation:

There are six extraocular muscles which act to rotate an eye about its vertical, horizontal, and antero-posterior axes. They are the medial rectus, the lateral rectus, the superior rectus, the inferior rectus, the superior oblique and the inferior oblique muscles. The inferior oblique abducts the eye and moves it upwards, the superior oblique abducts the eye and moves the eye downwards, the medial rectus moves the eye medially and the lateral rectus moves the eyes laterally. The superior rectus primarily adducts the eyes and moves it upwards (NOT abduct the eye and move it laterally), while the inferior rectus adducts the eye and moves it downwards.

Question:

Which among the following IS NOT a feature of hyperthyroidism?

Which one of the following is correct?

A) Weight loss

B) Pretibial myxoedema

C) Diarrhoea

D) Sinus bradycardia

E) Amenorrhoea

Answer:D

Explanation:

Some of the important causes for hyperthyroidism include diffuse toxic goitre (Graves’ disease), hyperfunctioning adenomas and multinodular goitres (Plummer’s disease). Clinical features of hyperthyroidism include weight loss (despite a good appetite), preference for cool environments, sweating, tremors, insomnia, fatigue, muscle weakness, diarrhoea (constipation is a feature of hypothyroidism) and amenorrhoea (menorrhagia is a feature of hypothyroidism). Some recognised eye signs include lid lag, lid retraction, proptosis, chemosis, ophthalmoplegia and optic atrophy. Cardiovascular symptoms include sinus tachycardia, atrial fibrillation and thyroid bruit. Cutaneous manifestations include increased skin pigmentation, thyroid acropachy, palmar erythema and pretibial myxoedema.

Question:

A 33-year-old motorcyclist is brought to the Accident and Emergency department following a high-speed road traffic accident. On examination, his pulse rate is 110/min, blood pressure is 100/74 mmHg and his GCS is 15. There is swelling and tenderness over his left lower leg, X-ray of which reveals a closed but comminuted fracture of his left tibia. Whilst he is being transferred to the Orthopaedic ward, he complains of severe unremitting pain in his left lower leg and numbness in his left foot. The dorsalis pedis and posterior tibial pulsations are palpable. The pain in his foot is made worse by passive dorsiflexion of the ankle.

Which one of the following is correct?

A) Torn calf muscles (Gastronemius and Soleus)

B) Common peroneal nerve palsy

C) Deep venous thrombosis

D) Ruptured Achilles tendon

E) Compartment syndrome

Answer:E

Explanation:

Compartment syndrome is defined as an increase in the interstitial fluid pressure within an osseofascial compartment of sufficient magnitude to cause a compromise of the microcirculation leading to necrosis of the affected nerve(s) and muscle(s). It is a devastating early complication seen after fractures and crush injury, commonly in the lower limb. It can also be caused by deep thermal burns, electrical injuries, restricting tourniquets, venom from snake bites and fluid extravasation (e.g. intravenous regional anaesthesia). Early in its development, the peripheral pulses are normal as are colour of the affected part (demonstrated by examining the digits of the affected limb), temperature and capillary refill since it is the microvasculature which is initially affected. Loss of peripheral pulses is usually a late and often sinister sign. The patient may complain of unremitting pain that is not relieved even by high doses of opioid analgesics. Severe pain in response to passive stretch of the ischemic muscles is by far the most dramatic and reliable clinical sign of compartment syndrome. Sensory loss (distal paraesthesiae) occurs before motor loss since the thin cutaneous nerve fibres are more susceptible to ischemia than the motor fibres. With progression of the condition, the limb becomes tense and swollen, and if left treated, the muscle weakness progresses to paralysis. Irreversible myoneural necrosis within 6-8 hours, even with compartment pressures in the range of 30-35 mmHg (taken in conjunction with the patient’s diastolic blood pressure; see below). The areas of muscle may also infarct giving rise to rhabdomyolysis, hyperkalaemia, hyperphosphataemia, high uric acid levels and metabolic acidosis. Classically, the compartment pressures are measured using a slit catheter device. The normal resting pressure within the compartment tissues is estimated to be about 3-4 mmHg. Compartment pressures in excess of 30-35 mmHg in a normally perfused patient suggested the need for open compartment fasciotomy. Recent evidence, however, suggests that fasciotomy should be undertaken if the difference between the diastolic pressure and the measured compartment pressure is less than 30 mmHg. Hence if the patient is in hypovolemic shock, as frequently happens in trauma victims, even a modestly increased compartment pressures warrants fasciotomy. Compartment syndrome can also affect the upper limb, commonly the forearm. In compartment syndromes affecting the anterior forearm, the greatest neurologic damage is to the median nerve as it is located in the centre of the muscle mass to be infarcted, whereas the ulnar nerve lies along the periphery of the compartment and is thus subject to less ischemia and damage.

Question:

A 69-year-old man of South-Asian origin presents to his general practitioner with a three-month history of tiredness, evening rise of temperature, night sweats and abdominal discomfort. He has also got nausea and vomiting, and states that he might have lost about two stones in weight during this period. On examination, his temperature is 37.8°C. Abdominal examination reveals tenderness over the region of the right iliac fossa and non-tender mass is palpable in this region. His haemoglobin is 9.4 gm/dL, white cell count is 15 x 109/L and the ESR is 112 mm/hr. An ultrasound scan of the abdomen reveals thickening of the mesentery and mesenteric lymphadenopathy. Plain radiograph of the chest demonstrates some evidence of right apical fibrosis. In his past medical history, he states that about 10 years ago he was treated by his family doctor with a long course of medications for persisting cough with blood-stained expectoration whilst in his native country.

Which one of the following is correct?

A) Crohn’s disease

B) South American blastomycosis

C) Intestinal tuberculosis

D) Non-Hodgkin lymphoma

E) Yersiniosis

Answer:C

Explanation:

This patient is most likely to have intestinal tuberculosis. The classical features of intestinal tuberculosis include abdominal pain, nausea, weight loss, fever with night sweats, anaemia, and raised WCC and ESR. In addition, the patients can also present with sub-acute intestinal obstruction secondary to small bowel adhesions. Although tuberculosis commonly affects the pulmonary system, it can affect a number of other systems in the body. Intestinal tuberculosis is common in tropical countries. Ileo-caecal involvement is seen in 80-90% of patients with gastrointestinal tuberculosis. This is probably due to the abundance of lymphoid tissue (Peyer patches) in the distal and terminal ileum. The diagnosis of intestinal tuberculosis can be made from ultrasound examination or CT scanning, which may demonstrate mesenteric thickening, mesenteric lymph node enlargement and, sometimes, ascites. The right apical fibrosis on this patient’s chest radiograph suggests chronic (or reactivation of old) tuberculosis. It is likely that the cough with blood-stained expectoration was due to pulmonary tuberculosis and he was treated with a long-course of anti-tubercular therapy by this family doctor. South American blastomycosis is a systemic mycotic infection caused by the fungus Paracoccidioides brasiliensis. Yersiniosis is an infection caused by Yersinia enterocolitica.

Question:

A 43-year-old gentleman presents to the Accident and Emergency unit with severe epigastric pain blow the lower sternum. The pain increases on swallowing. He has been regularly drinking since last ten years. On examination, his blood pressure is 100/90 mmHg and has a thready pulse. Chest x-ray reveals gas in the mediastinum and in the subcutaneous tissues.

Which one of the following is correct?

A) Oesophageal rupture

B) Diaphramatic rupture

C) Myocardial contusion

D) Fracture of the sternum

E) Traumatic haemothorax

Answer:A

Explanation:

Blunt oesophageal trauma, although very rare, may be lethal if unrecognized. Blunt injury of the oesophagus is caused by a forceful expulsion of the gastric contents into the oesophagus by a severe blow to the upper abdomen. The patient presents with epigastric pain or shock out of proportion to the apparent injury. Presence of mediastinal air suggests the diagnosis, which often can be confirmed by contrast studies and/ or oesophagoscopy.

Question:

Which among the following IS NOT a recognised process during angiogenesis in wound healing?

Which one of the following is correct?

A) Proteolytic degradation of the parent vessel basement membrane

B) Recruitment of fibrocytes to the wound site

C) Migration of endothelial cells towards the angiogenic stimulus

D) Proliferation of endothelial cells behind the leading front of migrating cells

E) Maturation of endothelial cells with organization into capillary tubes

Answer:B

Explanation:

Angiogenesis or neovascularization refers to the formation of new blood vessels from pre-existing vessels at the site of injury. Four general steps are recognised during this process: (i) proteolytic degradation of the parent vessel basement membrane, allowing formation of a capillary sprout; (ii) migration of endothelial cells towards the angiogenic stimulus; (iii) proliferation of endothelial cells behind the leading front of migrating cells; and (iv) maturation of endothelial cells with organization into capillary tubes. Several factors induce angiogenesis including, vascular endothelial growth factor, tumour necrosis factor - alpha, platelet derived growth factor, basic fibroblast growth factor and transforming growth factor - beta. Angiogenic capillary sprouts invade the fibrin/fibronectin-rich wound clot and within a few days organize into a microvascular network throughout the granulation tissue. Fibrocytes, which play a role in the formation of extracellular matrix and contribute to the myofibroblast population in the wound, do not play a role in angiogenesis.

Question:

Which among the following statements concerning primary hyperaldosteronism IS INCORRECT?

Which one of the following is correct?

A) Results from an adrenal cortex adenoma in the majority of cases

B) Leads to sodium retention

C) May result in hypertension

D) The plasma renin activity is suppressed

E) Leads to metabolic acidosis

Answer:E

Explanation:

Primary hyperaldosteronism results from excessive autonomous secretion of aldosterone by an adrenal cortex adenoma (Conn syndrome; 60-70%) or by bilateral hyperplasia of the zona glomerulosa (in about 30-40% of cases). Aldosterone, by inducing reabsorption of sodium in the distal tubule, enhances secretion of potassium and hydrogen ions, leading to hypernatremia, hypokalemia, and metabolic alkalosis. Hypertension is due to intravascular fluid retention secondary retention to sodium retention. In essence, Conn syndrome is characterized by increased aldosterone secretion, suppressed plasma renin activity, hypertension, and hypokalemia. The hypertension and hypokalemia may be treated with a potassium-sparing agent (first-step agent) such as spironolactone. The second-step agents that are useful in the treatment of primary hyperaldosteronism include thiazides diuretics, ACE inhibitors, calcium channel antagonists, and angiotensin II blockers. In patients with Conn syndrome, the pre-operative blood pressure response to spironolactone could be used as a valuable predictor of the blood pressure response to unilateral adrenalectomy. Surgery, in the form of an adrenalectomy (could be laparoscopic), is the main stay of treatment for Conn syndrome.

Question:

Which among the following statements regarding transplant rejection IS INCORRECT?

Which one of the following is correct?

A) Hyperacute rejection is a complement mediated response

B) Accelerated rejection is caused due to HLA incompatibility

C) Acute rejection commonly occurs between 7 to 21 days post transplantation

D) Chronic rejection is associated with fibrosis of the internal blood vessels of the transplant

E) Acute rejection is characterised by the presence of leukocytes, macrophages and T-cells within the interstitium

Answer:B

Explanation:

Four types of rejection are commonly recognised following transplantation. They are: Hyperacute, accelerated, acute and chronic. Hyperacute rejection occurs within minutes of transplantation and is a complement mediated response in recipients with pre-existing antibodies to the donor. This may be due to a HLA class I antibody or an ABO incompatibility. Accelerated rejection is cell-mediated and is seen in sensitised patients 2 to 4 days following transplantation. A biopsy reveals a florid cellular infiltrate (macrophages and T-lymphocytes). Acute rejection is the outcome of the immune response of the allograft in a non-sensitised patient and most commonly occurs between 7 to 21 days post transplantation. In acute rejection, graft antigens are recognized by T cells, and the resulting cytokine release eventually leads to tissue distortion, vascular insufficiency, and cell destruction. Histologically, there is presence of leukocytes, macrophages and T cells within the interstitium. Chronic rejection is the commonest cause of late graft loss and is characterised by an insidious, irreversible deterioration of function associated with fibrosis of the internal blood vessels of the transplant in the months following transplantation.

Question:

Which nerve among the following nerves DOES NOT arise from the posterior cord of brachial plexus?

Which one of the following is correct?

A) Upper subscapular nerve

B) Long thoracic nerve (Nerve to serratus anterior)

C) Nerve to lattissimus dorsi (Thoracodorsal nerve)

D) Axillary nerve

E) Radial nerve

Answer:B

Explanation:

The nerves which arise from the posterior cord of the brachial plexus are the upper subscapular nerve (C5 & C6), lower subscapular nerve (C5 & C6), nerve to lattissimus dorsi (Thoracodorsal nerve) (C6, C7, C8), axillary nerve (C5 & C6) and radial nerve (C5, C6, C7, C8, T1). Long thoracic nerve, also known as the nerve of Bell or nerve to Serratus anterior, has a root value of C5, C6 and C7. It arises from the root of the brachial plexus (the other nerves arising from the root include the dorsal scapular nerve (C5) and the branches to scalene muscles (C5-C8)).

Question:

Which among the following statements concerning myofibroblasts IS INCORRECT?

Which one of the following is correct?

A) Are characterised by the presence of stress fibres that contain a-smooth muscle actin and indented nuclei

B) Have structural properties between those of a fibroblast and a smooth muscle cell

C) Are present in the healing wound for up to 48 hours from the time of injury

D) Help to contract the granulation tissue and deposit new extracellular matrix

E) Are responsible for wound contracture and scarring

Answer:C

Explanation:

One of the best characterised sub-types of fibroblasts is the myofibroblasts, which plays an important role in scar formation. Myofibroblasts are characterised, amongst others, by the presence of stress fibres that contain a-smooth muscle actin and indented nuclei, and thus have structural properties between those of a fibroblast and a smooth muscle cell. Although their precise origin is a matter a debate, the consensus is that fibroblasts once migrated into the wound differentiate into myofibroblasts under the influence of growth factors such as transforming growth factor - beta1 and mechanical stress. In addition to fibroblasts, some smooth muscle cells and pericytes are also thought to be capable of differentiating into myofibroblasts. Myofibroblasts appear in the wound approximately three days after wounding and increase in number to a maximal level between the 10th and 21st days. Their main function is to contract the granulation tissue and deposit new ECM. Although they promote wound closure, myofibroblasts are also responsible for subsequent wound contracture and scarring; therefore, a delicate balance of fibroblasts and myofibroblasts in wound is essential for optimum wound healing.

Question:

A four-year-old boy is brought to the Accident and Emergency department with vomiting and abdominal pain. His parents say that he has been unwell for the last three days with intermittent abdominal pain, vomiting and diarrhoea. He has not passed urine for more than 8 hours. On questioning, he points to pain in the region of the right iliac fossa. On examination, his abdomen is rigid and tender. Bowel sounds are absent. His temperature is 38.3º C, blood pressure 80/60 mmHg, and pulse rate 190/min.

Which one of the following is correct?

A) Meconium peritonitis

B) Bacterial Peritonitis

C) Acute appendicitis

D) Volvulus Neonatorum

E) Necrotizing enterocolitis

Answer:B

Explanation:

Bacterial peritonitis in children and neonates may occur as a result of ruptured appendicitis, ruptured viscus or as a complication of any abdominal surgery. The child or baby may have classical signs of peritonitis such as abdominal pain, pyrexia, nausea, vomiting, tachycardia, low blood pressure and decreased urine output. Abdominal examination may reveal board like rigidity, rebound tenderness and absence of bowel sounds. An erect chest X-ray reveals free gas under the diaphragm. Blood culture, paracenthesis, or culture of the peritoneal fluid may help with the diagnosis. Plain abdominal x-rays should be taken in both supine and upright positions. The presence of gas beneath the diaphragm points to a perforation of the GI tract. Occasionally, the possibility of a primary peritonitis may seem high enough to warrant aspiration and Gram stain of the peritoneal fluid. Laparotomy is the most important diagnostic measure. The common organisms responsible for bacterial peritonitis include E. coli, K. pneumoniae, and pseudomonas species. Although local policies may vary, the commonly used antibiotics to treat this condition includes IV cefotaxime and oral ofloxacin.

Question:

Which among the following statements concerning the Cell Cycle IS CORRECT?

Which one of the following is correct?

A) DNA replication occurs during the ‘G1’ phase

B) The cells prepare for mitosis during the ‘S’ phase

C) Transition from one phase to the next is controlled by transforming growth factor genes

D) The retinoblastoma (Rb) gene product is expressed during the ‘G1’ phase

E) Prevention of tumour is regulated at the ‘G2’ to ‘M’ phase transition point

Answer:D

Explanation:

There are four distinct phases in the cell cycle, namely: ‘G1’ (gap phase; preparation for DNA synthesis), ‘S’ (synthesis; DNA replication), ‘G2’ (gap phase; preparation for mitosis) and ‘M’ (mitosis). Transition from one phase to the next is strictly controlled by cyclins and their associated cyclin-dependent kinases, which together drive the phosphorylation of a number of proteins. During ‘G1’ phase, the retinoblastoma (Rb) gene product is expressed, which is a regulator of cell cycle progression and plays a crucial role in tumour suppression. (Unphosphorylated Rb binds and inactivates E2F transcription factors to prevent premature entry into ‘S’ phase, as E2F induces expression of late G1 genes that are essential for entry into S-phase. Therefore, phosphorylation of Rb is essential for cell cycle progression via E2F-dependent transcription and the phosphorylation process is mediated by the transient action of cyclin D-Cdk4/6 and cyclin E-Cdk2 complexes). Tight regulation of ‘G1’ to ‘S’ transition is crucial for the prevention of tumourigenesis (tumour formation) as late ‘G1’ checkpoints determine whether a cell is genetically ‘suitable’ to undergo mitotic cycle. If DNA damage or mutations are detected, the cell cycle shuts down either permanently (cellular senescence) or temporarily whilst DNA repair takes place (cellular quiescence; ‘G0’ phase).

Question:

A 43-year-old woman presents to the Accident and Emergency department with a ten-hour history of severe right upper quadrant pain and vomiting. She says that the pain is radiating to her right scapula and exacerbates on breathing. On examination, her pulse rate is 80/min and her temperature is 38.2º C, a right hypochondriac mass is palpable. She says that she used to get this type of pain following a fatty meal, although not this severe. Her last menstrual period was almost four-weeks ago.

Which one of the following is correct?

A) Acute gastroenteritis

B) Gall stones

C) Urinary tract infection

D) Acute appendicitis

E) Acute cholecystitis

Answer:E

Explanation:

Acute cholecystitis is the acute inflammation of the gall bladder. It usually follows follows impaction of a stone in the cystic duct. The common cause of inflammation is gall stones. It is common in females over 40 years of age, the incidence increases with fertility. The common presentations include right hypochondrial pain that aggravates with fatty food. The pain may be associated with nausea and vomiting. The common risk factor for acute cholecystitis is gall stones. These may obstruct the CBD which inturn prevents the flow of the bile. There is a build up of bile within the gall bladder. The increase in the pressure leads to increased chances of perforation. Other risk factors include alcohol abuse, and rarely tumours of the gall bladder. The clinical diagnosis of acute cholecystitis may be difficult, but the diagnosis may be confirmed by cholescintigraphy and ultrasound. The differential diagnosis includes cholangitis, pancreatitis, peptic ulcer, appendicitis and pleurisy. The main treatment for acute cholecystitis includes cholecystectomy. The gall bladder is removed within couple of days of the illness. In case of complications like perforations or gangrene immediate removal is recommended.

Question:

Which among the following statements regarding metaplasia IS NOT TRUE?

Which one of the following is correct?

A) Is the transformation of one fully differentiated cell type into another

B) May be reversible

C) Barrett’s oesophagus is a type of squamous metaplasia

D) Can be a physiological process

E) Is characterised by abnormal mitosis, pleomorphism and a high nuclear/cytoplasmic ratio

Answer:E

Explanation:

Metaplasia is defined as the transformation of one fully differentiated cell type into another. Metaplasia usually occurs in response to an environmental stimulus; it is an adaptive process and is usually reversible. However, a metaplasia can progress to a dysplasia (e.g. bronchial epithelium in smokers) and eventually malignancy if the agent that caused the metaplastic transformation persists. Barrett’s oesophagus - replacement of squamous epithelium by gastric epithelium in patients with reflux oesophagitis – is a type of epithelial metaplasia. Metaplasia can also be a physiological process as seen in squamous metaplasia occurring in the endocervix in response to hormonal surges during puberty. Abnormal mitosis and cellular atypia including pleomorphism, hyperchromatism and a high nuclear/cytoplasmic ratio are features of dysplasia or malignancy, and, as such, these features are not seen in metaplasia.

Question:

Which amongst the following IS NOT TRUE concerning universal precautions in surgical practice?

Which one of the following is correct?

A) Water repellent gown reduces the risk of transmission of blood borne diseases

B) Wearing rubber gloves do not protect against sharps injury

C) Needles should be re-sheathed before handing back to the scrub nurse

D) Scalpels should be passed in a kidney bowl

E) Fixed retraction devices reduce the risk of injury due to sharp objects

Answer:C

Explanation:

When surgical procedures are undertaken, universal precautions are essential and should be practiced to minimise the risk to the operator and assistants, as well as to reduce the risk of transmission of blood borne diseases. The precautions for each procedure may vary according to the risk of contact with each procedure. Appropriate protective clothing in the operating theatre should include double gloving, water repellent gown and apron, protective headwear, masks, protective eyewear and shoe wear. Rubber gloves do not protect against sharps injury although they reduce the risk of disease transmission. Needles should never be re-sheathed, and sharp objects should be passed in an appropriate container. Fixed retraction devices help in reducing the number of times the assistants’ hands pass through or block the operating field inadvertently or inappropriately (thus minimising the risk of injury due to sharp objects). In addition, fixed retraction devices help in keeping number of assistants required to the minimum.

Question:

A 69-year-old man is brought to the Accident and Emergency department with severe peri-umbilical pain radiating to the back. He is strikingly tall. On examination, he is pale, sweaty, anxious and cyanosed. His blood pressure is 80/70 mmHg and his pulse rate is 140/min. The rhythm of the pulse is regular. No other abnormalities were detected. Bowel sounds are normal.

Which one of the following is correct?

A) Ureteric colic

B) Crohn’s Disease

C) Adhesive small bowel obstruction

D) Ruptured abdominal aortic aneurysm

E) Acute Pancreatitis

Answer:D

Explanation:

Abdominal aortic aneurysm is one of the commonest form of aneurysm in middle-aged and elderly patients. It is more common in males compared to females. The risk factors include smoking, hypertension a family history, and increasing age and tall and slim built. The patient may be asymptomatic before the rupture and may present with a pulsatile mass. As the aneurysm increases in size the patient may present with lower back ache. Ruptured AAA presents with periumbilical pain that radiates to the back. Associated symptoms include hypotension, dizziness, lack of orientation and tachycardia. The common investigations undertaken done to confirm the diagnosis include abdominal ultrasound, CT or a MRI scan. The treatment plan is based on the size of the aneurysm. For an aneurysm that is less than 5-cms, observation and conservative treatment (e.g., using anti-hypertensive drugs) will suffice. For aneurysms greater than 5-cms in diameter, elective surgery may be indicated (resection of aneurysm and insertion of a synthetic graft).

Question:

Which among the following statements concerning fractures of the cervical spine IS CORRECT?

Which one of the following is correct?

A) A Jefferson fracture leads to sudden death

B) Acute fractures of the axis represent about 70% of all cervical spine injuries

C) Type I axis fractures involves the junction of the odontoid peg with the body

D) In type II axis fractures, the posteriod elements of the axis may be fractured by a hyperextension injury

E) Odontoid fractures may be visualised using open-mouth odontoid views.

Answer:E

Explanation:

A Jefferson fracture is a ‘bursting type’ of fracture of the atlas (C1 vertebra). It involves fractures of the anterior and posterior arches, and causes the lateral masses to be displaced laterally. However, a Jefferson fracture does not produce neurological injury, as there is no encroachment on the neural canal. Atlanto-axial fracture dislocation on the other hand results in a posterior dislocation of the axis causing the odontoid process to compress the spinal cord, thus leading to sudden death. Acute fractures of the axis (C2 vertebra) represent about 18-20% of all cervical spine injuries and approximately 60% of axis fractures involve the odontoid process. Fractures of the axis can be divided as type I (fractures involving the tip of the odontoid process), type II (commonest type; fractures through the base of the dens, involving the junction of the odontoid peg with the body) and type III (fractures at the base of the dens, extending obliquely into the body of the axis). In type II fractures, the posterior elements of the axis, i.e., the pars interarticularis, may be fractured by a hyperextension injury (a hangman’s fracture). Patients with this type of fracture should be maintained in external immobilization until specialized care is available. Odontoid fractures can be seen in a plain radiograph using a lateral cervical-spine film or open-mouth odontoid views. However, a CT scan may be required to further delineate the type and extent of the fracture.

Question:

Which among the following statements regarding spinal cord injuries IS CORRECT?

Which one of the following is correct?

A) The lower limbs are more affected than the upper limbs in central cord syndrome

B) Brown –Sequard syndrome leads to ipsilateral paralysis and loss of vibration sense

C) Vibration and joint position sense are lost in anterior cord syndrome

D) Cauda Equina syndrome leads to upper motor neuron signs in the lower limbs

E) All spinal cord injuries are associated with bony injuries to one or more vertebrae

Answer:B

Explanation:

Central cord syndrome causes selective damage to the central grey matter leading to paralysis of the affected group of muscles. The upper limbs are more affected than the lower limbs due to the position of the fibre position within the cord. Brown –Sequard syndrome is caused due to hemisection of the cord. In this syndrome, there is ipsilateral paralysis and loss of vibration and joint sense on the affected side, and contralateral loss of pain and temperature sensation. Anterior cord syndrome is caused due to damage to the anterior spinal artery which leads to cord ischaemia. This can occur from aortic trauma or cross- clamping of the aorta as seen during repair of abdominal aortic aneurysm. There is paralysis of the affected group of muscles (cortico-spinal) with loss of light touch, pain and temperature sensations (spino-thalamic tracts). However, posterior column function is preserved, and normal vibration and joint position sensation are maintained. Cauda Equina syndrome, associated with fractures of the lumbar vertebrae, leads to lower motor neuron signs in the lower limbs. The patients may also have dysfunction of the gastro-intestinal and genito-urinary tracts. Spinal cord injuries can occur without an associated bony injury. This is particularly common in children, although it can be seen in adults. Such injuries are called spinal cord injury without associated radiological abnormality (SCIWORA).

Question:

Which amongst the following IS NOT a criterion for diagnosing Systemic Inflammatory Response Syndrome?

Which one of the following is correct?

A) Temperature > 38 o C or < 36o C

B) Systolic blood pressure <90 mmHg

C) Heart rate >90 beats/min

D) Respiratory rate >20 or PaCo2 < 4.3 kpa

E) WCC > 12, 000 or < 4,000 x 109/L

Answer:B

Explanation:

Systemic inflammatory response syndrome (SIRS) is a generalised inflammatory response produced by the body in reaction (response) to a variety of clinical insults such as infection (bacterial, viral, fungal), shock, trauma, burns, pancreatitis and tissue ischaemia. A clinical diagnosis of SIRS to be made when at least two of the following criteria are present: (i) Temperature > 38 o C or < 36o C; (ii) Heart rate >90 beats/min; (iii) Respiratory rate >20 or PaCo2 < 4.3 kpa; and WCC > 12, 000 or < 4,000 x 109/L. The systolic blood pressure, or for that matter the blood pressure, is not a parameter used in diagnosing SIRS.

Question:

A 47-year-old alcoholic presents to the Accident and Emergency unit with central abdominal pain and vomiting. She prefers to sit up as the pain aggravates on lying down flat and on eating. On examination, her pulse rate is 140/min and her temperature is 38.2°C and there is periumbilical discolouration.

Which one of the following is correct?

A) Acute pancreatitis

B) Ruptured ovarian follicle

C) Crohn’s Disease

D) Urinary tract infection

E) Pyelonephritis

Answer:A

Explanation:

The common causes for acute pancreatitis include alcohol, gallstones, trauma, hyperlipdaemia and certain drugs like azathiprine. Pancreatitis results from early activation of pancreatic enzymes, producing autodigestion of the pancreas and surrounding tissues. Exposure of trypsinogen to lysosomal enzymes such as cathepsin B has recently been elucidated as a mechanism for early trypsin activation (20). Digestive enzyme release is amplified as acinar cells lyse, leading to a vicious cycle of inflammation and necrosis. The common presentations include central abdominal pain that starts at a low intensity and gradually becomes very painful. The pain may radiate to the back and may be associated by nausea and vomiting. On examination, the patient may be tachycardic, with fever, jaundice and there may be peri-umbilical discoloration called the cullen’s sign. Blood test will show a significantly raised serum amylase levels. Management includes keeping the patient nil by mouth. Give IV fluids and plasma expanders if the urine output is <30ml/h. For analgesia give morphine and the vital signs are recorded regularly. Complications include intra-abdominal infection, pseudocyst, shock, renal failure and pancreatic necrosis.

Question:

Which amongst the following statements IS NOT TRUE regarding secretion of anti-diuretic hormone?

Which one of the following is correct?

A) Osmoreceptors situated in the hypothalamus are sensitive to increasing plasma osmolarity

B) Baroreceptors situated in the atria of the heart are sensitive to circulating blood volume

C) Stretch receptors situated in the carotid arteries are stimulated when the blood pressure rises

D) Head injury stimulates ADH secretion

E) Prolonged hypoxia can lead to oliguria and hyponatremia

Answer:C

Explanation:

Anti-diuretic hormone is secreted by the posterior pituitary gland. Several factors regulate ADH secretion. These include: (i) Special osmoreceptors that are situated in the hypothalamus. These are sensitive to increasing plasma osmolarity (when the plasma gets too concentrated) and stimulate ADH secretion. (ii) Stretch receptors (baroreceptors) that are situated in the atria of the heart, which are sensitive to circulating blood volume. The stretch receptors are activated by an increased volume of blood returning to the heart from the venous system. This causes inhibition of ADH secretion (since the body attempts to maintain physiological volume by removing excess fluid circulating within the system). (iii) Stretch receptors that are situated in the aorta and carotid arteries are stimulated when the circulating volume decreases and the blood pressure falls; this stimulates ADH secretion (by doing this the body attempts to maintain sufficient volume to generate the blood pressure necessary to deliver blood to the tissues and vital organs). (iv) Trauma such as head injury, burns or any cause for prolonged hypoxia can also stimulate ADH secretion. An increase in ADH production will lead to retention of water, which will result in oliguria and hyponatremia (dilutional).

Question:

A 70-year-old lady who is a taking regular treatment for arthritis is brought to the Accident and Emergency department with sudden onset epigastric pain. Her blood pressure is 110/80 mmHg and her pulse rate is 110/min (regular). She is taking ibuprofen for osteoarthritis. Plain abdominal X-ray is normal. An erect chest X-ray shows gas under the diaphragm. A per rectal examination reveals malena

Which one of the following is correct?

A) Ureteric colic

B) Crohn’s Disease

C) Adhesive small bowel obstruction

D) Perforated peptic ulcer

E) Acute Pancreatitis

Answer:D

Explanation:

Perforated ulcer is common in men than women but it is a common complication following regular analgesic treatment for arthritis. These drugs irritate the gastric mucosa and increased gastric secretion thus causing perforation. The other risk factors include h. pylori infection, smoking, excessive alcohol consumption, and zollinger-ellison syndrome. The majority of symptom includes epigastric pain, nausea and vomiting. The pain may radiate to the back or shoulder tip. The diagnosis for a perforated peptic ulcer may be made on an erect chest x-ray. There may be evidence of free gas under the diaphragm in case of perforation. There may be elevated serum amylase levels which may not be as raised as in acute pancreatitis. Computerised tomography scan may help with accurate diagnosis. The complications of perforated peptic ulcer include peritonitis and upper GI bleeding.

Question:

Which among the following statements regarding the Inferior Vena Cava IS CORRECT?

Which one of the following is correct?

A) Lies on the left side of the abdominal aorta

B) Is contained in a groove on the anterior surface of the liver

C) Enters the diaphragm at the level of T10 vertebra

D) Is a retroperitoneal structure

E) Has three valves in the abdominal cavity before it enters the diaphragm

Answer:D

Explanation:

The inferior vena cava conveys blood to the right atrium from all structures below the level of the diaphragm. It is formed by the union of the common iliac veins and lies anterior to the L5 vertebral body, a little to the right. It ascends anterior to the vertebral column, lying to the right of the abdominal aorta. Both the abdominal aorta and the inferior vena cava are retroperitoneal structures. The inferior vena cava is contained in a deep groove on the posterior surface of the liver. It crosses the diaphragm at the level of T10 vertebra, between its median and right leaves, and inclining slightly anteromedially. It then passes through the fibrous pericardium, and opens into the inferoposterior part of the right atrium. The abdominal part of the inferior vena cava is devoid of any valves.

Question:

Which artery among the following arteries IS NOT a branch of the External Carotid Artery?

Which one of the following is correct?

A) Facial artery

B) Lingual artery

C) Ascending pharyngeal artery

D) Posterior auricular artery

E) Inferior thyroid artery

Answer:E

Explanation:

Explanation: The branches of the external carotid artery in the neck are the superior thyroid artery, lingual artery, facial artery, occipital artery, posterior auricular artery and the ascending pharyngeal artery. Behind the parotid gland the external carotid artery divides into maxillary artery and superficial temporal artery. The inferior thyroid artery is not a branch of the external carotid artery but arises from the thyrocervical trunk, which arises from the first part of the subclavian artery. The other branches of the thyrocervical trunk include the suprascapular artery and the transverse cervical artery.

Question:

Which among the following IS NOT a histological feature of a malignant tumour?

Which one of the following is correct?

A) Increased mitosis

B) Pleomorphism

C) Hyperchromatism

D) A decrease in the nuclear-cytoplasmic ratio

E) Focal areas of haemorrhage and necrosis

Answer:D

Explanation:

Some of the characteristic histological changes that can be found in a malignant tumour include: (i) Increased mitosis; (ii) Abnormal mitosis (tripolar, tetrapolar, sunburst or bizarre); (iii) An increase in the nuclear-cytoplasmic ratio; (iv) Pleomorphism (variance of size and shape of tumour cells) and; (v) Hyperchromatism (increased amounts of DNA leading to dark-stained nuclei). In addition, there may be focal or extensive areas of haemorrhage and necrosis due to abnormal vascularity. The surrounding tissues may also have infiltrative borders with evidence of intravascular or lymphatic spread.

Question:

A 24-year-old male involved in a high speed RTA is brought to the Accident and Emergency unit. He is noticed to be bleeding from the nose and he complains of a salty taste in the mouth. He is noted to have bruising over the mastoid process and periorbital haematoma. Examination using an otoscope reveals visible bleeding behind the tympanic membrane.

Which one of the following is correct?

A) Open skull fracture

B) Basal skull fracture

C) Extradural haematoma

D) Subarachnoid Haemorrhage

E) Subdural haematoma

Answer:B

Explanation:

This patient is manifesting the classical signs and symptoms of basal skull fracture. Trauma is the commonest cause of such fractures. These fractures commonly involve the roof of the orbits, the sphenoid bone, or portions of the temporal bone. The commonly found signs and symptoms of basal skull fracture include, Raccoon eyes (periorbital haematoma), subconjunctival haemorrhage where the posterior margins cannot be seen, Battle’s sign (post auricular bruising and blood behind the eardrum; this sign may develop after 24-48 hours of injury) and rhinorrhoea/otorrhoea (blood with CSF & doesn't clot; this is caused by damage to the cribriform plate). The management of such patients depends on other associated injuries and the features found from relevant investigations such as a CT or an MRI. Some of the indications for a CT scan include a falling GCS or a GCS <13, depressed skull fracture, lateralising neurological signs and convulsions. Patients with a GCS <8 warrant intubation to protect their airway. With any skull fracture, especially basal fractures, prophylactic antibiotics are indicated to prevent meningitis. Some recognised complications of basal skull fractures include, high risk of infection (especially following CSF rhinorrhoea), facial palsy (usually responds well to steroids), and isolated VI nerve palsy.

Question:

Which among the following statements regarding coagulation IS INCORRECT?

Which one of the following is correct?

A) The extrinsic pathway is initiated by the release of tissue factor that is expressed on the surface of injured cells

B) Thrombin acts to convert fibrinogen to fibrin fibres

C) Mutation in the gene coding for clotting factor V can lead to an increase in the clotting time

D) Vitamin K is required for factor VII synthesis by the liver

E) Prothrombin time (PT) is used to monitor treatment with Warfarin

Answer:C

Explanation:

There are two distinct pathways in the coagulation cascade – the intrinsic and the extrinsic pathway. The coagulation cascade comprises of enzyme precursors, primarily synthesised in the liver, which are converted to their active form (denoted by ‘a’) by the previous factor in the cascade. This has an amplification role, in that each step stimulates a greater amount of active factor in the next. In the extrinsic pathway, tissue factor, a glycoprotein expressed on the surface of injured cells, stimulates conversion of factor VII to VIIa. The intrinsic pathway is initiated by damage to the endothelial surface caused due to exposure of collagen fibres in the basement membrane. Both the intrinsic and extrinsic pathways activate the common pathway of coagulation, which begins with conversion of factor X to Xa. This converts pro-thrombin to thrombin. Thrombin acts to convert fibrinogen to fibrin fibres, which cross-links to form a fibrin clot. There are a number of factors which limit clot formation. Firstly, clotting factors are removed from the area through the circulation of blood. Secondly, anti-thrombin forms stable complexes with clotting factors, inactivating them. Thirdly, Protein C is activated by formation of thrombin and, acting with its co-factor Protein S, it inhibits up-stream activation of clotting factors, inhibiting further thrombin formation. A specific point mutation in the gene coding for coagulation factor V (Leiden mutation) is associated with resistance to degradation by activated protein C, and is thus associated with an increased risk of thrombosis (NOT clotting time!). The Prothrombin Time is used to test the extrinsic pathway. Factor VII synthesis in the liver requires vitamin K, which is antagonised by Warfarin. Thus prothrombin time can be used to monitor treatment with warfarin (APPT is used to monitor treatment with heparin).

Question:

Which amongst the following factors DOES NOT contribute to the formation of thrombus?

Which one of the following is correct?

A) Atheroma

B) Thrombocytosis

C) Hypergammaglobulinaemia

D) Anaemia

E) Inherited protein S deficiency

Answer:D

Explanation:

Thrombus is a solid material formed from the constituents of blood in flowing blood. It is primarily a function of platelets although the clotting cascade is involved later. Some important factors that contribute to the formation of a thrombus can be grouped into three main areas. They are: (I) Changes in the vessel wall such as an atheroma causing a change in the speed and flow through the arteries; (II) Changes in the blood constituents such as thrombocytosis, increase in coagulation factors (e.g., such as fibrinogen and pro-coagulant factors released from malignancies), hyperviscocity from conditions such as hypergammaglobulinaemia and polycythaemia (NOT anaemia), and inherited deficiencies of protein C, protein S and anti-thrombin and; (III) Changes in the blood flow - reduction in blood flow in patients who have compromised venous drainage, such as in the deep veins of the leg, local stasis in aneurysms, and turbulence from artificial valves, stents and implanted devices. These three factors together that contribute to thrombus formation are known as the ‘Virchows triad’.

Question:

Which artery among the following arteries DOES NOT arise from the subclavian artery?

Which one of the following is correct?

A) Vertebral artery

B) Thoroco-acromial artery

C) Thyrocervical trunk

D) Internal thoracic artery

E) Costo-cervical trunk

Answer:B

Explanation:

The subclavian artery is divided by the scaleneus anterior muscle into three parts (before the muscle, at the level of the muscle and after the muscle). The first part has three branches – the vertebral artery, the internal thoracic artery and the thyrocervical trunk (which gives rise to inferior thyroid artery, ascending cervical artery, suprascapular artery and transverse cervical artery). The costo-cervical branch arises from the second part of the subclavian artery. The costo-cervical branch gives rise to the superior intercostal artery and the deep cervical artery. There are no branches from the third part of the subclavian artery. The subclavian artery continues beyond the outer border of the 1st rib as the axillary artery. The thoraco-acromial artery arises from the second part of the axillary artery.

Question:

Which among the following statements regarding Salter-Harris classification for bone injuries in children IS CORRECT?

Which one of the following is correct?

A) It is a classification for fractures involving the metaphysis and the diaphysis

B) Growth arrest is common in Salter-Harris type II injury

C) In Salter-Harris type III, growth disturbance is very unlikely

D) Salter-Harris type V is described as a communited fracture of the metaphysis

E) They account for <5% of all fractures in children

Answer:E

Explanation:

Salter-Harris classification is for fractures through the growth plate or the epiphysis (in Salter-Harris types II & IV, the metaphyseal fragment is also involved but the diaphysis is never affected). Salter-Harris types I & II does not involve the germinal layer and therefore growth disturbance is uncommon. In Salter-Harris types III & IV, the germinal layer is breached and growth disturbance is likely, although its incidence could be minimised by precise reduction of the fracture. Although not originally described, Salter-Harris type V fracture is recognised as a crushing injury of the epiphysis following which growth arrest is common. This fracture is often diagnosed retrospectively, when disturbance of physeal growth is apparent as a limb deformity. Because of the weakness of the growth plate, these injuries are relatively common. Salter-Harris injuries account for <5% of all fractures in children.

Question:

Which among the following statements regarding cellular cytoskeleton IS INCORRECT?

Which one of the following is correct?

A) Cytoskeletal proteins play an important role in signal transduction

B) Actin is one of the major cytoskeletal components

C) Microtubules are the largest constituent of the cytoskeleton

D) Two centrioles are present at all times in nucleated cells

E) Lamellipodia are thin cellular processes containing a tight bundle of parallel actin filaments

Answer:E

Explanation:

Cytoskeletal proteins are major cellular components and play many important roles such as in protein synthesis, signal transduction, cell motility and cell division. Actin, vimentin, and tubulin are the major cytoskeletal components associated with various spatial and mechanical functions of the cell such as cell division and migration. Microtubules are the largest constituent of the cytoskeleton, being up to 24nm in diameter. Two centrioles are present at all times in nucleated cells. They form the organising centre from which microtubule chains spread towards the cell membrane through the addition of tubulin subunits. Lamellipodia and filopodia are the two major protrusive organelles with strikingly different structural organization and different sets of molecular players. Lamellipodia are broad, flat protrusions that are filled with a branched network of actin filaments. The current model of actin dynamics in lamellipodia (“array treadmilling model”) describes it as a cycle of dendritic nucleation, elongation, capping and depolymerization of actin filaments. Filopodia are thin cellular processes that contain a tight bundle of parallel actin filaments, which elongate at the tip and depolymerize from the rear (as described by the “filament treadmilling model”).

Question:

Which among the following structures IS UNLIKELY to be damaged during a carotid endarterectomy procedure?

Which one of the following is correct?

A) Hypoglossal nerve

B) Zygomatic branch of the facial nerve

C) External Laryngeal nerve

D) Ansa Cervicalis

E) Pharyngeal branch of vagus nerve

Answer:B

Explanation:

Many vital structures can be damaged during a carotid endarterectomy procedure. The hypoglossal nerve crosses the external carotid artery just above its bifurcation. Damage to this nerve results in loss of normal motor functions of the tongue (on protrusion, the tongue is pulled towards the affected side). The zygomatic branch of the facial nerve does not run close to the field of surgery and, as such, is very unlikely to be damaged during a carotid endarterectomy procedure. However, the marginal mandibular branch of the facial nerve can be damaged due to retraction of the nerve during the procedure. The external laryngeal nerve runs close to the superior thyroid artery and supplies the cricothyroid muscle. Damage to this nerve causes loss of phonation over prolonged periods of time. The Ansa Cervicalis lies within the carotid sheath and supplies the infrahyoid strap muscles. The pharyngeal branch of the vagus nerve is at risk of injury at a higher level and paralysis of this nerve causes difficulty in swallowing.

Question:

Which artery among the following arteries DOES NOT arise from the axillary artery?

Which one of the following is correct?

A) Superior thoracic artery

B) Lateral thoracic (pectoral) artery

C) Thoraco-acromial artery

D) Costo-cervical trunk

E) Subscapular artery

Answer:D

Explanation:

The axillary artery is divided into three parts by the pectoralis minor muscle (first part is between the outer border of the first rib and the pectoralis minor muscle, second part is behind the pectoralis minor muscle and third part is after the pectoralis minor muscle). The first part has one branch – superior thoracic artery, the second part has two branches – the lateral thoracic (pectoral) artery and the thoraco-acromial artery, and the third part has three branches – the subscapular artery which divides into the circumflex scapular artery and the thoraco-dorsal artery, the anterior circumflex humeral artery and the posterior circumflex humeral artery. The costo-cervical trunk arises from the second part of the subclavian artery.

Question:

A newborn baby boy is brought to the neonatal clinic with complaints of gross abdominal distension and vomiting. Her parents say that the vomitus is green in colour. The baby hasn’t opened her bowels since birth. Her abdominal x-ray shows distended coils of bowel. Laboratory investigation of her sweat demonstrates increased levels of chloride.

Which one of the following is correct?

A) Meconium ileus

B) Volvulus neonatorum

C) Malrotation of the gut

D) Intestinal atresia

E) Hirschsprung’s disease

Answer:A

Explanation:

Meconium ileus is a common and an early presentation in babies with cystic fibrosis. This condition is more common in boys than girls and presents during the first days of life with gross abdominal distension and bilous vomiting. The baby fails to pass meconium. The early signs of meconium ileus include abdominal distension at birth, failure to pass meconium, bilious vomiting and progressive abdominal distension. The condition is commonly associated with cystic fibrosis which may present with pancreatic insufficiency, increased sweat chloride levels and recurrent respiratory infections. X-ray of the abdomen may show dilated loops of intestine with thickened bowel walls. Free gas or very large air-fluid level often suggests bowel perforation. Uncomplicated meconium ileus can be managed by using diatrizoate maglumine (Gastrografin) enema, with the procedure performed after adequate intravenous fluid administration. If the above management is unsuccessful laprotomy is indicated to evacuate the obstructing meconium. The differential diagnoses for meconium ileus include malrotation of gut, volvulus, Hirschsprung’s disease.

Question:

A 69-year-old lady is brought to the Accident and Emergency unit with a 12-hour history of severe abdominal pain and vomiting. On examination, she appears pale and sweaty. Her heart rate is108 beats/min and her blood pressure is 98/66 mmHg. Examination of the abdomen reveals guarding, rebound tenderness and evidence of peritonitis. Bowel sounds are absent. In her past medical history, she is noted to have severe osteoarthritis in her hips and knees for which she takes aspirin and ibuprofen tablets. Plain X-ray of the abdomen and chest reveals free gas under the diaphragm. She is later diagnosed with perforation of the second part of the duodenum from a peptic ulcer. Which vessel is most likely to be involved when an ulcer erodes the second part of the duodenum?

Which one of the following is correct?

A) Superior mesenteric vein

B) Left renal vein

C) Superior and inferior pancreatico-duodenal artery

D) Portal vein

E) Splenic vein

Answer:C

Explanation:

Perforation of the second part of the duodenum involves the superior and inferior pancreatico-duodenal arteries. The second part of the duodenum starts at the superior duodenal flexure and runs inferiorly in a gentle curve with its convexity to the right side of the vertebral column. It extends to the lower border of L3 vertebrae. The head of the pancreas lies in close relation to the second part of the duodenum. The superior and the inferior pancreatico-duodenal artery lie between the head and the second part of the duodenum. The portal vein lies in relation to the neck of pancreas while the superior mesenteric vein lies close to the lower border of the neck of pancreas as the portal vein is formed by superior mesenteric vein and splenic vein. The splenic vein is related to the body as it runs in a groove in the posterior surface of the gland. The left renal vein is also related to the body of the pancreas, but it is separated by the peri-renal fascia and fat.

Question:

A 77 year-old woman is brought to Accident and Emergency unit with a 12-hour history of generalized abdominal pain associated with nausea and vomiting. She has also had 4-5 episodes of diarrhea, with the stools containing mucus and altered blood. The pain is out of proportion to the physical signs. The bowel sounds are absent and she is in atrial fibrillation.

Which one of the following is correct?

A) Toxic megacolon

B) Diverticulits

C) Ruptured abdominal aortic aneurysm

D) Carcinoma of the rectum

E) Mesenteric ischaemia

Answer:E

Explanation:

This patient is presenting with the classical history and manifesting the well recognized signs and symptoms of mesenteric ischaemia. Mesenteric ischaemia commonly occurs following a disruption of the thrombus from one of the cardiac chambers, commonly the left ventricle, and, as such, this condition is more common in patients who are in atrial fibrillation. The risk factors for this condition include atherosclerosis, hypertension, hypercoagulable states, diabetes mellitus and age. The middle colic artery is commonly affected. The clinical presentation includes sudden onset severe abdominal pain, with the pain being out of proportion to the clinical findings, nausea and vomiting, and diarrhea, with the stools mixed with blood and mucus (due to desloughing of the ischaemic bowel wall). Arterial blood gas analysis is a useful initial investigation, which may reveal a metabolic acidosis. Plain abdominal film, in addition to ruling out some other causes for acute abdominal pain, may demonstrate ‘thumb printing’ of the affected colon. Angiography, ultrasound scan and CT scan are other investigations that may be indicated to diagnose the condition. The immediate management of patients with ischaemic bowel includes oxygen, venous access, appropriate fluid resuscitation, parentral broad spectrum antibiotics and adequate analgesia. Surgery (removal of the ischemic bowel) remains the mainstay of treatment.

Question:

A 30-year-old woman presents to the Accident and Emergency department with a 48-hour history of severe right-sided abdominal pain, painful micturition, fever, and chills and rigors. She had undergone cystoscopy 5 days ago. Her temperature is 38.3º C. On examination, she is warm with sweaty peripheries and is tender over her left loin region. There are pus cells and casts on examination of her urine.

Which one of the following is correct?

A) Ruptured ovarian follicle

B) Crohn’s Disease

C) Urinary tract infection

D) Pyelonephritis

E) Diverticulitis

Answer:D

Explanation:

Pyelonephritis usually presents with severe loin pain, chills, rigor, pyrexia, burning micturition, and increased urinary frequency and urgency. There may be renal tenderness and tenderness over the iliac fossa on the affected side. Pyelonephritis may present with associated constitutional symptoms such as headache, lassitude and nausea. The risk factors for pyelonephritis include the use of urinary catheters, cystoscope, surgeries on the urinary tract, renal stones and enlarged prostate in males. Urine microscopy reveals pus cells and cast cells. Ultrasound is a very useful investigation to clinch the diagnosis. Plain abdominal x-ray may reveal a renal calculus, which may be the aetiology for pyelonephritis. In pyelonephritis caused by underlying anatomical disorders or a pathological obstruction, an intravenous pyelogram (IVP) or CT scan of the abdomen are valuable investigations, and may demonstrate enlarged kidneys with poor flow of dye through the kidneys. Some recognised complications of pyelonephritis include chronic pyelonephritis, renal scarring and renal failure, perinephric abscess and sepsis.

Question:

A 65-year-old presents to his general practitioner with weakness along the right side of his mouth and lower lip. He states that he has difficulty in closing the mouth and unable to move his lower lip. On examination, there is loss of sensation over the mandible and the chin on the right side. The patient states that he has noticed these symptoms since he underwent excision of his right submandibular gland for a malignant tumour two-week ago. Which nerve is most likely to be injured in this patient to cause the above symptoms?

Which one of the following is correct?

A) Mandibular branch of the Trigeminal nerve

B) Glossopharyngeal nerve

C) Lingual nerve

D) Marginal mandibular branch of the facial nerve

E) Hypoglossal nerve

Answer:D

Explanation:

It is most likely that this patient has sustained an injury to the marginal mandibular branch of the facial nerve during surgical removal of the submandibular gland. The submandibular gland occupies most of the submandibular or the digastric triangle. The marginal mandibular branch of the facial nerve courses between the deep surface of the platysma and the superficial aspect of the fascia that lies over the submandibular gland. The mandibular branch of the facial nerve supplies muscles of the lower lip and the chin. Injury to this branch of the facial nerve may thus result in difficulty in closing the mouth and loss of sensation over the chin and mandible. The facial artery and vein are located just deep to this nerve. The lingual nerve and submandibular duct (Wharton duct) lie along the posterior border of the mylohyoid muscle. The hypoglossal nerve courses deep to the tendon of the digastric muscle and then lies medial to the deep cervical fascia.

Question:

Which among the following statements concerning Human Leukocyte Antigen (HLA) is INCORRECT?

Which one of the following is correct?

A) They are a group of genes located along chromosome 6 that code for antigen presenting proteins

B) Class I HLA express intracellular antigens and are expressed on all nucleated cells

C) Class II HLA includes the sub-types A, B and C

D) HLA-B27 is associated with sero-negative spondyloarthropathies

E) Acute transplant rejection is predominantly an immune response against foreign HLA protein

Answer:C

Explanation:

Human Leukocyte Antigen (HLA), the human form of major histocompatibility complex (MHC), is a large group of genes located along chromosome 6 that code for the proteins expressed on cell surfaces which present antigens. Class I HLA express intracellular antigens and are expressed on all nucleated cells, whilst Class II HLA is expressed only by antigen presenting cells (which express phagocytosed material to CD8+ cells). The subtypes of Class I HLA are A, B and C and those of Class II are DR, DP, DQ. The significance of these subtypes is that specific forms are associated with an increased likelihood of developing certain diseases/conditions. For example, the presence of HLA-B27 is associated with conditions such as ankylosing spondylitis, reactive arthritis, psoriatic arthritis, inflammatory bowel disease and anterior uveitis - grouped as ‘sero-negative spondyloarthropathies. Acute transplant rejection occurs within hours and days and is predominantly an immune response against foreign HLA protein. (Hyperacute transplant rejection, which begins within minutes of transplant, is complement-mediated immunity driven by pre-existing antibodies such as ABO-mismatch.)

Question:

Which nerve among the following nerves DOES NOT arise from the medial cord of brachial plexus?

Which one of the following is correct?

A) Medial cutaneous nerve of the forearm

B) Medial pectoral nerve

C) Musculocutaneous nerve

D) Ulnar nerve

E) Median cutaneous nerve of the arm

Answer:C

Explanation:

The following nerves arise from the medial cord of brachial plexus: Medial cutaneous nerve of the forearm (C8 & T1); Median cutaneous nerve of the arm (C8 & T1); Medial root of median nerve (C8 & T1); Medial pectoral nerve (C8 & T1), and; Ulnar nerve (C8 & T1). The musculocutaneous nerve (C5, C6 & C7) arises from the lateral cord of the brachial plexus. The nerves which arise from the lateral cord of the brachial plexus are the lateral pectoral nerve (C5, C6, C7) and the lateral root of the median nerve (C5, C6, C7).

Question:

Which among the following features IS NOT a feature of Wernicke encephalopathy?

Which one of the following is correct?

A) Acute mental confusion

B) Hyperthermia

C) Ataxia

D) Ophthalmoplegia

E) Delirium tremens

Answer:B

Explanation:

Wernicke encephalopathy is caused by thiamine (vitamin B-1) deficiency, characterized by a triad of acute mental confusion, ataxia (due to a combination of polyneuropathy, cerebellar damage and vestibular paresis) and ophthalmoplegia (such as nystagmus, bilateral lateral rectus palsies and conjugate gaze palsies). Frequently found in alcoholics, this condition can also be seen in disorders associated with malnutrition, in patients on long-term haemodialysis and those with AIDS. Other features of this condition include memory disturbance, hypothermia (due to the involvement of the temperature-regulating center in the brainstem), hypotension (due to the efferent sympathetic outflow, decreased peripheral resistance and, to a little extent, due to significant alcoholic liver disease) and delirium tremens.

Question:

A 3-year-old boy is brought by his parents to the General Practitioner with a 2-3 month history of decreased vision in his left eye. On examination, there is convergent squint and a white pupillary reflex in the left eye. Fundoscopic examination after dilatation of the pupils reveals evidence of retinal detachment and a mass in the region of the fundus. His elder brother also had a similar clinical picture 2 years ago.

Which one of the following is correct?

A) Capillary haemangioma of the orbit

B) Orbital lymphoma

C) Retinoblastoma

D) Optic glioma

E) Retinal astrocytic hamartomas

Answer:C

Explanation:

The history, and signs and symptoms in this child are suggestive of a retinoblastoma. Retinoblastoma is the most common intraocular malignancy in children and is bilateral in about one-third of patients. Some are sporadic but many are hereditary. It involves deletion or mutation of the tumour suppressive RB gene on the long arm of chromosome 13. Hence children with a family history should be carefully monitored from birth. Most children are diagnosed before 3 to 4 years of age. Leukochoria (white pupillary reflex), strabismus (squint) and a mass in the fundus are the most common signs. It can also lead to secondary changes in the eye, including glaucoma, retinal detachment, and inflammation secondary to tumour necrosis. In addition, proptosis is a common presenting symptom in children from developing countries.

Question:

An emergency referral is made by the general practitioner to the gastroenterologists regarding a 74-year-old gentleman with a 2-month history of intermittent rectal bleeding and change in bowel habits. His daughter who accompanies him states that his appetite has been poor of late and reckons that he has lost more than a stone in weight in the past 3-4 months. Further questioning also reveals a history of discomfort and ‘bloating’ sensation in his abdomen in the recent past. On examination, he appears mildly jaundiced. The liver is found to be enlarged to 6-cms below the right costal margin. The abdomen appears distended with evidence of ascites. There is percussion dullness in the flanks. An ultrasound scan of the abdomen confirms ascites, multiple liver lesions and evidence of tumour-cell implantation on the omental surface.

Which one of the following is correct?

A) Desmoplastic small round cell tumor

B) Malignant peritoneal mesothelioma

C) Gastrointestinal stromal tumour

D) Peritoneal carcinomatosis

E) Budd-Chiari syndrome

Answer:D

Explanation:

The signs and symptoms in this patient are suggestive of peritoneal carcinomatosis and malignant ascites probably secondary to colorectal carcinoma and liver metastases. Peritoneal carcinomatosis refers to the presence of malignant cells within the peritoneal cavity. It can lead to the development of ascites. Other recognized causes of peritoneal carcinomatosis (and malignant ascites) include carcinoma of the ovary, endometrium, breast, stomach and pancreas. Tumour-cell implantation on the omental surface leads to the classic finding of "omental caking". This is followed by serosal invasion and proliferation in the omental fat. Eventually, the omental fat becomes entirely replaced by tumour, resulting in a thick, confluent, soft-tissue mass. Desmoplastic small round cell tumour is a highly aggressive malignancy that most often affects young adults. This malignancy rapidly invades the peritoneal surfaces with haematogenous metastasis to the liver, lungs, and lymph nodes. Malignant peritoneal mesothelioma is a rare but aggressive tumour derived from the peritoneal mesothelium. Twenty-thirty percent of mesotheliomas arise from the peritoneum and is associated with asbestos exposure and abdominal therapeutic radiation. There is no history suggestive of asbestos exposure in this patient. The clinical presentations of gastrointestinal stromal tumours and Budd-Chiari syndrome (occlusion of the hepatic vein or inferior vena cava) are very different.

Question:

A 5-year-old girl is undergoing chemotherapy treatment for acute lymphoid leukaemia under the care of the paediatric oncologists. She has had previous cardiac surgery for a ventricular septal defect. She is noted to have short limbs, increased space between great toe and second toe, upslanting palpebral fissures and a large tongue. She is also found to have l single transverse creases in both her palms.

Which one of the following is correct?

A) Treacher-Collins syndrome

B) Pierre-Robin syndrome

C) Apert syndrome

D) Down syndrome

E) Turner syndrome

Answer:D

Explanation:

This child has got the classical features of Down syndrome (Trisomy 21). The characteristic dysmorphic features (distinctive phenotype) of this condition include a single transverse palmar crease, upslanting palpebral fissures, short limbs, poor muscle tone, increased space between great toe and second toe, and a large, protruding tongue. Approximately one in 150 patients with Down’s syndrome develop leukaemia, with a relative risk of developing acute leukemia in the first 5 years of life being about 50 times (compared to unaffected individuals). Congenital heart defects are common (40-50%); these include endocardial cushion defect (nearly 43-45%), ventricular septal defect (30-34%), atrial septal defect (10%), tetralogy of Fallot (6%) and isolated patent ductus arteriosus (about 4%). Tracheo-oesphageal fistula, duodenal atresia or stenosis, Meckel’s diverticulum, Hirschsprung disease, omphalocele and imperforate anus may also occur.

Question:

The paediatricians transfer the care of a 16-year-old boy to the adult physicians for continued management of the boy’s epilepsy. He is known to suffer from learning difficulty, attention deficit, moderate autistic-like behaviour and low IQ. His parents and a few of his paternal uncles also suffer from learning difficulty. On examination, he is noted to have prognathism, pectus excavatum, flat-feet and macro-orchidism.

Which one of the following is correct?

A) Klinefelter’s syndrome

B) Fragile X syndrome

C) Treacher-Collins syndrome

D) Pierre-Robin syndrome

E) Marfan’s syndrome

Answer:B

Explanation:

The signs and symptoms in this patient are suggestive of Fragile X syndrome (also termed Martin-Bell syndrome or marker X syndrome). This syndrome is the most common cause of inherited mental retardation characterised by cognitive, behavioural, and neuropsychological difficulties. Mild-to-moderate autistic like behaviour (such as hand flapping and avoidance of eye contact), attention deficit, mental retardation, reduced IQ (particularly decreasing IQ with increasing age), deficiency in abstract thinking and developmental delays (especially speech and language delays) may be seen. There may be a family history of the condition, with mental retardation affecting multiple male relatives. Approximately 20% of patients may have seizures, with nearly half of them requiring anticonvulsant therapy. Macro-orchidism (sometimes up to 7-8 times the normal testicular volume) is a characteristic feature of this condition. Large ears, long face, high-arched palate, gynaecomastia, lordosis, pectus excavatum, flat-feet and joint laxity are other features of this syndrome.

Question:

A 71-year-old lady is admitted under the care of the general physicians with a 6-8 week history of increasing shortness of breath, gasping for air at night causing her disturbed sleep and expectoration of frothy sputum. She also states that she feels light-headed and has abdominal discomfort. On examination, she appears dyspnoeic and has got a raised JVP. Auscultation of the chest reveals bilateral basal lung crepitations and a pansystolic murmur. Abdominal examination reveals abdominal distention with shifting flank dullness and hepatomegaly. She is also noted to have bilateral pitting pedal oedema.

Which one of the following is correct?

A) Budd-Chiari syndrome

B) Congestive cardiomyopathy

C) Constrictive pericarditis

D) Congestive cardiac failure

E) Nephrotic syndrome

Answer:D

Explanation:

The history, and signs and symptoms in this patient are consistent with congestive cardiac failure. Patients may present with anxiety, dyspnoea at rest or exertion, paroxysmal nocturnal dyspnoea, orthopnoea, frothy sputum, pedal oedema (frequently bilateral), abdominal pain, abdominal distention and light-headedness. The signs include, tachypnoea, wheeze, raised JVP, aortic or mitral valvular abnormalities, S3 or S4 on cardiac auscultation and pulsus alternans (alternating weak and strong pulse indicative of depressed left ventricle function). In addition, there may be pleural effusion, which further exacerbates the shortness of breath (particularly during exercise and when the patient is lying flat). Ascites, caused due to congestive cardiac failure, is transudative in nature

Question:

Which among the following is NOT a recognised diagnostic criterion for Henoch-Schonlein purpura?

Which one of the following is correct?

A) Diffuse abdominal pain

B) Arthralgia

C) Spleenomegaly

D) Renal involvement

E) Predominant IgA deposition from any biopsy

Answer:C

Explanation:

Henoch-Schonlein purpura is the commonest form of vasculitis during childhood. The diagnostic criteria for Henoch-Schonlein purpura are a palpable purpura in the presence of at least one of the following four features: (i) Diffuse abdominal pain (ii) Arthritis (acute) or arthralgia (iii) Renal involvement (haematuria and/or proteinuria), and (iv) Biopsy with predominant IgA deposition. Gastrointestinal tract involvement occurs in about 50-75% of children. Some important gastrointestinal symptoms include colicky abdominal pain, vomiting, GI tract haemorrhage, intussusceptions, protein losing enteropathy, pancreatitis and hydrops of the gall bladder. The arthritis usually affects the large joints of the lower limb. The IgA levels are elevated in about half the children with HSP. Spleenomegaly in not a commonly recognised feature of Henoch-Schonlein purpura.

Question:

A 59-year-old gentleman who is known to consume large amounts of alcohol is admitted to the general medical ward with a four-week history of mild confusion, jaundice and abdominal distension. His partner who accompanies him states that his personality and conscious levels have been affected recently. On examination, he is able to communicate normally. He is noted to have musty aroma in his breath, scratch marks on his skin, multiple spider naevi, flapping tremor and an enlarged abdomen with distended veins. He does not have ophthalmoplegia and his postural balance is not affected. Free serum ammonia levels are found to be elevated. His thiamine level is normal.

Which one of the following is correct?

A) Wernicke encephalopathy

B) Hepatic encephalopathy

C) Korsakoff’s psychosis

D) Encephalitis

E) Whipple’s disease

Answer:B

Explanation:

The history of alcohol abuse associated with the presence of musty aroma in his breath (fetor hepaticus - secondary to the exhalation of mercaptans), scratch marks, spider naevi, flapping tremor, impaired personality and change in conscious levels, and an enlarged abdomen with distended veins (porto-systemic anastamosis) is strongly suggestive of alcoholic liver disease leading to hepatic encephalopathy and associated decompensation. Approximately 30% of patients with end-stage liver disease experience significant encephalopathy, approaching coma. An elevated arterial or free venous serum ammonia level is an important finding in patients with hepatic encephalopathy, although in about 10% of patients with hepatic encephalopathy the serum ammonium levels may be normal. (Ammonia, produced in the GI tract by bacterial degradation of amines, amino acids, purines and urea, is normally detoxified in the liver by conversion to urea by the Krebs-Henseleit cycle. However, in cirrhosis there is a decreased mass of functioning hepatocytes for detoxification of the ammonia and the porto-systemic shunting may divert blood containing ammonia away from the liver to the systemic circulation.) Wernicke encephalopathy and Korsakoff’s psychosis are caused due to thiamine (Vitamin B-1) deficiency, frequently seen in alcoholics (but can be found in disorders associated with malnutrition and in patients on long-term haemodialysis or with AIDS). Wernicke encephalopathy is characterised by ataxia, confusion, ophthalmoplegia and impairment of short-term memory. Korsakoff's psychosis is a continuum of Wernicke's encephalopathy characterised by amnesia (anterograde and retrograde), confabulation, apathy and lack of insight. The normal levels of serum thiamine and the absence of other symptoms of Wernicke encephalopathy and Korsakoff’s psychosis rules out this condition in this patient. Encephalitis is inflammation of the brain tissue that is caused due to a bacterial or viral infection, or an auto-immune cause. Whipple's disease is a rare infectious disease caused by Tropheryma whippelii that typically infects the bowel. Symptoms of this condition include diarrhoea, intestinal bleeding, abdominal pain, loss of appetite and weight loss. Some patients may experience neurological symptoms as well.

Question:

Which among the following characteristics is NOT a major criterion for diagnosing Gorlin syndrome?

Which one of the following is correct?

A) Two or more basal cell carcinomas in persons younger than 20 years of age

B) Odontogenic keratocysts of the jaw

C) Cleft palate

D) Three or more palmar pits

E) First-degree relative with Gorlin syndrome

Answer:C

Explanation:

Gorlin syndrome (also referred to as basal cell nevus syndrome) is an autosomal dominant condition characterised by several organ anomalies, many of which are subtle. The affected individuals are extremely sensitive to ionizing radiation, including sunlight, and they tend to develop multiple neoplasms, including basal cell carcinomas and medulloblastoma. They may also develop multiple abnormalities of the skin, skeleton and nervous systems (hence some refer to Gorlin syndrome as the fifth phakomatosis). Evans et al (1993) and Kimonis et al (1997) proposed that Gorlin syndrome can be diagnosed when 2 major or 1 major and 2 minor criteria are present: The major criteria include: (i) multiple (>2) basal cell carcinomas at any age, or two or more basal cell carcinomas in persons younger than 20 years (ii) Odontogenic keratocysts of the jaw (iii) Three or more palmar or plantar pits (iv) Bilamellar calcification of the falx cerebri (v) Bifid, fused, or markedly splayed ribs, and (vi) First-degree relative with Gorlin syndrome. The minor criteria include: (i) Macrocephaly (ii) Congenital malformations (e.g., cleft lip or palate, frontal bossing, coarse face, hypertelorism) (iii) Skeletal abnormalities such as Sprengel deformity, marked pectus deformity, or syndactyly of the digits (iv) Radiological abnormalities such as bridging of the sella turcica, vertebral anomalies (e.g., hemivertebrae, fusion or elongation of the vertebral bodies), modelling defects of the hands and feet (v) occipitofrontal circumference > 97th percentile, with frontal bossing (vi) Ovarian fibroma, and (vii) Medulloblastoma.

Question:

Which among the following is NOT a feature of Poland’s syndrome?

Which one of the following is correct?

A) Hypoplasia of the breast

B) Abnormalities of rib cage

C) Absence of clavicular head of pectoralis major muscle

D) Deficiency of axillary hair

E) Upper extremity anomalies

Answer:C

Explanation:

Named after Sir Alfred Poland, the classic features of Poland syndrome include the following: (i) Hypoplasia and/or aplasia of breast or nipple (ii) Abnormalities/hypoplasia of the rib cage (iii) Absence of the sternal head of the pectoralis major muscle (iv) Deficiency of subcutaneous fat and axillary hair, and (v) Upper extremity anomalies such as short upper arm, forearm or fingers (brachysymphalangism). Some patients may have the following additional features: (i) Hypoplasia or aplasia of serratus anterior, external oblique, pectoralis minor, latissimus dorsi, infraspinatus, and supraspinatus muscles, (ii) total absence of the antero-lateral ribs and herniation of lungs, and (iii) Symphalangism, with syndactyly and hypoplasia or aplasia of the middle phalanges.

Question:

Which among the following is NOT a feature of Pierre Robin syndrome?

Which one of the following is correct?

A) Cleft palate

B) Micrognathia

C) Severe respiratory and feeding difficulties

D) Otitis media

E) Delayed eruption of teeth

Answer:E

Explanation:

Pierre Robin syndrome is an autosomal recessive disease, affecting approximately 1 in 8,500 live births with a male-to-female ratio of 1:1 (except in the X-linked form). The widely accepted aetiological factor for this condition is that during the initial event, mandibular hypoplasia occurs between the 7th and 11th week of gestation. This keeps the tongue high in the oral cavity, causing a cleft in the palate by preventing the closure of the palatal shelves (this may explain the inverted U-shaped cleft and the absence of an associated cleft lip). Oligohydramnios may also play a role in the aetiology since the lack of amniotic fluid could cause deformation of the chin and subsequent impaction of the tongue between the palatal shelves. The prevalence of cleft palate (soft and hard palatal clefts) may be as high as 91%. The cleft is usually U-shaped (80%) or V-shaped. Occasionally, it may present as a bifid or double uvula or as an occult submucous cleft. Micrognathia (the features of which are: retraction of the inferior dental arch behind the superior dental arch; the mandible has a small body, obtuse genial angle, and a posteriorly located condyle) is seen in the majority of cases. The growth of the mandible catches up during the first year. The mandibular hypoplasia resolves and the child attains a normal profile by approximately 5-6 years of age. The combination of micrognathia and glossoptosis may cause severe respiratory and feeding difficulty as well as obstructive sleep apnoea in the newborn. The most common otic abnormality is otitis media (about 80%), followed by auricular anomalies (75%), conductive hearing loss (nearly 50%) and external auditory canal atresia (5%). Delayed eruption of the teeth is not a recognised feature of Pierre Robin syndrome.

Question:

Which among the following statements regarding neuronal tracts within the nervous system IS INCORRECT?

Which one of the following is correct?

A) The medial lemniscus is the contralaterally organized continuation of the dorsal column pathway

B) The majority of lateral corticospinal axons decuss at the level of the medulla

C) Retinal input in relayed to cortical area 17 via the lateral geniculate nucleus

D) Parkinson’s disease is associated with degeneration of dopaminergic neurons projecting in the nigrostriatal tract

E) Typically, the lateral spinothalamic tracts include a greater proportion of myelinated axons than the dorsal column pathways

Answer:E

Explanation:

First order neurons running in the dorsal columns synapse with second order neurons originating in the cuneate and gracile nuclei at the level of the caudal medulla. These secondary axons decussate forming the medial lemniscus, before terminating in the thalamus. The primary role of the lateral corticospinal tract is to control the movement of the limb muscles. Approximately 80% of these axons will cross the spinal cord at the level of the caudal medulla, explaining why defective neurotransmission arising higher than this level will result in a contralateral loss of function. As the largest part of the diencephalon, almost all sensory information has a thalamic relay (olfactory information is an exception). Visual input from the optic tract is relayed via the lateral geniculate (thalamic) nucleus or body to Brodman’s cortical area 17. The striatum plays a vital role in the initiation and performance of motor activities, and receives input from 3 main regions - the neocortex, thalamus and substantia nigra. Selective degeneration of dopaminergic neurons within the substantia nigra results in Parkinson’s disease. The lateral spinothalamic tracts convey the pain sensation. Much of this information (such as that regarding thermally-induced pain) is conveyed via unmyelinated C fibre afferents. The dorsal column pathways convey information regarding light touch as well as joint and muscle sensation via larger diameter, myelinated Aß sensory afferent fibres.

Question:

Which among the following statements regarding Apert’s syndrome is INCORRECT?

Which one of the following is correct?

A) It is an autosomal recessive disorder

B) Commonly detected in the newborn period due to craniosynostosis

C) Associated with mid-face hypoplasia

D) Children may present with micrognathia

E) Symmetrical syndactyly is a recognised feature

Answer:D

Explanation:

Apert syndrome is an autosomal dominant disorder characterized by craniosynostosis (tower-shaped skull), craniofacial anomalies (mid-face hypoplasia leading to recessed cheek bones and prominent eyes) and severe symmetrical syndactyly (webbing of the middle digits of the hands and feet; cutaneous and bony fusion) of the hands and feet. Other recognised features of this condition include sunken nasal bridge, wide-set and prominent eyes, apparent low-set ears with occasional conductive hearing loss and congenital fixation of the stapedial footplate. Micrognathia (undersized jaw; mandibular hypoplasia) is not a feature of this syndrome (micrognathia is seen in conditions such as Pierre Robin syndrome, Treacher Collins syndrome, Trisomy 13 & 18 and DiGeorge’s syndrome).

Question:

A 44-year-old charity worker presents to his General Practitioner with a four-month history of low grade fever, fatigue, lethargy, night sweats and joint pains. He states that he has had episodes of expectorating blood during this period. He also gives a history of loss of appetite and loss of weight. Due to the nature of his job, he frequently travels to parts of Africa and the sub-continent. On examination, he appears pale and weak. His temperature is 37.8°C. Enlarged lymph nodes are palpable over his anterior cervical region. The lymph nodes are firm in consistency and with a ‘matted’ feel. Blood investigation reveals a normal platelet count, normal bleeding and clotting time, and an elevated ESR. Plain radiograph of the chest reveals a cavitating lesion in the apex of his right lung. Biopsy of the lymph node reveals epithelioid macrophages and Langhans giant cells.

Which one of the following is correct?

A) Infectious mononucleosis

B) Non-Hodgkin’s Lymphoma

C) Sarcoidosis

D) Tuberculosis

E) Dengue haemorrhagic fever

Answer:D

Explanation:

This patient has got all the classical signs and symptoms of tuberculosis infection. Tuberculosis, a bacterial disease caused by mycobacterium tuberculosis, may manifest with pulmonary or extra-pulmonary symptoms. Some important pulmonary symptoms include chest pain, haemoptysis and prolonged cough (for more than three weeks). The accompanied systemic symptoms include fever, chills, night sweats, decreased appetite, loss of weight and easy fatigablity. Some recognised extra pulmonary manifestations of tuberculosis include joint involvement (arthritis of the spine, knee and hips) and skin lesions (e.g., lupus vulgaris which may present as small, sharply marginated, red-brown papules over the head and neck). On examination, patients may appear tired, with pallor and low grade pyrexia. Lymph node involvement is usually after six to eight months of infection. The cervical lymph nodes (especially the anterior cervical group) are commonly affected. The lymph nodes may be ‘matted’ together with a firm consistency. Biopsy of the lymph biopsy may reveal epithelioid macrophages and Langhans giant cells along with lymphocytes and plasma cells.

Question:

The paramedics receive a call from the shop-keeper of a convenience store regarding a 48-year-old man who has just collapsed in his store. The people in the neighbourhood state that he lives alone and has a history of alcohol addiction. On arrival to the Accident and Emergency department, he is sweaty, has rigors and is short of breath. He also complains of severe pain around his neck and behind his sternum. There is no history of vomiting. His temperature is 39.1°C, blood pressure is 118/78 mmHg and pulse rate is 108/min. He is noted to have a poor oral hygiene with extensive gingivitis and there is evidence of oedema in his posterior pharynx. His neck is swollen but there is no palpable lymphadenopathy. Auscultation of the chest reveals decreased bilateral air entry. He is referred to have an emergency CT scan of the neck and chest which reveals swelling of the pre-cervical and retropharyngeal soft tissues, and a widened mediastinum.

Which one of the following is correct?

A) Rupture of descending thoracic aorta

B) Acute oesophageal perforation

C) Sarcoidosis

D) Acute descending mediastinitis

E) Acute suppurative lymphadenitis

Answer:D

Explanation:

The history of poor oral hygiene combined with extensive gingivitis, oedema in the posterior pharynx and the CT scan findings of a widened mediastinum as well as swelling of the pre-cervical and retropharyngeal soft tissues points to a diagnosis of acute descending mediastinitis in this patient. Acute descending mediastinitis is a rare but life-threatening infection usually originating in the oropharynx and characterized by rapid tissue destruction in the mediastinum. Oropharyngeal infections such as odontogenic infection, Ludwig's angina, acute suppurative peri-tonsillitis and retropharyngeal abscess can occasionally descend to the mediastinum. The descent of the infection from the oropharynx to the mediastinum is enhanced by gravity and negative intrathoracic pressure. Widening of the mediastinum may be observed in rupture of the descending thoracic aorta and acute oesophageal perforation but these conditions are not commonly associated with fever with chills or symptoms in the neck. Sarcoidosis and acute suppurative lymphadenitis do not give rise to all the signs and symptoms observed in this patient.

Question:

Which among the following statements concerning lung volumes in a healthy male subject IS INCORRECT?

Which one of the following is correct?

A) A typical value for tidal volume is about 500 - 600ml

B) The volume of alveolar dead space is approximately 150ml

C) The helium dilution method is an appropriate way of measuring functional residual capacity

D) A typical alveolar ventilation rate for the above subject could be in the region of 5,000 – 6,000 ml/min

E) Inspiratory reserve volume is often nearly double the size of the expiratory reserve volume

Answer:B

Explanation:

An appropriate value for the tidal volume (quoted by many physiology text books) in a healthy adult male is about 500 - 600ml. However, it should be borne in mind that what is “normal” for a subject varies widely depending on the gender and age as well as the subject’s particular anatomical make-up. The alveolar dead space is typically about zero in a healthy subject. The anatomical dead space is approximately 150ml. (Thus the physiological dead space is also about 150ml since physiological dead space = alveolar dead space + anatomical dead space.) In order to measure the functional residual capacity (FRC), the subject is connected to a spirometer of known volume, containing a known concentration of helium. As helium does not cross the alveolar/capillary interface, inspiration of helium will result in distribution of helium throughout the spirometer and lungs. Measurement of helium concentration throughout this closed system at the end of a normal expiration will allow calculation of the functional residual capacity/volume. Assuming a tidal volume of 500 - 600ml and an anatomical dead space of 150ml, for a respiratory frequency (respiratory rate) between 12 and 16/min, the resulting alveolar ventilation values will be in the range of about 4,500 – 7,000ml. The lungs are always left partially inflated with the functional residual capacity from which the expiratory reserve volume (ERV) is drawn. The ERV is typically about 2,000ml. Assuming our subject has a typical value for vital capacity of 6,000ml, the inspiratory reserve capacity would be of the order of 3,500ml, which is well in excess of the ERV.

Question:

Which among the following statements regarding the autonomic nervous system IS INCORRECT?

Which one of the following is correct?

A) A pre-ganglionic sympathectomy would be a reasonable treatment option for Raynauds disease

B) Increased parasympathetic stimulation of the salivary glands is likely to result in a greater volume of saliva produced, with reduced potassium content

C) Post-ganglionic sympathetic neurons release predominantly noradrenaline

D) A spinal cord lesion at the T10 level is most likely to result in “dry orgasm”

E) Increased activity within the parasympathetic innervation of the heart will have a negative chronotropic effect

Answer:D

Explanation:

Raynauds disease is characterized by excess arterial and arteriolar constriction within the peripheral circulation. Therefore, a reduction in the sympathetic-mediated tone of these vessels via a pre-ganglionic sympathectomy is a reasonable option to treat this disorder. The salivary glands are influenced to a much greater extent by the parasympathetic rather than sympathetic division of the autonomic nervous system. As increased parasympathetic activity increases the flow rate in the salivary glands, but less time is allowed for the duct cell secretion of potassium into the salivary fluid. Consequently, the potassium content of the saliva is reduced. Noradrenaline is the neurotransmitter released by the majority of post-ganglionic sympathetic neurons. Genital erection and ejaculation requires coordinated activity from both divisions of the autonomic nervous system. The sympathetic fibres from T11 to L2 governs ejaculation whereas the genital erection is mediated by parasympathetic innvervation arising from the sacral region of the spinal cord. Thus a lesion at the T10 level would affect both erection and ejaculation. “Dry orgasm”, where the patient can generate and maintain an erection but is unable to ejaculate, can be a side effect of drugs such as beta blockers. The parasympathetic innervation of the heart is almost exclusively restricted to the atria and structures therein including the sinoatrial node (SAN). Increased parasympathetic activity reduces the slope of the pacemaker potential in the SAN resulting in a reduced heart rate – a negative chronotropic action.

Question:

Which among the following statements regarding pathophysiology of the respiratory system IS CORRECT?

Which one of the following is correct?

A) An FEV1: VC ratio of less than 80% is a characteristic feature of obstructive disorders

B) Centrally located chemoreceptors are the key determinants of ventilation in patients with chronic respiratory failure

C) Decreased airway resistance is a feature of emphysema

D) Dipalmitoylphosphatidyl choline increases surface tension and encourages movement of fluid from pulmonary capillaries into the alveoli

E) Cystic fibrosis is the result of a single genetic defect affecting the synthesis of sodium transport proteins in the lungs and intestine

Answer:A

Explanation:

In obstructive disorders such as bronchial asthma, airway diameter is reduced leading to a decreased flow rate. Consequently, this leads to a decreased forced expiratory volume in the first second of exhalation. Any decrease in lung volume would be expected to be of much less significance; therefore, the ratio is influenced to a greater degree by the changes in airway resistance and diameter. In healthy subjects, plasma CO2 levels are monitored principally by centrally located chemoreceptors within the medulla. (The combination of water and CO2 molecules within the cerebrospinal fluid (CSF) produces hydrogen carbonate (bicarbonate) ions which then dissociate to generate hydrogen ions; it is the level of these hydrogen ions that is actually monitored by the central chemoreceptors.) However, in patients with chronic hypercapnia (secondary to chronic respiratory failure), the buffering capabilities of the CSF are increased, which negates the effects of the increased hydrogen ions and reduces the ventilatory drive. Under these conditions, the role of the oxygen-detecting peripheral chemoreceptors assumes a greater significance. The destruction of lung tissue associated with emphysema results in a decrease in the radial traction force applied to the airways. This leads to an increase in the airway resistance (the resistance to flow is inversely proportional to the square of the radius). Dipalmitoylphosphatidyl choline, more commonly known as surfactant, is a detergent molecule with several key roles within the lungs. Its profound ability to reduce surface tension within the alveoli significantly reduces the work of inspiration. Its presence also prevents the collapse of small alveoli into larger ones as well as helping to reduce the movement of fluid from the pulmonary capillaries into the alveoli. Cystic fibrosis is the most commonly occurring genetic disease in Caucasians. The faulty gene codes for an epithelial cell membrane chloride (NOT sodium) channel, CFTR. The loss of fully functional CFTR channels ultimately leads to a reduced water secretion and consequent increased viscosity of lung (and pancreatic) secretions.

Question:

Which among the following statements regarding the transport of carbon dioxide in the blood IS INCORRECT?

Which one of the following is correct?

A) The rapid generation of bicarbonate ions from carbon dioxide requires the presence of an enzyme found only inside red blood cells

B) Carbaminohaemoglobin provides around 10% of the transport of carbon dioxide

C) Chloride ions are co-transported with bicarbonate ions across the red blood cell membrane

D) The binding of carbon dioxide to haemoglobin promotes the increased dissociation of oxygen from haemoglobin

E) Carbon monoxide combines with haemoglobin to form carboxyhaemoglobin and is considered to be an irreversible process

Answer:C

Explanation:

The transport of carbon dioxide (CO2) by the blood utilizes a number of methods of which the production of bicarbonate (hydrogen carbonate) ions from carbon dioxide and water is the most significant. This reaction occurs much more rapidly inside red blood cells due to the presence of carbonic anhydrase (carbonic anhydrase is not found within the plasma). As the bicarbonate ions generated within the red blood cells move out, chloride ions must move into the cell in order to maintain the appropriate electrical charge within these cells. This is therefore a counter-transport arrangement. The reversible combination of haemoglobin with CO2 to form carbaminohaemoglobin, a molecule which promotes the dissociation of oxygen from haemoglobin, provides between 5 and 10% of the total CO2 transport. The binding of carbon monoxide by haemoglobin forming carboxyhaemoglobin is generally regarded as irreversible due to the extremely high affinity of carbon monoxide for haemoglobin, roughly 200 times that of oxygen for haemoglobin

Question:

Which among the following statements regarding receptors IS INCORRECT?

Which one of the following is correct?

A) Pharmacological blockade of nicotinic receptors will result in a loss of neuromuscular transmission

B) Dry mouth is a likely side-effect of the use of a muscarinic receptor antagonist

C) Stimulation of H2 receptors will result in increased gastric acid secretion

D) ß2 receptor stimulation is likely to result in tachycardia

E) Activation of pre-synaptic ß receptors stimulates a G-protein mediated increase in cyclic AMP

Answer:D

Explanation:

Nicotinic cholinergic receptors are found at the neuromuscular junction as well as throughout all autonomic ganglia. Thus the pharmacological blockade of nicotinic receptors will result in a loss of neuromuscular transmission. Although the salivary glands are under dual innervation (by both branches of the autonomic nervous system), the volume of the salivary secretions is governed principally by the level of parasympathetic activity. Blockade of muscarinic receptors is therefore likely to result in a decreased salivary secretion. Histamine is produced by enterochromaffin cells in the gastic mucosa. Both gastrin and acetylcholine will stimulate these cells to release histamine which in turn stimulates H2 receptors located on gastric acid secreting parietal cells. Thus the stimulation of H2 receptors will result in increased gastric acid secretion. Adrenergic receptors are classified as a1, a2, ß1 and ß2, The ß2 receptors are concentrated in the airways. ß1 agonists (NOT ß2) would be expected to increase heart rate due to the cardiac location of this type of adrenergic receptor. ß1 and ß2 receptors can be distinguished by the ability of different antagonists to block their activation. But both types of receptors are similar in structure and they exert their actions via G-protein activation and subsequent stimulation of adenylate cyclase activity.

Question:

Which among the following statements regarding oxygen delivery to the tissues IS CORRECT?

Which one of the following is correct?

A) Typical arterio-venous difference for a healthy 21-year-old male at rest would be approximately 75%

B) Arterial oxygen partial pressure is reduced in women with iron deficiency anaemia

C) In subjects living at high altitude, the oxygen dissociation curve is shifted to the left

D) Use of erythropoietin stimulates greater dissociation of oxygen from haemoglobin

E) An increase in the acidity of the blood would promote greater oxygen delivery to the tissues

Answer:E

Explanation:

The typical arterio-venous difference for a healthy 21-year-old male at rest would be approximately 75%. (In a healthy subject at rest, only about 25% of the oxygen delivered to the tissues is utilised therein.) In a patient with simple iron deficient anaemia, arterial oxygen partial pressure will remain at around normal levels but the decreased haemoglobin (Hb) levels result in a decrease in the total oxygen transported per minute. In order to maintain sufficient delivery of oxygen, the arterio-venous (a-v) difference will increase due to the production of molecules such as 2,3 diphosphoglycerate (DPG). The A-V difference is increased and the dissociation curve shifts to the RIGHT in subjects living at high altitude, which is again due to the increased production of molecules such as 2,3 DPG. Erythropoietin (EPO), whether endogenously or exogenously administered, promotes oxygen delivery by promoting increased maturation of red blood cells. However, it has no effect on the dissociation of oxygen from Hb. An increase in the concentration of hydrogen ions has the same effect on the oxygen dissociation curve as an increase in temperature or 2,3 DPG levels - all these factors shift the curve to the RIGHT thereby increasing the oxygen dissociation and increasing the oxygen delivery to the tissues. Note: Physiology text books tend to refer to 2,3 diphosphoglycerate (2,3 DPG) whereas biochemistry text books refer to 2,3 biphosphoglycerate (2,3 BPG). Therefore both terms and abbreviations can be regarded as in common usage and is correct.

Question:

Which among the following statements concerning foetal and adult red blood cells IS INCORRECT?

Which one of the following is correct?

A) Each foetal haemoglobin molecule generally comprises 2 alpha and 2 gamma chains

B) Gamma haemoglobin chains have a greater affinity for 2,3 DPG than beta haemoglobin chains

C) The Bohr shift is a significant factor in ensuring sufficient oxygen delivery to foetal tissues

D) he life span of red blood cells in a term infant is nearly half that of the maternal red blood cells

E) By the end of a healthy term pregnancy, foetal haematocrit would be expected to be approximately 50% higher than the maternal haematocrit

Answer:B

Explanation:

In foetal haemoglobin (HbF) two gamma chains replace the two beta chains found in HbA (adult haemoglobin). These gamma chains having a LOWER affinity for 2,3 DPG than is exhibited by beta chains. This ensures a greater affinity of HbF for oxygen than the HbA and is an important factor in ensuring oxygen delivery to the developing foetus. Oxygen transfer is further facilitated by the binding of hydrogen ions by foetal Hb molecules (the Bohr effect) present, as the pH of foetal blood is lower than that of maternal blood. The lifespan of neonatal red blood cells is approximately 70 days compared with approximately 120 days for the maternal red blood cells. However, foetal haematocrit and consequently HbF levels increase throughout pregnancy to a peak value around term, which is about 50% higher than those of the mother. Note: Physiology text books tend to refer to 2,3 diphosphoglycerate (2,3 DPG) whereas biochemistry text books refer to 2,3 biphosphoglycerate (2,3 BPG). Therefore both terms and abbreviations can be regarded as in common usage and is correct.

Question:

Which among the following statements concerning pulmonary circulation IS CORRECT?

Which one of the following is correct?

A) In a healthy 21-year-old male, the pressure difference across the pulmonary circulation is typically around one-half of that observed across the systemic circulation

B) Low pressure differences within the pulmonary circulation are likely to result in pulmonary oedema

C) Low alveolar PO2 values result in vasodilation within the pulmonary vasculature

D) The pulmonary circulation can be described as a “low pressure high compliance” system

E) In a healthy standing subject, peak ventilation perfusion matching is achieved at the base of the lungs

Answer:D

Explanation:

The pulmonary circulation is a low pressure system, maintaining the integrity of the thin walled circulatory vessels. In addition, it also ensures that there is only a minimal production of fluid within the alveoli. The distensibility of these thin walled vessels ensures a high compliance of the vessels that help maintain the required low pressures. The pressure difference of approximately 10 mmHg across the pulmonary circulation is significantly less than that observed within the systemic circulation (typically closer to 100mmg). Hypoxic vasoconstriction is a feature of the pulmonary vasculature in contrast to the systemic circulation, such that blood flow is diverted from poorly ventilated regions of the lung enabling closer ventilation-perfusion matching within the lungs. The ventilation-perfusion ratio is closest to one (i.e., optimal at approximately the level of the 3rd rib in a standing subject).

Question:

A two-week old baby boy is brought to the neonatal unit with history of refusal to feed and general irritability. The mother states that he hasn’t been wetting his nappies adequately since birth. On examination, the resident paediatrician identifies the baby to have a disparity between his brachial and popliteal blood pressures. The blood pressure over his brachial artery is 96/64 mmHg whilst the pressure measured in his popliteal artery is 74/62 mmHg. The pulse rate is 166/min and he has an increased respiratory rate. The femoral pulses on both groins are weak compared to the radial pulses. There is some degree of cyanosis in the lower extremities. Ausculation of his chest reveals a systolic murmur over the precordial region.

Which one of the following is correct?

A) Atrial septal defect

B) Tracheo-Oesophageal fistula

C) Pulmonary atresia

D) Coarctation of aorta

E) Aortic stenosis

Answer:D

Explanation:

This baby is most likely to have a coarctation of the aorta. Coarctation of aorta is defined as a narrowing of the aortic segment, secondary to localized medial thickening with some infolding of the medial and superimposed neointimal tissue. It accounts for about 5-8% of all congenital heart defects and is more common in boys. Classically, the coarctation is located in the thoracic aorta distal to the origin of the left subclavian artery. Due to this, the blood flow and thus the blood pressure to the upper limbs, face and neck are normal whilst the flow distal to the coarctation (such as that to the abdomen and lower limbs) is impaired. Coarctation of aorta may occur as an isolated defect or in association with other defects such as a bicuspid aortic valve and ventricular septal defect. The common clinical presentations include irritability, poor feeding and decreased urine output. The signs and symptoms may include hypotension, weak or absent femoral pulse, and radio-femoral delay. There may be apparent differential cyanosis between the upper and the lower body. A systolic murmur may be present over the left pericardium or between the scapulae.

Question:

Which among the following statements regarding Pfeiffer syndrome is INCORRECT?

Which one of the following is correct?

A) Is an autosomal dominant condition

B) Associated with mutations in the FGFR-1 gene

C) Characterised by craniosynostosis

D) May present with partial syndactyly on hands and feet

E) Mid-face hyperplasia

Answer:E

Explanation:

Pfeiffer syndrome is a rare autosomal dominant condition (affecting about 1 in 100,000 individuals) caused by mutations in the fibroblast growth factor receptor genes FGFR-1 or FGFR-2. It is characterised by craniosynostosis (skull is prematurely fused and unable to grow normally), broad and deviated thumbs and big toes, and partial syndactyly on hands and feet. The other associated signs and symptoms include hydrocephaly, ocular proptosis (bulging wide-set eyes due to shallow eye sockets), ankylosed elbows, dental problems (due to crowded teeth and a high palate), and delayed development. Based on the severity of the phenotype, Pfeiffer syndrome can be divided into three clinical subtypes: Type 1 (or the "classic" Pfeiffer syndrome) is mild and consist of brachycephaly, mid-face hypoplasia (NOT hyperplasia), and finger and toe abnormalities; it is associated with normal intelligence and generally good outcome. Type 2 consists of ‘clover-leaf’ skull, extreme proptosis, finger and toe abnormalities, elbow ankylosis or synostosis, developmental delay and neurological complications. Type 3 is similar to type 2 but without a ‘clover-leaf’ skull.

Question:

Which among the following statements regarding neurotransmitters IS CORRECT?

Which one of the following is correct?

A) Substance ‘P’ is found in high concentration within the substantia gelatinosa layer of the ventral horn

B) Huntington’s disease is associated with an increase in the excitatory GABA-ergic striatal neurons

C) Glutamate is the principle neurotransmitter within the corticospinal pathway

D) Glycine is the major excitatory neurotransmitter within the spinal cord

E) Serotonergic (5-HT producing) neurons are found principally in those brain regions constituting the limbic system

Answer:C

Explanation:

Substance ‘P’, an important nociceptive neurotransmitter, is known to play a significant role in pain perception. As a transmitter involved in conveying sensory information, its main location is in the dorsal rather than the ventral horn. Inhibitory GABA-ergic striatal neurons are lost in Huntington’s disease in addition to the loss of cholinergic local circuit neurons within the striata. Glutamate is the main excitatory neurotransmitter utilized by the upper motor neurons connecting the motor cortex and spinal cord whilst Glycine is a significant inhibitory neurotransmitter within the Renshaw cells of the spinal cord. Although pharmacological manipulation of the levels of 5-HT is used to treat disorders such as depression and anxiety, serotonergic neurons are not distributed throughout the limbic system despite its importance in regulating emotions. Their sole location within the central nervous system is in the raphe nuclei of the brainstem.

Question:

Which among the following characteristics is NOT seen in ‘Holt-Oram’ syndrome?

Which one of the following is correct?

A) Fusion of the carpal bones

B) Phocomelia

C) Craniosynostosis

D) Hypoplasia of the radius

E) Atrial septal defect

Answer:C

Explanation:

Holt-Oram syndrome (also known as heart-hand syndrome), is an inherited disorder characterized by abnormalities of the upper limbs and the heart. Abnormalities may be unilateral, bilateral or asymmetric, and may involve the radial, carpal and metacarpal bones. Aplasia, hypoplasia, fusion, or anomalous development of these bones produces a spectrum of phenotypes, including triphalangeal or absent thumbs. Fusion of the carpal bones is a frequent finding. Occasionally, upper limb malformation can be sufficiently severe to produce phocomelia with rudimentary limbs (this has been termed pseudothalidomide syndrome). Hypoplasia of the radius manifests as short, deformed forearm. Sprengel deformity (upward displacement of the scapula) and hypoplasia of the shoulders, clavicles, and humerus have also been reported. The number and location of hypoplastic muscles correlate with the severity of skeletal involvement. Accordingly, patients with hypoplasia of large and proximal muscles have phocomelia, and those with intrinsic hand muscle hypoplasia have only a triphalangeal thumb or no skeletal malformation. Approximately 75% of patients have some form of cardiac abnormality. In most patients, the abnormality is either an atrial septal defect (ASD) or a ventricular septal defect (VSD). ASDs are usually of the secundum variety, while VSDs tend to occur in the muscular trabeculated septum. Cardiac anomalies also may include cardiac conduction defects such as atrioventricular block and atrial fibrillation. Craniosynostosis is not a feature of Holt-Oram syndrome.

Question:

Which among the following statements regarding oxygen transport within the circulatory system IS CORRECT?

Which one of the following is correct?

A) The use of hyperbaric oxygen therapy can markedly increase the amount of oxygen transported as oxyhaemoglobin

B) Approximately 99% of oxygen transport occurs in the form of oxidized haemoglobin

C) A typical healthy male at rest will utilize approximately 1 litre of oxygen per minute

D) A typical value for haemoglobin concentration in a healthy adult female would be around 12g/dL

E) In a healthy foetus, the haemoglobin oxygen saturation should be within approximately 2% of the maternal oxygen saturation levels

Answer:D

Explanation:

Hyperbaric oxygen treatment is used in cases where a significant fraction of a subject’s haemoglobin (Hb) has irreversibly bound to carbon monoxide. However, it increases the amount of oxygen dissolved in the blood, but not the bound fraction. The binding of oxygen to Hb creating oxyhaemoglobin is reversible and so does not involve oxidation of the Hb molecule. Approximately 99% of oxygen transport within the circulatory system occurs in the form of oxidized haemoglobin. Although approximately 1 litre of oxygen is delivered to the tissues per minute at rest, only 25% of this would typically be utilized, the rest being exhaled. Hb values are given as g/dL and an acceptable value in a healthy adult female will be about 12g/dL; in males, this would be expected to be in the region of 13.5-14g/dL. Healthy maternal Hb saturation levels (around 97%) greatly exceed those observed in their foetus (typically closer to 85%).

Question:

A 53-year-old gentleman undergoes internal fixation (intra-medullary nailing) of his right tibia after he sustained a comminuted fracture of this bone when he was hit by a car whilst crossing the road. Nearly 36 hours after the operation, he complains of severe pain in his right leg. On examination, his blood pressure is 122/82 mmHg and the pulse rate is 84/min. The right calf feels tense and is mildly tender. The foot pulses are present. He has some altered sensation over the dorsum of the foot. The pain is worsened when the foot is actively dorsiflexed.

Which one of the following is correct?

A) Fat embolism

B) Deep vein thrombosis

C) Compartment syndrome

D) Popliteal artery embolism

E) Calf haematoma

Answer:C

Explanation:

This patient has got the classical features of a compartment syndrome. Compartment syndrome is defined as an increase in the interstitial fluid pressure within an osseofascial compartment that leads microcirculatory compromise and later myoneural necrosis. It is a serious and limb-threatening complication seen after long-bone fractures (and after surgery for fixation of long-bone fractures), crush injury, deep thermal burns and other forms of trauma. It can also be caused by electrical injuries, restricting tourniquets, fluid extravasation (e.g. intravenous regional anaesthesia), snake venom (from bites) and infections such as meningococcal septicaemia. Severe pain in response to passive stretch of the affected group of muscles is a classical and a reliable clinical sign. Sensory loss occurs before motor loss since the thin cutaneous nerve fibres are more susceptible to ischemia than the motor fibres. The peripheral pulses are frequently normal during the early stages of the condition since it is the microvasculature which is initially affected. Loss of peripheral pulses is usually a late and a sinister sign. Left untreated, the limb becomes tense and swollen, soon progressing to weakness of the affected group of muscles and later paralysis. Compartment pressures in excess of 30-35 mmHg (normal value is 3-4 mmHg) in a normally perfused patient suggested the need for open compartment fasciotomy although recent evidence suggests that fasciotomy should be undertaken if the difference between the diastolic pressure and the measured compartment pressure is less than 30 mmHg.

Question:

A 69-year-old lady in the surgical ward is complaining of abdominal discomfort and of feeling excessively hot for a few hours since she woke up in the morning. She had undergone an emergency laparotomy for a perforated duodenal ulcer two days earlier and was recovering satisfactorily. The nurse looking after her states that the patient has had 5-6 episodes of diarrhoea overnight. On examination, she appears to be anxious, is sweaty and has got warm peripheries. Her temperature is 37.9°C, blood pressure is 162/82 mmHg and the pulse rate is 140/min. Her blood glucose is 4.6 mmol/L. The ECG monitor reveals her to be atrial fibrillation. She does not have any significant past medical history apart from papillary carcinoma of the thyroid for which she is on radio-active iodine.

Which one of the following is correct?

A) Addisonian crisis

B) Hashimoto's thyroiditis

C) Thyroid storm

D) Gram negative sepsis

E) Acute suppurative thyroiditis

Answer:C

Explanation:

The signs and symptoms in this patient are very suggestive of a thyroid storm. Thyroid storm is caused due to an increase in the level of circulating catecholamoines and should be treated as a medical emergency. Thyroid storm may be precipitated by surgery to the thyroid gland, direct trauma to the thyroid gland, vigorous palpation of an enlarged thyroid, sepsis, radioactive iodine intake and withdrawal of anti-thyroid drugs. In addition, it can also be induced by any surgery in a patient with thyroid disorder, particularly when they have not been optimised pre-operatively. The presentation is usually acute with the patient appearing anxious, sweaty, confused (occasionally) and complaining of abdominal pain/discomfort. The temperature may be elevated (due to an increased metabolic rate) and the patient may have warm peripheries. Diarrhoea may be present, which is due to the increased catecholamines. The examination findings include hypertension with a wide pulse pressure, signs of high cardiac output and tachycardia; the tachycardia may be disproportionate to the pyrexia. These signs and symptoms may be accompanied by atrial fibrillation or flutter.

Question:

Which among the following is NOT a feature of Marfan’s syndrome?

Which one of the following is correct?

A) Arachodactyly

B) Pectus excavatum

C) Pes cavus

D) Aortic dissection

E) Infero-nasal (downward) dislocation of the lens

Answer:E

Explanation:

Marfan syndrome, estimated to affect approximately one in 5,000 of the population, is an autosomal dominant connective tissue disorder characterised skeletal, cardiovascular, ocular, and pulmonary system abnormalities. It is caused by mutation of the FBN1 gene on chromosome 15. This gene normally controls production of fibrillin, a protein which plays an important role in the structural development of the connective tissue. The most readily visible signs are associated with the skeletal system such as long, slender limbs asociated with with long and slender fingers and toes (arachodactyly). Other skeletal abnormalities include scoliosis, pectus excavatum or pectus carinatum. Abnormal joint flexibility, a high-arched palate, pes cavus (flat feet), stooping of shoulders and stretch marks are other associated findings. Cardiac manifestation inlcudes dilatation of the aortic root that may progress to aortic dissection. Ocular manifestations include myopia, astigmatism, upward dislocation of the lens (supero-temporal) and glaucoma. (Downward dislocation (infero-nasal) of the lens is a feature of homocystinuria).

Question:

Which among the following statements regarding gas partial pressures within the circulatory system IS INCORRECT?

Which one of the following is correct?

A) A typical value for atmospheric oxygen partial pressure at sea level would be approximately 100 mmHg

B) A typical value for the arterial oxygen partial pressure would be approximately 98 mmHg

C) A typical value for the venous oxygen partial pressure would be 40 mmHg

D) A typical value for the arterial carbon dioxide partial pressure would be 40 mmHg

E) A typical value for the venous partial pressure of carbon dioxide would be 45 mmHg

Answer:A

Explanation:

The normal atmospheric pressure is 760 mmHg (i.e., 1 atmosphere pressure = 760mmHg = 101.325kPa). As oxygen constitutes approximately 21% of the atmospheric gases, the fraction of atmospheric pressure that is due to oxygen must be 21% of 760 mmHg, which is about 160 mmHg. Thus the atmospheric oxygen partial pressure (PO2) at sea level is typically around 160 mmHg. In the lungs, the inspired air mixes with air left from the previous breath – during normal breathing this volume is 1-2 litres and is called the functional residual capacity (FRC). As this air has “given up” some of its oxygen, the partial pressure of oxygen is reduced in the FRC such that mixing of this old and newly inspired air results in a gas mix with an alveolar partial pressure of around 100 mmHg. Assuming that the subject is in good health with no impairment of gas exchange across the alveolar/capillary interface, gas transfer is a highly efficient process and should result in an arterial oxygen partial pressure very close to the alveolar PO2 . Although at rest, only approximately 20-25% of the arterial oxygen is taken up by the tissues, venous PO2 is significantly less than arterial PO2. Unsurprisingly, arterial PCO2 is less than the venous PCO2 as CO2 produced in the tissues has been transferred from venous blood to the alveolar air for exhalation. Consequently, blood leaving the lungs in the pulmonary veins will have a reduced PCO2.

Question:

Which among the following statements concerning the mechanics of respiration IS INCORRECT?

Which one of the following is correct?

A) The lung compliance is greater during the expiration phase compared with the inspiration phase

B) The majority of airway resistance is located in the trachea and subsequent airway divisions

C) Resistive forces oppose airflow during inspiration

D) The radial traction experienced by the airways is inversely proportional to the lung volume

E) Under conditions of turbulent flow, pressure is proportional to (flow)2

Answer:D

Explanation:

During inspiration, a greater pressure is required to inflate the lungs to a given volume than that is required to achieve the same volume during the expiratory phase. This is the phenomenon of hysteresis and reflects the fact that work must be done during inspiration to overcome resistive forces such as the resistance of the airways and pulmonary tissue. Approximately 30% of airway resistance is located in the nose, pharynx and larynx, and the remaining 70% of airway resistance is generated by the trachea and subsequent airway divisions. As the lungs inflate, increased radial traction is exerted on the airways, allowing them to expand such that radial traction is directly proportional to lung volume. The relationship between laminar flow and pressure is one of direct proportionality. However, during conditions of turbulent flow, pressure is indeed proportional to the square of the flow rate. Note: A full understanding of airway resistance and air flow involves consideration of several key principles of physics including Poiseuille’s and Bernoulli’s laws, and is a complex issue. The interested reader may wish to start with chapter 4 of Respiratory Physiology. A clinical approach. Schwartzstein and Parker. Lippincott Williams and Wilkins Publications.

Question:

Which among the following statements concerning the regulation of ventilation IS CORRECT?

Which one of the following is correct?

A) The most significant inspiratory neurons are located in the medulla along the ventral aspect

B) The Hering Breuer reflex is an important determinant of tidal volume during quiet breathing

C) The motor innervation of the diaphragm arises from spinal cord segments C6-C8

D) Activation of juxtacapillary receptors may result in apnoea

E) During strenuous exercise in highly trained individuals, oxygen utilization by the tissues may increase 35-fold

Answer:E

Explanation:

Although the interplay between medullary and pontine respiratory neuronal groups is not fully understood, it is widely accepted that dorsally located neurons within the medulla are more important in driving inspiration whereas the ventrally located respiratory medullary neurones appear to play a more significant role in governing expiration. The Hering Breuer reflex, referring to the possible role of pulmonary stretch receptors in limiting inspiration, appears not to be important during quiet inspiration but may play a minor role in limiting respiratory excursions during strenuous exercise. The diaphragm is supplied by the phrenic nerve, which arises from spinal cord segments C3, C4 and C5 – remember the rhyme: C3, 4 and 5 keep the diaphragm alive! Juxtacapillary receptors, also known as ‘J’ receptors, (located close to pulmonary capillaries) via their unmyelinated C fibre afferents are believed to contribute to the tachypnoea (increased respiratory frequency) observed in some patients with congestive heart failure. These receptors may be detecting and responding to increased pulmonary capillary pressures and/or increased levels of interstitial fluid. In the highly trained athlete working at a high intensity, it is possible to observe minute ventilation rates of 180 litres. Assuming that the arterio-venous (a-v) difference is at least maintained at 25%, this would support an increase in tissue oxygen utilization by up to 35-fold.

Question:

Which among the following statements regarding the autonomic nervous system IS CORRECT?

Which one of the following is correct?

A) Accommodation of the lens is achieved via parasympathetic innervation of the ciliary muscle

B) The pupillary light reflex is an example of ‘push-pull’ innervation by both the sympathetic and parasympathetic divisions

C) Spinal cord damage below T10 level is unlikely to affect the micturition reflex

D) Sweat production is increased in response to the release of noradrenaline from post-ganglionic sympathetic fibres

E) Tidal volume is increased during the fight or flight response due to an increased respiratory frequency caused by elevated circulatory levels of adrenaline

Answer:A

Explanation:

When looking at a close object the lens must accommodate (i.e., round up) in order to create sufficient refraction of the light. Activation of the parasympathetic nervous system causes contraction of the ciliary muscles, resulting in a reduced pull on the lens by the suspensory ligaments thus allowing the lens to remain more spherical. Alterations in the diameter of the pupil in response to changes in the ambient light are mediated solely via the parasympathetic neurons of the oculomotor nerve (CNIII). However, in response to a change in emotions such as happiness or increased libido activation of the sympathetic nervous system can cause pupillary dilatation. Micturition or voiding of the bladder is a parasympathetic reflex; the parasympathetic nerves arising in the sacral regions of the spinal cord (S2, S3 and S4) innervate the detrusor muscle and it compresses the sphincter at the neck of the bladder. Thus a lesion at the level of T10 would affect the micturition reflex. Increased sympathetic activity such as that observed during a fight or flight response results in increased sweating. However, sweat production is unusual as the post-ganglionic sympathetic innervation of the sweat glands is cholinergic rather than adrenergic. Bronchial diameter is very sensitive to changes in the levels of circulating adrenaline. Respiratory frequency (rate), however, is controlled by the medullary brain stem respiratory control centre which in turn regulates the contraction of skeletal muscles such as the diaphragm and intercostal muscles.

Question:

A 20-year-old woman attends her General Practitioner with a 2-3 week history of a ‘lump down below’. She states that the lump is painless and she is well otherwise. On further questioning, she states that has had 5-6 casual sexual partners in the past six months. She denies any previous history of sexual transmitted disease and has never been tested for any illnesses. On examination, there is an irregular mass on the right labium minora, which is hard on palpation. There is no associated erythema, exudate or ulceration. There are no enlarged lymph nodes in the inguinal region.

Which one of the following is correct?

A) Vaginal carcinoma

B) Genital herpes

C) Syphilis

D) Bacterial vaginosis

E) Chancroid

Answer:C

Explanation:

This patient is most likely to have developed syphilis. Syphilis can either be sexually transmitted or can be congenitally acquired. The primary lesion, termed a chancre, is painless mass, most commonly found on the introitus in women and on the penile glans, shaft or base of the penis in men. The chancre usually resolves after some weeks without treatment. The primary infection is followed after six to eight weeks by secondary syphilis, which a systemic response with lymphadenopathy and a vasculitis rash often including the palms and soles. Hepatitis or nephritis can also be features of secondary syphilis. If left untreated the patient may go on to develop features of tertiary syphilis. These include the formation of granulomatious lesions, termed gumma, which can occur in the skin, bone, testes and liver. Cardiac symptoms such as aortitis, aortic regurgitation and coronary artery ostitis can also occur in tertiary syphilis. Neurosyphilis is a late complication of chronic syphilis infection, the features of which include: Tabes dorsalis, with the selective demyelination of the posterior column of the spinal cord causing loss of fine touch and proprioception; generalised paralysis of the insane in which there is generalised weakness and behavioural and personality changes and; Argyll-Robertson’s pupils, in which the light reflex is lost with preservation of the accommodation reflex due to damage at the periaquaductal grey matter in the midbrain. Vaginal carcinoma is a differential diagnosis although it is rare, especially in this age group with such a short history. Genital herpes is very common but would usually present with vesicular or ulcerated lesions which are exquisitely painful. Bacterial vaginosis would present with a homogenous discharge rather than a mass. Chancroid is a tropical infection caused by Haemophilus ducreyi and usually presents with multiple soft lesions which are painful and associated inguinal lymphadenopathy. The lymph nodes may rupture and suppurate.

Question:

A 50-year-old woman attends her General Practitioner with a 6-8 week history of itching and redness in her right nipple. She states that the itching has not improved despite using the cream that had been prescribed 3 weeks ago. On examination, there is an eczematous lesion, 1-cm in diameter, extending over the right areola and the nipple. No lumps are palpable in either of the breasts. There is no regional lymphadenopathy. A biopsy is taken of the lesion and the report states it to be ‘mucin positive cells containing pale cytoplasm and presence of hyperchromatic nuclei at the dermoepidermal junction’.

Which one of the following is correct?

A) Tinea infection

B) Psoriasis

C) Inflammatory carcinoma

D) Eczematous dermatitis

E) Paget’s disease of the nipple

Answer:E

Explanation:

The signs and symptoms in this patient are suggestive of Paget’s disease of the nipple. The biopsy report describes the characteristic features of Paget’s cells (mucin positive cells containing pale cytoplasm and presence of hyperchromatic nuclei at the dermoepidermal junction), characteristic of Paget’s disease. This condition is associated with underlying carcinoma or carcinoma-in-situ. No breast mass may be palpable nor will there be loco-regional lymphadenopathy. This patient requires urgent referral to the breast specialist for further investigation and management. The fact that the lesion extends onto the nipple weighs against a simple eczema, and any lesion that does not respond to topical treatment (such as topical steroid) warrants further investigation. A relatively short history makes chronic conditions such as psoriasis unlikely.

Question:

An 81-year-old woman who lives in a residential home is brought by the paramedics to the Accident and Emergency department with an 8-hour history of severe generalized abdominal pain, nausea and vomiting. On examination, her blood pressure is 96/70 mmHg and her pulse rate is 112/min. Her respiratory rate is 12/min. She is in atrial fibrillation. Abdominal examination reveals generalized tenderness with absent bowel sounds. Analysis of her arterial blood gases (measured when she was breathing room air) reveals the following: pH – 7.31, PCO2 – 4.9 kpa, PO2 – 11.6 kpa, HCO3 – 18.4 mmols/L, base deficit of -4 and an O2 saturation of 100%.

Which one of the following is correct?

A) Uncompensated metabolic acidosis

B) Compensated metabolic alkalosis

C) Uncompensated metabolic alkalosis

D) Compensated respiratory acidosis

E) Compensated metabolic acidosis

Answer:A

Explanation:

This patient is most likely to have an infarction of the mesenteric artery. Although any of the three anterior abdominal aortic branches (coeliac, superior and the inferior mesenteric vessels) may occlude, it is the occlusion of the superior mesenteric artery which commonly causes mesenteric infraction. The occlusion may be due to a thrombus or an embolus and is commonly seen in elderly patients who are in atrial fibrillation. Clinical features of mesenteric infarcation include generalized abdominal pain, nausea and vomiting. Frequently, analysis of the arterial blood gases reveals a metabolic acidosis, which is caused due to the toxins released from the infarcted bowel and the resulting sepsis. This patient has got an uncompensated metabolic acidosis since the pH and HCO3 are low, the PCO2 is normal and there is base deficit. Respiratory compensation for metabolic acidosis occurs by the lungs increasing the respiratory rate by blowing off excessive carbon-dioxide. The degree of compensation depends on the severity and duration of the primary problem as well as associated medical co-morbidities. In this patient, both the respiratory rate and the PCO2 are normal, and thus there has been no respiratory compensation so far to the gradually developing metabolic acidosis.

Question:

Which among the following physiological functions is NOT an action of noradrenaline acting on the α1 receptor?

Which one of the following is correct?

A) Vasoconstriction of cutaneous blood vessels

B) Smooth muscle contraction of the ureters

C) Positive ionotropic effect on the cardiac muscle

D) Smooth muscle contraction in the iris

E) Glycogenolysis from adipose tissue

Answer:D

Explanation:

Noradrenaline is most potent against the α1 receptors but also acts on the α2 and β receptors. The specific action of noradrenaline acting on the α1 receptors include: Vasoconstriction of the cutaneous blood vessels and blood vessels in the gastrointestinal system; contraction of smooth muscle in the ureter, urethral sphinter, hairs (arrector pili muscles), pregnant uterus and the bronchioles (although this action is minor compared to the relaxing effect of β2 receptor on the bronchioles); contraction of the urinary bladder; smooth muscle relaxation in the iris (causing a dilated pupil); positive inotropic effect on the heart; increased secretion from the salivary glands; sodium reabsorption from the kidney, and; glycogenolysis and gluconeogenesis from the adipose tissue and the liver.

Question:

A 64-year-old woman presents to her General Practitioner with a 4-week history of a lump in her left breast. She is referred to have a mammogram, which reveals an irregular, spiculated 2.5cm density in her left breast. She has no palpable axillary lymphadenopathy. A needle biopsy is performed, which shows ‘malignant cells floating in mucinous pools, with a well-defined margin of surrounding fibrous tissue’. Nuclei show minimal pleomorphism and no mitoses are seen. Cells are oestrogen receptor positive, progesterone receptor positive with HER2 over-expression of +1. A plain chest radiograph, abdominal ultrasound and PET scan are normal. She undergoes appropriate surgery and histology reveals absence of nodal involvement. What are the most likely grade and stage of the malignancy?

Which one of the following is correct?

A) Grade I, Stage T1N0M0

B) Grade I, Stage T2N0M0

C) Grade II, Stage T1N0M0

D) Grade II, Stage T2N0M0

E) Grade III, Stage T3N0M1

Answer:B

Explanation:

Minimal pleomorphism and no visible mitoses, with mucin-type specialisation indicate grade I disease. The size of the lump (2.5 cm) indicates T2 disease (2-5 cms). There is no lymph node involvement or distant metastasis, and suggests N0 and M0 respectively. Lymphatic spread can only be ruled out by axillary node sampling, sentinel node biopsy or on nodal clearance.

Question:

A 62-year-old gentleman who smokes about 15 cigarettes per day presents to his General Practitioner with a 4-5 week history of dragging discomfort in his left loin. He feels generally tired and reckons that he has lost some weight recently. He also states that he has noticed passing some blood in his urine. On examination, his blood pressure is 154/96 mmHg and his pulse rate is 78/min. A left loin mass is felt on per abdominal examination. He is also noticed to have a left-sided varicocele, which he states to have developed in the last few days. Urinalysis reveals 3+ blood.

Which one of the following is correct?

A) Squamous cell carcinoma of the renal pelvis

B) Transitional cell carcinoma of the bladder

C) Adenoma of the renal cortex

D) Nephroblastoma

E) Adenocarcinoma of the kidney

Answer:E

Explanation:

The features in this patient are suggestive of an adenocarcinoma of the kidney (syn: Hypernephroma; Grawitz’s tumour), which present as well-circumscribed lesions in the renal cortex. It is more prevalent in patients over 40 years of age and affects more males than females (2:1). Some recognised risk factors for the development of this tumour includes smoking, genetic factors, a high intake of fat, oil and milk, and exposure to toxins such as lead, cadmium, asbestos and petroleum products. The well-recognised clinical features of this condition include a dragging discomfort in the loin and a triad of haematuria (with occasional clot colic), flank pain (in 35-40%) and a palpable abdominal mass (in 25-45%). In men, a rapidly developing varicocele (most often on the left) is a characteristic sign. This is because the left testicular vein drains into the left renal vein (varicocele associated with a right-sided renal carcinoma is less common since the right testicular vein drains directly into the inferior vena cava). The patient may also manifest symptoms (features) of hypertension, erythrocytosis and hypercalcaemia.

Question:

A 26-year-old gentleman presents to the Accident and Emergency unit with a deep laceration to his left distal forearm after he was involved in a fight in his local pub. On examination, he is unable to pinch objects or spread his fingers. There is loss of sensation over his little and ring fingers. His thumb flexes when he is asked to hold a card between his thumb and index finger.

Which one of the following is correct?

A) Musculocutaneous nerve

B) Radial nerve

C) Median nerve

D) Posterior interosseous nerve

E) Ulnar nerve

Answer:E

Explanation:

This patient has got an injury to his ulnar nerve. Ulnar nerve (C8, T1) arises from the medial cord of the brachial plexus and is an important motor nerve of the hand. In low lesions (such as in distal forearm or wrist), there is weakness and paralysis of the small muscles of the hand. Long-standing lesions lead to hypothenar muscle wasting and clawing of the hand (due to the action of unopposed long flexors). Sensation over the little and ring fingers may be lost. The patient will not be able to adduct or abduct the fingers. There is also loss of thumb adduction that makes ‘pinch’ difficult. When the patient is asked to grasp a card between his thumb and index finger, there is flexion of the thumb, known as the Froment’s sign (this is due to paralysis of the adductor pollicis and the first palmar interossei muscle and the unopposed action of the flexor pollicis longus muscle).

Question:

A 57-year-woman presents to the surgical outpatient with loss of sensation over her right leg. She had undergone ligation and stripping of her long saphenous vein four weeks ago. The surgical wound has healed nicely. On examination, she has full range of movements in her hip and knee joints with a motor power of 5/5. There is no obvious muscle wasting. She has decreased sensation along the medial side of the leg from the level of the patella up to the medial aspect of the ankle and foot. Knee and ankle jerks are normal. She has good peripheral pulses.

Which one of the following is correct?

A) Common peroneal nerve

B) Cutaneous branch of the obturator nerve

C) Sural nerve

D) Saphenous nerve

E) Medial femoral cutaneous nerve

Answer:D

Explanation:

This patient is most likely to have injured her saphenous nerve since it runs in close proximity to the long saphenous vein. The saphenous nerve (a continuation of the femoral nerve) exits the adductor canal (Hunter's canal or subsartorial canal), descends under the sartorius muscle, and then winds around the posterior edge of the sartorius muscle where it becomes tendinous. It then gives rise to the infrapatellar branch,which pierces the sartorius muscle and courses anteriorly to the infrapatellar region, and the descending branch, which passes down the medial aspect of the leg and, at the lower third of the leg, divides into two branches. One of the branches of the descending portion of the saphenous nerve courses along the medial border of the tibia and ends at the ankle while the other branch passes anterior to the ankle and is distributed to the medial aspect of the foot, sometimes reaching as far as the metatarsophalangeal joint of the great toe. It is the medial branch of the saphenous nerve that is commonly prone to injury during varicose vein stripping.

Question:

A two-year-old boy is brought to the paediatric surgical clinic by his mother who states that for the past 4-5 days she has noticed blood in his nappies when he passes urine. His appetite has been poor recently and he is has not put on any weight in the past few months. He has earlier been diagnosed with underdevelopment of the iris (aniridia) and hypospadias. On examination, the child appears weak and has a temperature of 37.9°C. Abdominal examination reveals a solitary, soft mass in the right loin, which is not tender on palpation. The mass does not cross the midline. Urinalysis reveals microscopic haematuria.

Which one of the following is correct?

A) Neuroblastoma

B) Adenoma of the renal cortex

C) Nephroblastoma

D) Papillary transitional cell tumour of the renal pelvis

E) Adenocarcinoma of the kidney

Answer:C

Explanation:

The presentation in this child is very suggestive of a Nephroblastoma (also known as Wilm’s tumour). This is the most common tumour of the urinary system in childhood, with a peak incidence between the ages of 3-4. Nephroblastomas may be sporadic or hereditary (loss of function of a recessive tumour gene in 11p13 region). On pathological examination, the tumours are usually solitary, soft, lobulated and are tan or grey in colour. The infant may present with pyrexia, haematuria (blood in the nappy), failure to thrive, and an abdominal (flank) mass (usually non-tender). This mass does not cross the midline which distinguishes it from neuroblastoma (this is more nodular and irregular in shape). Nephroblastoma is associated with congenital anomalies such as hypospadias, aniridia, hemi-hypertrophy of the body and Beckwith-Wiedemann syndrome. If the tumour is suspected, the relevant investigations to undertake will include a full blood count and a biochemical profile, ultrasound scan (to confirm the mass and to also to view the other kidney), intravenous urogram (to give anatomical detail and an indication of renal function) and a renogram. It is usually treated by total nephrectomy or partial nephrectomy (in children with bilateral disease) followed by radiotherapy.

Question:

A 37-year-old man who works in glass factory presents to the Accident and Emergency unit with a 2-cm long, deep, transverse laceration over the medial side of the palm of the hand. On examination, he has normal sensation over the palm of his hand. However, the sensation over the little finger and the ulnar aspect of the ring finger are decreased. He is able to fully abduct and adduct his fingers and to adduct his thumb. He has normal pinch grip.

Which one of the following is correct?

A) Superficial branch of the ulnar nerve

B) Deep branch of the ulnar nerve

C) Palmar cutaneous branch of the median nerve

D) Anterior interosseous nerve

E) Palmar cutaneous branch of the ulnar nerve

Answer:A

Explanation:

The patient is most likely to have injured the superficial branch of the ulnar nerve from which the digital nerves to the little finger and the medial half of the ring finger arises. After the ulnar nerve gives off muscular branches to the flexor carpi ulnaris and the medial half of the flexor digitorum profundus in the forearm, the palmar cutaneous branch arises in the forearm (usually the junction of the middle 1/3rd and the distal 1/3rd) and supplies the skin over the medial part of the palm along the hypothenar eminence. The dorsal cutaneous branch arises in the distal half of the forearm (usually about 5-6 cms proximal to the proximal wrist crease), passes between the ulna and the flexor carpi ulnaris, and supplies the dorsal surface of the medial aspect of the hand. The ulnar nerve ends by dividing into superficial and deep branches at the distal border of the flexor retinaculum. The superficial branch of the ulnar nerve supplies cutaneous fibres to the palmar surface of the little finger and the medial side of the ring finger. The deep branch supplies motor fibres to the hypothenar muscles, the medial two lumbrical muscles, the adductor pollicis muscle, and all the interossei. The deep branch also supplies the wrist, intercarpal, carpometacarpal, and intermetacarpal joints.

Question:

A 69-year-old lady who had undergone a right shoulder replacement 4 weeks ago presents to the Accident and Emergency department with weakness in flexing her right elbow and numbness over the outer side of her right forearm. She does not have any other constitutional symptoms. General examination is unremarkable. There is no bony tenderness. Examination of the affected limb reveals that she has got a weak flexion of the elbow and supination of the forearm. There is reduced sensation over the lateral and volar aspect of the forearm. The biceps tendon reflex is reduced. All other motor and sensory functions in this limb are normal.

Which one of the following is correct?

A) Posterior interosseous nerve

B) Musculocutaneous nerve

C) Anterior interrosseous nerve

D) Radial nerve

E) Median nerve

Answer:B

Explanation:

This patient is most likely to have an injury to the musculocutaneous nerve. The nerve may be injured following shoulder joint replacements, usually due to the pressure from the retractor. It may also be injured following brachial plexus injuries. The musculocutaneous nerve (C5, C6, C7) is a mixed nerve that arises from the lateral cord of the brachial plexus. In the arm, the nerve gives motor supply to the biceps brachii muscle along with brachialis and the coracobrachialis muscles. Above the elbow it is only motor, but is only sensory below the elbow. Injury to this nerve produces weakness of flexion at the elbow and weakness of supination of the forearm (the biceps is an important supinator). There is sensory loss over the lateral side of the forearm.

Question:

A 53-year-old gentleman undergoes internal fixation (intra-medullary nailing) of his right tibia after he sustained a comminuted fracture of this bone when he was hit by a car whilst he crossing the road. Nearly 36 hours after the operation, he complains of severe pain in his right leg. On examination, his blood pressure is 118/82 mmHg and the pulse rate is 84/min. The right calf feels tense and is mildly tender. The foot pulses are present. He has some altered sensation over the dorsum of the foot. The pain is worsened when the foot is actively dorsiflexed.

Which one of the following is correct?

A) Fat embolism

B) Deep vein thrombosis

C) Compartment syndrome

D) Popliteal artery embolism

E) Calf haematoma

Answer:C

Explanation:

This patient has got the classical features of a compartment syndrome. Compartment syndrome is defined as an increase in the interstitial fluid pressure within an osseofascial compartment that leads microcirculatory compromise and later myoneural necrosis. It is a serious and limb-threatening complication seen after long-bone fractures (and after surgery for fixation of long-bone fractures), crush injury, deep thermal burns and other forms of trauma. It can also be caused by electrical injuries, restricting tourniquets, fluid extravasation (e.g. intravenous regional anaesthesia), snake venom (from bites) and infections such as meningococcal septicaemia. Severe pain in response to passive stretch of the affected group of muscles is a classical and a reliable clinical sign. Sensory loss occurs before more loss since the thin cutaneous nerve fibres are more susceptible to ischemia than the motor fibres. The peripheral pulses are frequently normal during the early stages of the condition since it is the microvasculature which is initially affected. Loss of peripheral pulses is usually a late and a sinister sign. Left untreated, the limb becomes tense and swollen, soon progressing to weakness of the affected group of muscles and later paralysis. Compartment pressures in excess of 30-35 mmHg (normal value is 3-4 mmHg) in a normally perfused patient suggested the need for open compartment fasciotomy although recent evidence suggests that fasciotomy should be undertaken if the difference between the diastolic pressure and the measured compartment pressure is less than 30 mmHg.

Question:

Whilst doing a general surgical ward round in the morning, a 69-year-old lady appears to be anxious and complains of abdominal discomfort. She had undergone an emergency laparotomy for a perforated duodenal ulcer two days earlier and was recovering satisfactorily. The nurse looking after her states that the patient has had 5-6 episodes of diarrhoea overnight. On examination, she is sweaty and has got warm peripheries. Her temperature is 38.5°C, blood pressure is 162/82 mmHg and the pulse rate is 140/min. Her blood glucose is 4.6 mmol/L. The ECG monitor reveals her to be atrial fibrillation. She does not have any significant past medical history apart from papillary carcinoma of the thyroid for which she is on radio-active iodine.

Which one of the following is correct?

A) Addisonian crisis

B) Hashimoto's thyroiditis

C) Thyroid storm

D) Gram negative sepsis

E) Acute suppurative thyroiditis

Answer:C

Explanation:

The signs and symptoms in this patient are very suggestive of a thyroid storm. Thyroid storm is caused due to an increase in the level of circulating catecholamoines and should be treated as a medical emergency. Thyroid storm may be precipitated by surgery to the thyroid, direct trauma to the thyroid gland, vigorous palpation of an enlarged thyroid, sepsis, radioactive iodine intake and withdrawal of anti-thyroid drugs. In addition, it can also be induced by any surgery in a patient with thyroid disorder particularly when they have not been optimised pre-operatively. The presentation is usually acute with the patient appearing anxious, sweaty, confused (occasionally) and complaining of abdominal pain/discomfort. The temperature may be elevated and the patient may have warm peripheries. Diarrhoea may be present, which is due to the increased catecholamines. The examination findings include hypertension with a wide pulse pressure, signs of high cardiac output and tachycardia; the tachycardia may be disproportionate to the pyrexia. These signs and symptoms may be accompanied by atrial fibrillation or flutter.

Question:

A 42-year-old man of Asian origin presents to the General Practitioner with a 3-4 week history of right-sided abdominal pain and increased frequency in passing urine, especially at night. He also states that his appetite has been poor recently and has lost some weight during this period. In addition, he has noticed his body to be warmer in the evenings. On examination, his temperature is 37.9°C and his pulse rate is 94 beats/min. No mass is felt on abdominal examination. Urianalysis reveals sterile pyuria. He is referred to the hospital to have an intravenous pyelogram, which reveals intra-renal calcification with blunting of the calices of the right kidney.

Which one of the following is correct?

A) Adenocarcinoma of the kidney

B) Renal tuberculosis

C) Squamous cell carcinoma of the renal pelvis

D) Adenoma of the renal cortex

E) Angioma of the renal artery

Answer:B

Explanation:

Renal tuberculosis commonly occurs between the ages of 20–40, affecting more males than females (approximately 5:3 ratio). The right kidney is more affected than the left. Tuberculosis of the kidneys usually spreads haematogenously from pulmonary disease, although it occasionally may be secondary to tuberculosis of the GI tract or bone. However, by the time renal tuberculosis is diagnosed, the primary source of pulmonary infection may be inactive or calcified. Clinical features of renal tuberculosis include an increase in urinary frequency (both during the day and night), painful micturition, renal pain and haematuria. Constitutional symptoms include weight loss and an evening rise (mild) in temperature. Intravenous pyelogram is a very useful investigation in the diagnosis of this condition. The changes observed by intravenous pyelogram range from mild intra-renal calcification with blunting of the calices to the appearance of an auto-nephrectomized calcified kidney. A short anti-tubercular therapy with pyrazinamide, isoniazide and rifampicin may be useful in the management of genitor-urinary tuberculosis (a high concentration of anti-tuberculous drugs are excreted in the urine).

Question:

Which among the following statements regarding synaptic transmission IS CORRECT?

Which one of the following is correct?

A) Action potentials travel towards the cell body of a neurone along the axon

B) Release of neurotransmitter is mediated by sodium influx through voltage-gated calcium channels

C) Post-ganglionic neurones of the para-sympathetic nervous system release noradrenaline

D) Glutamate causes excitation of the dendrites

E) After release, acetylcholine is broken down into choline and acetate within the synaptic cleft before being reabsorbed

Answer:E

Explanation:

Action potentials travel towards the cell body of a neurone along the dendrites. It then travels away from the cell body along the axon. The neurotransmitter release is stimulated by calcium influx (NOT sodium) into the cell at the terminal bouton through voltage-gated calcium channels. Both para-sympathetic and sympathetic branches of the autonomic nervous system have pre- and post-ganglionic neurones. All pre-ganglionic neurones release acetylcholine. The post-ganglionic neurones of the parasympathetic nervous system also release acetylcholine whilst those of the sympathetic nervous system release noradrenaline. Glutamate causes excitation of the post-synaptic membrane since it is an excitatory neurotransmitter that leads to depolarisation. After binding with receptors on the post-synaptic membrane, acetylcholine is broken down by cholinesterase into choline and acetate within the synaptic cleft. The acetate and choline are then reabsorbed into the pre-synaptic membrane.

Question:

Which among the following statements regarding the organisation of the brain and the nervous system is INCORRECT?

Which one of the following is correct?

A) The macroscopic appearance of white matter is due to the high fat content of the myelinated axons

B) The grey matter is located peripherally within the brain

C) The area involved in the formation of new memory is located within the mid-brain

D) The dorsal columns of the spinal cord carry fine touch and proprioception

E) The primary motor and sensory cortices have a topographical representation of the body

Answer:C

Explanation:

The macroscopic appearance of the white matter is due to the high fat content of the myelinated axons whilst that of the grey matter is due to the large number of cell bodies. Within the brain, the grey matter is located peripherally whilst the white matter is located centrally (with additional collections of grey matter interspersed, the basal ganglia). However, within the spinal cord the grey matter is organised centrally with surrounding white matter forming the tracts. The area thought to be involved in the formation of new memories is the hippocampus, which is located within the medial temporal lobe. The dorsal columns of the spinal cord carry fine touch, proprioception and vibration modalities. The spinothalamic pathway carries the modalities for temperature, pain and gross (crude) touch. The primary motor and sensory cortices have a topographical representation of the body, with the leg medially within the central sulcus and the arm and face laterally. The sizes of these areas are related to the precision of sensation or movement of the particular body part (e.g., the hand has a far larger area of representation than the feet).

Question:

Which among the following statements regarding skeletal muscle physiology IS CORRECT?

Which one of the following is correct?

A) The numbers of fibres supplied by a single motor neurone is dependent on the embryological development of that muscle

B) Hypertrophy of a muscle involves increase in the number of actin and myosin filaments within the muscle fibres

C) The ‘H’ zone within sarcomeres contains actin filaments

D) The ‘I’ bands contain myosin fibres

E) Release of calcium ions is responsible for the exposure of the active sites of myosin filaments

Answer:B

Explanation:

The numbers of fibres supplied by a single motor neurone is dependent on the dexterity of the muscle; muscles requiring fine movements have fewer fibres supplied by each neurone. Hypertrophy is induced by contraction of a muscle at maximal force and involves increase in the number of actin and myosin fibres. The ‘H’ zone within sarcomeres (the area between two Z lines within a myofibril) contains myosin fibres. The ‘I’ band contains actin fibres, which overlap with myosin fibres during contraction (thus shortening the ‘I’ band during contraction). Release of calcium ions is responsible for the exposure of the active sites of actin filaments (NOT myosin filaments) that allows the myosin heads to bind at the onset of contraction.

Question:

Which among the following statements regarding testing for Human Immunodeficiency IS CORRECT?

Which one of the following is correct?

A) A child under 14 years of age cannot have a HIV test unless consented by either of the parent

B) In adults, if the test is positive, they are legally obliged to inform their partner of their status

C) The most common test for HIV tests for antibodies against HIV

D) Standard ELISA test has a false positive rate of rate of approximately 20%

E) Will be positive within 24-48 hours of exposure

Answer:C

Explanation:

If the patient is deemed Gillick competent, even if they are 14 years of age, they can consent to medical tests or interventions (although Gillick competence is commonly applied to contraception, it can apply to any medical field). Competence means that the patient is able to understand the nature, purpose, benefits, risks and alternatives to an intervention, including no intervention, believes and retains the information long enough to reach a conclusion, and be able to make that conclusion free of external pressure. Patients are not legally obliged to inform anyone else (including their partner) of their HIV status unless they intentionally put others at risk. Thus, patients may need to disclose their status to their partners if they continue to have sexual intercourse despite having the knowledge and the understanding of the modes of HIV transmission. Likewise, failure to inform medical insurance companies of a positive status when opening new policies may nullify the policy in the future. The most common test for HIV tests for antibodies against HIV. Other substances which can be tested for include p24 antigen, which detects the p24 protein on the surface of the HIV and PCR for the viral RNA. The false positive rate of standard ELISA test for HIV antibodies has a far lower false positive rate. There is a window period after exposure before which antibodies against HIV are raised. This varies up to three months and so a test taken before this period is of dubious value if negative.

Question:

Which among the following statements regarding the treatment of Parkinson’s Disease is INCORRECT?

Which one of the following is correct?

A) Levo-dopa is converted to dopamine by hydroxylation

B) Dopamine cannot cross the blood brain barrier

C) Levo-dopa has a half-life of around 2 hours

D) Levo-dopa can cause nausea and vomiting through stimulation of the chemoreceptor trigger zone

E) Anti-muscarinic drugs are useful to treat tremors

Answer:A

Explanation:

Levo-dopa is an amino acid that is converted to dopamine in the brain by decarboxylation. It is actively transported across the blood-brain-barrier and is metabolised within neurones in the substantia nigra into dopamine. Dopamine cannot cross the blood-brain-barrier (therefore levo-dopa, which is able to cross the blood brain barrier, is administered and converted within the brain to dopamine). Levo-dopa stimulates the chemoreceptor trigger zone in the fourth ventricle causing nausea and vomiting. Levo-dopa has a short half-life of around 2 hours. Although less effective than dopamine related drugs, anti-muscarinic drugs are used in the treatment of Parkinson’s disease and they are particularly useful in treating tremors.

Question:

Tumours of the lower lip:

Which one of the following is correct?

A) have a late metastases rate of about 40%

B) may present with metastases to neck nodes in up to 30% of patients at time of presentation

C) are significantly more frequent in males

D) are associated with poor oral hygiene

E) are most commonly basal cell carcinomas

Answer:C

Explanation:

Squamous cell carcinomas account for 98% of lower lip tumours. Lower lip cancers predominantly affect males with a male: female ratio of 80:1. The tumours are commonly located between the midline and lateral commisure. Most lip cancers are 1 to 2 cm in size at presentation and require a full-thickness resection of the skin, muscle and underlying mucosa. Clinical metastases to cervical (neck) lymph nodes are seen in less than 10% of patients and approximately 5 -15% of patients will develop cervical lymph node metastases at some time in the future; if so, an appropriate neck dissection may be indicated. The tumour may arise as a single lesion or as the most neoplastically advanced area in a diffusely premalignant vermilion with leukoplakia. This pre-malignant change can be treated by a lip-shave and the mucosa lining the lip can be advanced for closure and resurfacing of the lip margin.

Question:

Which amongst the following statements is true regarding thyroglossal duct cysts?

Which one of the following is correct?

A) They present as painful masses during swallowing

B) They mostly occur above the hyoid bone

C) Excision is required due to its malignant potential

D) The duct arises from the foramen caecum in the anterior tongue

E) They may be imbedded in the strap muscles

Answer:E

Explanation:

The thyroid gland develops as a diverticulum from the floor of the pharynx, which later becomes the foramen caecum at the base in the posterior tongue. The thyroid gland then descends inferiorly into the anterior neck through a hollow canal, the thyroglossal duct. This duct normally involutes; however, if this involution fails to occur, a thyroglossal duct cyst may develop. Thyroglossal duct cysts present as asymptomatic masses in the anterior neck and mostly occur below the level of the hyoid bone in the midline. Most patients present before the age of 30. The cysts may become imbedded in the strap muscles. They rarely turn carcinomatous, but may become infected. Recurrent infection is an indication for surgical excision.

Question:

Which amongst the following statements regarding Frey’s syndrome is CORRECT?

Which one of the following is correct?

A) It occurs in about 65% of patients who have undergone surgery to the parotid gland

B) It is caused by growth of the divided sympathetic nerve fibers into the skin

C) Treatment using 1% glycopyrrolate lotion is based on a sympatholytic effect

D) A positive starch-iodine test is diagnostic

E) It can lead to sialolithiasis if left untreated

Answer:D

Explanation:

Gustatory sweating associated with the parotid gland was first described by Duphenix in 1853. In 1923, Lucja Frey, a Polish neurologist, reported a case of parotid gland infection complicated by gustatory sweating and suggested a possible role of the auriculotemporal nerve. Since then, gustatory sweating related to parotid surgery or infection is called Frey’s syndrome. It presents as localized flushing and sweating of the skin overlying the surgical site. It is caused by sprouting of the divided parasympathetic nerve branches to the parotid into the divided sympathetic nerve fibers to the sweat glands. The reported incidence ranges from 7 to 50%. The diagnosis is usually made from history but can be confirmed by the starch-iodine test (Minor’s test - the affected skin is painted with iodine and dusted with starch. The appearance of a bluish discoloration during eating is diagnostic. A positive test is due to a reaction of the starch and iodine in the presence of moisture/sweat). The symptoms are usually a minor problem. Occasionally, treatment may be required if the symptoms are significant. Medical treatment consists of topical scopolamine (may have significant central nervous system side effects if systemically absorbed), or 1% glycopyrrolate, a parasympatholytic cream. The other treatment option is the injection of botulinum toxin into the affected area; the effect however is not durable and will need repeated injections every four to six months. Surgical options are less commonly employed. These include: (i) re-elevating the skin flap and placing temporalis fascia or a dermal flap in the intervening space (ii) Jacobsen’s neurectomy or division of the preganglionic parasympathetic nerve in the middle ear.

Question:

Which one of the following is a characteristic feature of septic shock?

Which one of the following is correct?

A) Decreased blood pressure, increased systemic vascular resistance

B) Decreased peripheral vascular resistance

C) Fall in blood pressure, raise in JVP and pulsus paradoxus

D) Increased blood pressure and increased peripheral vascular resistance

E) Increased pulmonary vascular resistance

Answer:B

Explanation:

Septic shock is usually associated with sepsis or septicemia, usually by Gram-negative (endotoxic shock) bacteria, but can also occur from infection with Gram-positive bacteria or fungi (rare). It is frequently associated with abdominal and pelvic infection complicating trauma or surgery. In early septic shock, the preload and after load are decreased, and the myocardial contractility is increased. In late septic shock, the pre-load and after-load are increased and the myocardial contractility is decreased. Due to endotoxin production in septic shock there is a reduction in peripheral vascular resistance, which leads to vasodilatation.

Question:

A 63-year-old man presents to his GP with difficulty in abducting his right shoulder after he injured this shoulder trying to lift a heavy object. On examination, he is unable to initiate abduction of this shoulder. However, if the arm is lifted to 90 degrees, he is able to hold it in that position. There is tenderness under the acromion process. What is the most likely diagnosis in this patient?

Which one of the following is correct?

A) Anterior dislocation of the shoulder

B) Rotator cuff tear

C) Rupture of the long head of biceps

D) Frozen shoulder

E) Torn supraspinatus tendon

Answer:E

Explanation:

Tear of the supraspinatus tendon commonly occurs in elderly patients. With advancing age the tendinous cuff of the shoulder degenerates and is liable for rupture if subjected to sudden movement or stress. Major tear in the tendon leads to a loss of action of the supraspinatus muscle (tendon). The patient is unable to initiate shoulder abduction as the early phase of abduction requires the action of the supraspinatus muscle. However, the patient may be able to hold the arm in the abducted position (after passive abduction) since this is supported by the action of the deltoid.

Question:

A 34-year-fork lift driver presents to his GP with an acute onset pain in his lower back after he tried to lift a heavy object. On examination, the paraspinal muscles are in spasm and he has altered sensation down the back of both his legs. He is unable to pass urine. Plain radiography does not reveal any fractures. Choose the single most appropriate diagnosis in this patient.

Which one of the following is correct?

A) Lumbar intervertebral disc prolapse

B) Lumbar spinal stenosis

C) Multiple Myeloma

D) Secondary metastatic deposit in the vertebrae

E) Spondylolisthesis at level of L4/5

Answer:A

Explanation:

Lumbar intervertebral disc prolapse usually affects men in their middle age. It is mainly caused by sudden lifting of heavy weight or may be precipitated by trauma. Prolapse of the L4/5 and L5/S1 discs account for about 90% of the cases. The clinical presentation in acute cases includes acute back pain (with radiating pain along the legs), parasthesia and motor weakness in the event of nerve root compression. In severe bilateral nerve root compression, there may be bowel and bladder incontinence, and sexual dysfunction. On examination, the paraspinal muscles may be in spasm and the patient may lean away from the side of the pain with the hip and knee flexed in an effort to reduce the leg pain.

Question:

A 40-year-old marketing executive presents to the surgical outpatient clinic with a lump in her right breast of about 6-weeks duration. On examination, the lump is about 3 x 3 cms in size. Mammogram reveals diffuse micro-calcifications and FNAC is suggestive of a malignancy. There are no palpable nodes or evidence of distant metastasis. Which one of the following is the most appropriate management in this patient?

Which one of the following is correct?

A) Modified radical mastectomy with axillary dissection

B) Preoperative radiotherapy followed by modified radical mastectomy

C) Wide local excision and axillary dissection followed by adjuvant radiotherapy

D) Wide local excision followed by adjuvant radiotherapy

E) Wide local excision with sentinel node biopsy

Answer:A

Explanation:

Modified radical mastectomy with axillary dissection should be recommended even for small tumours in patients with diffuse micro calcifications on mammography. Wide Local Excision with sentinel node biopsy might be appropriate if the area of calcification around the lump is small and well defined. Adjuvant radiotherapy is not indicated after this procedure unless there are 4 or more positive axillary nodes or evidence of lympho-vascular invasion.

Question:

A 69-year-old man presents to the Accident and Emergency department with a 4-5 month history of cough and weight loss. He was diagnosed with prostate cancer six months earlier for which he is undergoing treatment. Chest X-ray reveals a cannonball appearance in the right lung and diffuse infiltrative opacity in the left lung. What is the most likely diagnosis in this patient?

Which one of the following is correct?

A) Carcinoid tumour

B) Large cell undifferentiated carcinoma

C) Lung metastases

D) Mesothelioma

E) Pancoast tumour

Answer:C

Explanation:

The lungs are frequent sites for metastasis from tumours elsewhere in the body. Although, cannonball appearance in chest radiography may strongly suggest a metastatic lesion, it may also be seen with primary lung tumours. It has to be acknowledged that metastatic disease may assume a variety of radiographic appearances from finely nodular disease to an infiltrative, poorly defined opacity.

Question:

State the one malignancy in which α-feto protein and β-human chorionic gonodotrophin are useful tumour markers.

Which one of the following is correct?

A) Carcinoma of the breast

B) Medullary carcinoma of the thyroid

C) Carcinoma of the pancreas

D) Carcinoma of the prostate

E) Testicular tumour

Answer:E

Explanation:

α-feto protein and β-human chorionic gonodotrophin are sensitive indicators of testicular tumours. One or both of these serum markers are elevated in more than 90% of patients with non-seminomatous germ cell tumours of the testis. Elevated levels of these markers after appropriate treatment indicate the presence of residual disease and thus the need for further therapy.

Question:

A 37-year-old receptionist presents to the surgical out-patient clinic with a 2-week history of periareolar inflammatory mass with discharge from her right breast. There is slight retraction of the nipple. It is diagnosed to be a mammary duct fistula and there is no evidence of malignancy. What is the most appropriate management in this patient?

Which one of the following is correct?

A) Fine needle aspiration cytology

B) Mastectomy and axillary clearance

C) Radical mastectomy

D) Fistulotomy

E) Wide local excision and axillary node sampling

Answer:D

Explanation:

A mammary duct fistula is a communication between the skin (usually in the periareolar region) and a breast duct. The underlying pathology is usually a periductal mastitis or rarely, granulomatous mastitis. The median age of women developing mammary duct fistula is around 35 years. Retraction of the nipple at the site of the involved duct is present in almost all the patients. Some recognized treatment options include excision of the involved duct and fistula alone (Fistulotomy) or excision of the fistula combined with total duct excision (Hadfields procedure – radical subareolar duct excision).

Question:

A 67-year-old gentleman is referred by the GP to the urology out-patient clinic with a 3-4 month history of painless haematuria, increased frequency of micturition and loss of weight. He also complains of generalised tiredness and lethargy. He smokes about 20-25 cigarettes a day. On examination, he appears pale and anaemic. Abdominal examination and per rectal examination are unremarkable. What is the most likely diagnosis in this patient?

Which one of the following is correct?

A) Angiomyolipoma

B) Carcinoma of the bladder

C) Carcinoma of the prostate

D) Renal cell carcinoma

E) Squamous cell carcinoma of the renal pelvis

Answer:B

Explanation:

The history of smoking and other pertinent signs and symptoms in this patient are very suggestive of a carcinoma of the bladder. Carcinoma of the bladder epithelium is the most common tumour of the genitourinary tract. Some of the recognised risk factors for the development of carcinoma of the bladder includes cigarette smoking (more than 20 cigarettes/day increases the risk of developing bladder cancer by 2-6 times), working in the aniline dye industry, rubber industry, petrochemical industry, schistosomiasis infestation of the bladder, local radiation therapy, some chemotherapeutic drugs and long-term catheterisation in paraplegic patients. Patients with carcinoma of the bladder may present with painless haematuria, dysuria, frequency and urgency of micturition. The patient may have symptoms of anaemia such as dry and pale tongue and generalised tiredness. Investigations include urine microscopy and culture (to rule out any infection) and cystoscopy. Endoscopic resection of the mass followed by a 4-6 week course of radiotherapy to the bladder and the pelvic side walls is useful in treating a majority of the tumours.

Question:

A 71-year-old woman who lives in residential care is brought to the Accident and Emergency department with a 12-hour history of severe generalized abdominal pain associated with nausea and vomiting. Her blood pressure is 100/70 mmHg and her heart rate is 102/min. She is in atrial fibrillation and examination of her abdomen reveals absent bowel sounds. Choose the most appropriate diagnosis in this patient.

Which one of the following is correct?

A) Crohn's disease

B) Diverticular disease

C) Mesenteric infarction

D) Mittelschmerz

E) Ulcerative colitis

Answer:C

Explanation:

The history and clinical features in this patient is very suggestive of mesenteric infarction. Although any of the three anterior abdominal aortic branches (coeliac, superior and the inferior mesenteric vessels) may occlude, it is the occlusion of the superior mesenteric artery (SMA) which commonly causes mesenteric infraction. Despite the presence of collateral vessels for SMA, they may not be able to dilate sufficiently and swiftly to overcome the acute reduction in blood flow. The occlusion may be due to a thrombus or an embolus and is seen in elderly patients who are in atrial fibrillation. Clinical features include persistent, severe and generalised abdominal pain. This condition is a surgical emergency as the patient rapidly becomes toxic and may die from septic shock unless the infracted bowel is removed.

Question:

The paediatric surgeons are asked to review a new-born baby boy with mild abdominal distension, bilious vomiting, and failure to pass meconium after 24 hours. Plain abdominal x-ray reveals dilated loops of bowel with fluid levels and barium enema demonstrates a ‘conical appearance’ in a segment of the colon. What is the most likely diagnosis in this baby?

Which one of the following is correct?

A) Infantile hypertrophic pyloric stenosis

B) Intestinal atresia

C) Meckel’s diverticulum

D) Intussusception

E) Hirschsprung’s disease

Answer:E

Explanation:

Hirschsprung’s disease is an absence of ganglion cells in the neural plexus of the intestinal wall. It is more common in boys. The delayed passage of meconium together with distension of abdomen following feeds and bilious vomiting are the usual clinical features. Plain abdominal x-ray may demonstrate dilated loops of bowel with fluid levels. Barium enema demonstrates a ‘conical appearance’ in the affected part due to the dilated ganglionic proximal colon and the distal aganglionic bowel failing to distend.

Question:

A 39-year-old man walks into A&E after being assaulted with a baseball bat. He had a momentary loss of consciousness but feels fine at present. Skull X-ray reveals a linear fracture over his right parietal area. Whilst in casualty, he suddenly becomes confused and later unconscious with a GCS of 8. His right pupil is dilated. What is the most likely diagnosis in this patient?

Which one of the following is correct?

A) Subarachnoid haemorrhage

B) Subaponeurotic haematoma

C) Subdural haematoma

D) Extradural haematoma

E) Diffuse axonal injury

Answer:D

Explanation:

Acute extradural haematoma should be suspected after a head injury where the patient has a fluctuating level of consciousness (though not always). The patient may briefly lose conscious, but soon recover (lucid interval). They are usually associated with trauma and are seen in the young. Extradural bleeds are commonly due to fractured temporal or parietal bones causing injury to the middle meningeal artery or vein. With increasing bleed (haematoma), lateralizing signs develop including an ipsilateral dilated pupil and contralateral hemiparesis. This eventually leads to a bilateral fixed pupil and coma which culminates in respiratory arrest.

Question:

A 32-year-old lady presents to the surgical out-patient clinic with intermittent dysphagia for solids and liquids, which is exacerbated by stress. She also gives a history of delayed regurgitation of food. There is no gastric air bubble seen on plain radiography and chest x-ray reveals a double right heart border. What is the most likely diagnosis in this patient?

Which one of the following is correct?

A) Pharyngeal palsy

B) Achlasia cardia

C) Plummer-Vinson syndrome (Pharyngeal web)

D) Syringomyelia

E) Retrosternal goitre

Answer:B

Explanation:

The history and findings in this patient is very suggestive of achlasia cardia, a condition where there is a neuromuscular failure of relaxation at the lower end of the oesophagus due to loss of ganglia from the Auerbach’s plexus. It affects more females than males (3:2) and is common during the third decade of life. There is progressive dysphagia to solids and liquids, chest pain and regurgitation of old food from the dilated oesophageal sac. There is no gastric air bubble because the dilated oesophagus never completely empties and therefore swallowed air cannot pass into the stomach. Chest x-ray shows air or fluid level behind the heart and the expanded oesophagus gives the appearance of a ‘double right heart border’.

Question:

A 69-year-old gentleman presents to his GP with hoarseness of voice of three months duration. He is known to have COPD for which he is on steroid inhalers and he smokes 20 cigarettes per day. On examination, the throat appears inflamed with white patches. In addition, the larynx and vocal cords also appear red and beefy. What is the most likely diagnosis in this patient?

Which one of the following is correct?

A) Laryngeal carcinoma

B) Sicca syndrome

C) Laryngeal papillomata

D) Candidiasis of the larynx

E) Chronic laryngitis

Answer:D

Explanation:

Candidiasis of the larynx is common in patients using steroid inhalers. Very young or old, diabetics, immuno-suppressed (cytotoxics, steroids, haematological malignancies, AIDS) are at an increased risk. These lesions appear as creamy white patches on the mucosa, surrounded by a thin margin of erythema. Patches are hard to remove and they bleed if scraped. Antifungal agents such as nystatin or Amphotericin B are useful to treat this condition. Antibiotics should be avoided (or withdrawn) if possible.

Question:

An eight-month-old male baby with haemophilia is referred by the GP to the surgical out-patient clinic with history of intermittent episodes of inconsolable crying and vomiting. The parents say the baby’s stools are mixed with blood. On examination, a mass is palpable over the right side of abdomen. What is the most likely diagnosis?

Which one of the following is correct?

A) Intussusception

B) Ano-rectal atresia

C) Mid-gut malrotation

D) Meconium ileus

E) Volvulus neonatorum

Answer:A

Explanation:

This baby is most likely to have intussusception, which is caused due to invagination of a segment of bowel into its adjoining lower segment. It is more common in boys and usually occurs under the age of one. Intussusception is associated with haemophilia, Henoch-Schonlein purpura, haemangiomas and GI lymphomas. Clinical features include severe colicky abdominal pain (causing intermittent inconsolable cries with the child drawing up the legs) and vomiting. The infant may pass ‘redcurrant jelly’ stools and a sausage shaped mass is palpable on abdominal examination. Rectal examination may reveal blood.

Question:

An 86-year-old woman who lives in a nursing home is brought to the Accident and Emergency department by the paramedics. She was attempting to stand from a chair unassisted when she cried out and dropped back into the seat. She is in considerable pain, and her leg is shortened and externally rotated. She is a long-term smoker with a 30/day history. What is the most likely underlying pathology for her fracture?

Which one of the following is correct?

A) Paget’s disease

B) Osteoporosis

C) Bone metastasis

D) Osteoarthritis

E) Osteogenesis imperfecta

Answer:B

Explanation:

This aetiology for fracture in this patient is most likely to be due to osteoporosis. This is not an unusual story for a pathological fracture, occurring with very minimal force. The patient’s age, sex and smoking history are all risk factors for osteoporosis. Whilst bone metastases can also cause pathological fractures, they are much less likely than osteoporosis. Osteogenesis imperfecta is a rare condition that presents during childhood.

Question:

You are doing a busy on-call and have three sick patients to review. A young man in the orthopaedic ward is known to be a complainer. He has complained about the wait in the Accident and Emergency department, the fact that his light is not working and that his dinner was too small. It is 2am and he is now complaining that his fractured wrist is hurting more and more. On examination, his forearm is tense and swollen, and passive extension of his fingers causes him to cry out. What would you do?

Which one of the following is correct?

A) Prescribe a stat dose of morphine IV and administer it

B) Contact your senior urgently

C) Reassure the patient and plan to review later

D) Prescribe fluids because you suspect he is dehydrated

E) Prescribe an oral dose of paracetamol

Answer:B

Explanation:

The clinical signs and symptoms in this patient – swelling, disproportionate pain and pain on passive movement of the affected group of muscles - are typical of compartment syndrome, and cannot be ignored. (Paraesthesia, pulselessness and paralysis are late features). Although complaining patients can make a junior doctor’s life difficult, it cannot be assumed that they are making an unnecessary fuss. Compartment syndrome is a limb-threatening emergency that needs to be acted upon without undue delay.

Question:

A 67-year-old lady slips whilst gardening and falls on her right side. She is unable to stand and is brought into hospital by ambulance. On examination, she is seen to be in obvious discomfort. Her right hip is flexed, but there is no mal-alignment. Radiographs demonstrate a simple, undisplaced, trochanteric fracture.

Which one of the following is correct?

A) Total hip replacement

B) Dynamic hip screw

C) A-O Cannulated screws

D) Intramedullary nailing

E) Hemiarthroplasty

Answer:B

Explanation:

An undisplaced extracapsular fracture, such as in this case, is unlikely to result in avascular necrosis and can, therefore, be appropriately treated with a dynamic hip screw. An undisplaced intra-capsular fracture can be treated with A-O Cannulated screws (or treated conservatively) and intramedullary nailing is usually used for displaced/unstable extra-capsular fractures (of the shaft). A displaced intra-capsular fracture of the neck of femur carries a high risk of avascular necrosis of the femoral head and is, therefore, more appropriately treated with a hemiarthroplasty.

Question:

An 84-year-old woman, who is currently an inpatient on the Orthopaedic ward, has undergone an emergency hemi-arthroplasty after sustaining a Garden Type IV fracture of the neck of femur three days ago. She has been very reluctant to mobilise and today the nurses have noticed her to be confused. On reviewing her charts, her heart rate is 92 beats/min, temperature is 37.9 degree centigrade and her oxygen saturation is 90% on room air.

Which one of the following is correct?

A) Fat embolus

B) Pulmonary embolus

C) Pneumonia

D) Empyema

E) Bronchiectesis

Answer:C

Explanation:

It is very likely that this patient has developed pneumonia due to her poor mobilisation post-operatively. Pneumonia is the one of the common complication in post-operative patients. Patients who are immobile are at increased risk of pneumonia, as well as thrombus formation. DVT/PEs tends occur later, typically around 10 days, although this diagnosis must excluded. Urinary tract infections are also a common complication, and will commonly present with confusion followed by sepsis, especially in the elderly. Fat embolism is a rare but serious complication in which respiratory failure is associated with neurological symptoms as well as a petechial rash of the conjunctiva and mucosae. Empyema and bronchiectesis do not fit in with the clinical history.

Question:

A 56-year-old woman presents to her GP complaining of pain in her right groin of insidious onset. She states that the pain is worse for the first few minutes after getting up, and it is stopping her from enjoying her hobby of walking and gardening. On closer questioning she states that many of her joints are stiff and sore, and that her mother had similar problems. On examination, she is tender on palpation in the right groin, and internal rotation of the hip is decreased. Bouchard’s and Heberden’s nodes are seen on both hands.

Which one of the following is correct?

A) Paget’s disease

B) Fracture of the neck of femur

C) Osteoarthritis

D) Rheumatoid arthritis

E) Osteopetrosis

Answer:C

Explanation:

The signs and symptoms in this patient are most likely to be due to Osteoarthritis. If affecting the hip, it frequently presents with pain in the groin. The reduced internal rotation at the hip is also an early indicator of this diagnosis. The presence of Bouchard’s and Heberden’s nodes suggests that the diagnosis is primary generalised nodal osteoarthritis, which is the most common form of osteoarthritis and is more prevalent in women (female: male = 10:1). Paget’s disease of bone results in increased bone turnover with progressive deformation, although this condition may result in secondary osteoarthritis this is much less common than primary osteoarthritis. Rheumatoid arthritis is a chronic inflammatory condition. Joint involvement is highly variable but is classically symmetrical, affecting the proximal joints of the hand and wrist. Large weight-bearing joints can be affected, resulting in erosions visible on plain radiography and soft tissue swelling.

Question:

A 56-year-old gentleman, with a BMI of 34, presents to his GP complaining of severe pain in his right knee. He states that the pain is worse in the morning. On examination, he has a valgus deformity and an antalgic gait. A radiograph is performed and demonstrates mild osteoarthritic changes.

Which one of the following is correct?

A) Intra-articular steroid injection

B) Partial knee replacement

C) Non-steroidal anti-inflammatory drugs

D) Weight loss

E) Total knee replacement

Answer:D

Explanation:

The decision to operate is always guided by the degree of loss of function as opposed to radiological changes. However, knee replacement must always be approached with caution. First-line treatment for this gentleman will include weight-loss, physiotherapy, and analgesia. Obesity puts massive strain on the lower limb, and evidence suggests that the symptomatic improvement resulting from weight reduction exceeds that experienced after joint replacement.

Question:

A 46-year-old woman with well-controlled rheumatoid arthritis presents to her GP complaining of dry, gritty and itchy eyes. She denies any history of trauma. She also reports her mouth to be quite dry and is unable to speak for long. On examination, her visual acuity is unaffected but is noted to have dry eyes.

Which one of the following is correct?

A) Felty’s syndrome

B) Sicca syndrome

C) Eczema

D) Conjunctivitis

E) Secondary Sjogren’s syndrome

Answer:E

Explanation:

Sjogren’s syndrome is strongly associated with RA (50% of cases). The patient will typically suffer from a severe connective tissue disorder, associated with keratoconjuctivitis sicca (decreased tear production) and/or xerostomia (decreased production of saliva). Histologically, there is plasma cell and lymphocyte infiltration of the secretory glands. Sicca syndrome (meaning ‘dryness’), describes dryness of the eyes and mouth which is not caused by an autoimmune disorder. Felty’s syndrome is a triad of longstanding RA, splenomegaly and leukocytopaenia.

Question:

An 84-year-old woman who underwent a successful total hip replacement 2 months previously returns to her GP once again complaining of pain in the operated hip. She has experienced pain consistently in this hip since her operation, and is finding it difficult to mobilise. Neurovascular examination of the limb is unremarkable and she is apyrexial.

Which one of the following is correct?

A) Fat necrosis

B) Dislocated hip

C) Peri-prosthetic fracture

D) Functional pain

E) Osteomyelitis

Answer:C

Explanation:

Peri-prosthetic fractures may be sustained during the insertion of the new femoral head and are relatively common. These fractures are frequently missed as they present with insidious post-operative pain and difficulty mobilising. Peri-prosthetic infections will typically present later (6 months to a year), with loosening of the joint leading to instability. Dislocation is an acute and very painful condition. Functional pain following insertion of any prosthesis should be a diagnosis of thorough exclusion. Management of the patient’s expectations, however, regarding their new joint is important to avoid dissatisfaction with results, and to familiarise the patient with what to expect.

Question:

A 69-year-old man presents to the surgical out-patient clinic with a six-week history of lower abdominal pain, loss of appetite, loss of weight, change in bowel habits and per rectal bleeding. Per rectal examination is unremarkable.

Which one of the following is correct?

A) Rigid sigmoidoscopy

B) Proctoscopy

C) Flexible sigmoidoscopy

D) Colonoscopy

E) Carcinoembryonic antigen

Answer:A

Explanation:

The clinical presentation in this patient is very suggestive of a colonic malignancy – most likely to be in the rectum, sigmoid colon or the descending colon. Left-sided colonic carcinoma presents with change in the bowel habits, bleeding per rectum, tenesmus (mainly rectal carcinoma) and intestinal obstruction, whilst right-sided colonic carcinoma commonly presents with anaemia, tiredness, malaise and loss of weight. Tumours of the rectum may sometimes be palpable on digital rectal examination. Rigid sigmoidoscopy can be used in the out-patient clinic to detect a growth in the rectum or in the distal part of sigmoid colon since it can visualise the colon up to 25 cms from the anal verge (proctoscopy can visualise up to 10 cms). If a tumour or a polyp is detected by rigid sigmoidoscopy examination, then further investigations may be undertaken to visualise more proximal aspects of the colon: Flexible sigmoidoscopy, which is useful in inspecting the colon until the splenic flexure, about 60 cms from the anal verge (but this needs prior planning and may require admission as a day case). Similarly, colonoscopy that can visualise the colon up to the caecum may also need admission as a day-case procedure.

Question:

A 49-year-old gentleman presents to the Accident and Emergency department with an eight-hour history of severe epigastric and central abdominal pain radiating through his back. The pain reduces when he leans forward. He has also had three episodes of vomiting, mostly bilious. He admits drinking up to 50-60 units of alcohol per week. He has experienced similar but less severe episodes in the past. On examination, his temperature is 37.6ºC, pulse rate is 92/min and respiratory rate is 18/min. Abdominal examination reveals tenderness over the epigastric region with moderate degree of guarding but no evidence of peritoneal irritation. Plain radiographs of the chest (erect) and abdomen (supine) are unremarkable.

Which one of the following is correct?

A) Intestinal obstruction

B) Mesenteric ischaemia

C) Acute pancreatitis

D) Perforated peptic ulcer

E) Ruptured abdominal aortic aneurysm

Answer:C

Explanation:

The signs and symptoms in this patient are very suggestive of acute pancreatitis. Alcohol accounts for about 30-35% of all cases of acute pancreatitis. The other important cause of acute pancreatitis is obstruction secondary to gallstones (30-40%). Approximately 25% of patients presenting with acute pancreatitis may have associated cardiovascular (tachycardia) or respiratory (tachypnoea) symptoms. The severity of acute pancreatitis is validated using various prognostic scoring systems. Currently in the UK, the Glasgow-Imrie scoring system is widely used for assessing the severity and predicating the prognosis in acute pancreatitis (age>55 years, white blood cell count>15 × 109/l, glucose>10 mmol/l, urea>16 mmol/l, PaO2<60 mm Hg, calcium<2 mmol/l, albumin<32 g/l, lactate dehydrogenase>600 units/l, asparate/alanine aminotransferase>100 units/l. Serum C-reactive protein concentration, although not part of the Glasgow criteria, has an independent prognostic value if the peak level is >210 mg/l in the first four days of the attack). Serum amylase is a useful indicator to diagnose acute pancreatitis; a diagnosis of acute pancreatitis is likely if the level is three times the upper limit of normal although this may vary between laboratories depending on the hospital policy/guidelines. An ultrasound of the abdomen is indicated in all patients with acute pancreatitis to determine the presence/absence of biliary calculi. A CT of the abdomen should be performed on all patients with severe acute pancreatitis, preferably between days 3 and 10 following the onset of symptoms, to rule out pancreatic necrosis.

Question:

A 61-year-old woman presents to the surgical out-patient clinic with a 6-8 week history of colicky pain over her left lower abdomen, abdominal bloating, flatulence and occasional constipation. She states that the symptoms settle after defecation. She does not report of any per-rectal bleeding. On examination, there is fullness and mild tenderness over her left iliac fossa. Per rectal examination is normal.

Which one of the following is correct?

A) Diverticulosis

B) Ulcerative colitis

C) Hiatus hernia

D) Inguinal hernia

E) Colorectal cancer

Answer:A

Explanation:

The most likely diagnosis in this patient is diverticulosis or diverticular disease. Symptomatic diverticular disease is characterized by non-specific attacks of vague abdominal pain, mainly over the left iliac fossa, abdominal bloating, flatulence, changes in bowel habits and constipation. The pain is colicky in nature, which is often relieved by passing flatus or after defecation. Fullness or tenderness in the left iliac fossa, or occasionally a tender, palpable loop of sigmoid colon, may be felt on abdominal examination. In patients with a history suggestive of diverticular disease, barium enema is the first-line of investigation. If patients are presenting with diverticulitis then barium enema examination may be done once the acute symptoms have subsided.

Question:

A 44-year-old woman presents to her General Practitioner with a four-week history of pain in her right upper quadrant, itchy skin and painful joints. On examination, she appears jaundiced, has finger clubbing, xanthelasmata and increased pigmentation in her skin. Abdominal examination reveals a hepato-splenomegaly.

Which one of the following is correct?

A) Primary biliary cholangitis

B) Chronic hepatitis

C) Primary sclerosing cholangitis

D) Wilson’s disease

E) Primary biliary cirrhosis

Answer:E

Explanation:

Primary biliary cirrhosis is a chronic, progressive non-suppurative form of cholestatic disease of the liver. Nearly 75-90% of patients affected by the disorder are women. The aetiology is unknown, although it thought to be an autoimmune disorder. The disease leads to destruction of the small-to-medium bile ducts, which leads to progressive cholestasis and often end-stage liver disease. The patient may be present with pruritis, fatigue, jaundice, hepato-splenomegaly and melanotic skin pigmentation. Other recognized features include clubbing, xanthelasmata and arthralgia.

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Question:

A 30-year-old woman presents to the Accident and Emergency department with a 48-hour history of severe right-sided abdominal pain, painful micturition, fever, chills and rigors. She underwent cystoscopy 5 days ago. Her temperature is 38.3º C. On examination, she is warm with sweaty peripheries and is tender over her left loin region. There are pus cells and casts on examination of her urine.

Which one of the following is correct?

A) Ruptured ovarian follicle

B) Glomerulonephritis

C) Urinary tract infection

D) Pyelonephritis

E) Diverticulitis

Answer:D

Explanation:

Pyelonephritis usually presents with severe loin pain, chills, rigor, pyrexia, burning micturition, and increased urinary frequency and urgency. There may be renal tenderness and tenderness over the iliac fossa on the affected side. Pyelonephritis may present with associated constitutional symptoms such as headache, lassitude and nausea. The risk factors for pyelonephritis include the use of urinary catheters, cystoscope, surgeries on the urinary tract, renal stones and enlarged prostate in males. Urine microscopy reveals pus cells and cast cells. Ultrasound is a very useful investigation to clinch the diagnosis. Plain abdominal x-ray may reveal a renal calculus, which may be the aetiology for pyelonephritis. In pyelonephritis caused by underlying anatomical disorders or a pathological obstruction, an intravenous urogram or abdominal CT are valuable investigations, and may demonstrate enlarged kidneys with poor flow of dye through the kidneys. Some recognised complications of pyelonephritis include chronic pyelonephritis, renal scarring and renal failure, perinephric abscess and sepsis.

Question:

A 24-year-old man is brought to the Accident and emergency unit after he was violently assaulted by some youths outside a night club in a drunken brawl. He is conscious but is complaining of severe discomfort in his pelvic region. On examination, he appears to be in hypovolaemic shock with a blood pressure of 100/70 mmHg and a pulse rate of 114/min. Local palpation reveals marked tenderness over the suprapubic region and the iliac crests bilaterally. Further examination reveals the pelvis to be unstable, suggestive of a fracture. Bruising is noted over the penis, scrotum and the perineum. A per rectal examination reveals a high riding prostate.

Which one of the following is correct?

A) Injury to the spermatic cord

B) Injury to the peripheral sacral nerves

C) Injury to the cauda equine

D) Injury to the prostate

E) Injury to the urethra

Answer:E

Explanation:

The signs and symptoms in this patient are highly suggestive of a urethral injury. Hypovolemia is due to the loss of blood from the associated pelvic fracture. Urethral injury should be suspected in the setting of pelvic fractures, straddle-type injuries, traumatic catheterization, or any penetrating injury to the perineal region. Amongst others, the important symptoms of urethral injury include pain, inability to pass urine and haematuria (macroscopic or microscopic). Physical examination may reveal blood at the urethral meatus and a high-riding prostate may be identified upon rectal examination. Extravasation of blood may occur along the fascial planes leading to bruising in the perineum, scrotum and penis. The urethra may be injured anywhere along its course. The membranous urethra is more prone to injury from pelvic fractures because the puboprostatic ligaments fix the apex of the prostate gland to the bony pelvis and thus cause shearing of the urethra when the pelvis is displaced. The bulbar urethra is susceptible to blunt force injuries because of its path along the perineum. Straddle-type injuries from falls or kicks to the perineal area can result in injury to the bulbar urethra. The penile urethra is less likely to be injured from external trauma because of its mobility, but iatrogenic injury may occur during catheterization or cystoscopy. If urethral injury is suspected, the patient should be discouraged from passing urine. Urethral catheterisation should be avoided. Retrograde urography is the investigation of choice in suspected urethral injuries. If surgical intervention is required, then suprapubic catheterisation may be required. Complications of urethral injuries include infection, bleeding, stricture, erectile dysfunction and urinary incontinence.

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Question:

Which amongst the following conditions does not result in an increase in the prostate specific antigen (PSA) levels?

Which one of the following is correct?

A) Seminoma of testis

B) Following catheterization

C) Prostatitis

D) Carcinoma of prostate

E) Benign prostatic hypertrophy

Answer:A

Explanation:

The prostate specific antigen (PSA) is an enzyme produced by the prostate. Its normal function is to liquefy gelatinous semen after ejaculation, thus allowing the spermatozoa to more easily navigate through the cervix. The PSA test measures the blood level of Prostatic Specific Antigen. PSA levels under 4 ng/mL are generally considered normal; however, in individuals below the age of 50 sometimes a cut-off of 2.5 ng/mL is used as the upper limit of normal. The common causes of high PSA levels are carcinoma of the prostate, enlargement of the prostate (BPH)) and prostatitis. It can also be elevated after urinary catheterization and may be raised for 24 hours after ejaculation.

Question:

A 62-year-old gentleman who smokes about 15 cigarettes per day presents to his General Practitioner with a 4-5 week history of dragging discomfort in his left loin. He feels generally tired and reckons that he has lost some weight recently. He also states that he has noticed passing some blood in his urine. On examination, his blood pressure is 154/96 mmHg and his pulse rate is 78/min. A left loin mass is felt on per abdominal examination. He is also noticed to have a left-sided varicocele, which he states to have developed in the last few days. Urinalysis reveals 3+ blood.

Which one of the following is correct?

A) Squamous cell carcinoma of the renal pelvis

B) Transitional cell carcinoma of the bladder

C) Adenoma of the renal cortex

D) Nephroblastoma

E) Adenocarcinoma of the kidney

Answer:E

Explanation:

The features in this patient are suggestive of an adenocarcinoma of the kidney (syn: Hypernephroma; Grawitz’s tumour), which presents as well-circumscribed lesions in the renal cortex. It is more prevalent in patients over 40 years of age and affects more males than females (2:1). Some recognised risk factors for the development of this tumour includes smoking, genetic factors, a high intake of fat, oil and milk, and exposure to toxins such as lead, cadmium, asbestos and petroleum products. The well-recognised clinical features of this condition include a dragging discomfort in the loin and a triad of haematuria (with occasional clot colic), flank pain (in 35-40%) and a palpable abdominal mass (in 25-45%). In men, a rapidly developing varicocele (most often on the left) is a characteristic sign. This is because the left testicular vein drains into the left renal vein (varicocele associated with a right-sided renal carcinoma is less common since the right testicular vein drains directly into the inferior vena cava). The patient may also manifest symptoms (features) of hypertension, erythrocytosis and hypercalcaemia.

Question:

A 61-year-old prison warden who smokes 15 cigarettes per day presents to his GP complaining of pain in both calves. He states that the pain comes on when he walks about 200 metres, and that it improves upon rest. Upon direct questioning he states the pain is relieved after a few moments of standing still or taking a seat. He is not troubled by the pain at night. Examination is largely unremarkable, although both feet are pale and slightly cold. There are no skin changes.

Which one of the following is correct?

A) Spinal claudication

B) Critical ischaemia

C) Peripheral arterial disease

D) Varicose veins

E) Peripheral neuropathy

Answer:C

Explanation:

This is a classical presentation of peripheral arterial disease, presenting with intermittent claudication. The lack of rest pain indicates this is not critical ischaemia. Spinal claudication is a misnomer. This condition mimics intermittent claudication, but is due to spinal impingement, often due to osteoarthritis. The story is similar to that of intermittent claudication, but the patient will be relieved only by sitting down, which takes pressure off the lumbar nerve roots. They will also be able to walk for hours whilst pushing a shopping trolley, as bending forward also relieves the pressure. Intermittent claudication is associated with the presence of cardiovascular risk factors, including smoking, hypertension, hyperlipidaemia and diabetes.

Question:

A 70-year-old man, who was previously fit and healthy, is brought to the Accident and Emergency department with sudden onset left-sided loin/back pain. He describes the pain as tearing in nature, constant and 10/10 in severity. Urine dipstick shows +++RBCs. He describes no urinary symptoms, but is visibly pale and sweaty. Abdominal examination shows diffuse guarding but no expansile mass. His pulse is 120 bpm but he is otherwise haemodynamically stable.

Which one of the following is correct?

A) Ultra-sound of the renal tract

B) CT angiogram of the abdomen

C) Intravenous urogram

D) Abdominal X-ray

E) MR scan

Answer:B

Explanation:

This gentleman is likely to have a dissected abdominal aortic aneurysm. The tearing nature of the pain, and the patient’s gender and age suggest this diagnosis. It is a vital differential not to be missed in a patient who presents with sudden-onset back-pain. The alternative differentials include ureteric calculus, pancreatitis and myocardial infarction. In a leaking aortic aneurysm there will often be haematuria. In the presence of rupture, the aneurysm will be impalpable because, unlike unruptured aneurysm, which is tense and distended, after rupture it is less so and therefore less readily palpable. A CT angiogram is the investigation of choice in this patient.

Question:

A 29-year-old woman who works as a beautician presents to her GP in some embarrassment. She states that she has noticed an ‘ugly’ swelling running along the outside of her leg from behind her knee to her ankle. The swelling is blue in colour and she states that when she accidentally banged whilst moving a table a few weeks back it bled for around an hour. On examination, she also has a similar swelling on the contralateral leg.

Which one of the following is correct?

A) Long saphenous varicose vein

B) Varicocoele

C) Saphena varix

D) Short saphenous varicose vein

E) Arteriovenous malformation

Answer:D

Explanation:

This is likely to be a varicosity of the short (or lesser) saphenous vein, probably due to incompetence at the sapheno-popliteal junction. It is more common in women although it can occur in men. The bilateral incompetence points to a possible congenital defect in venous anatomy. Varicose veins are more friable than normal veins, and minor trauma can lead to significant bleeding.

Question:

A heavy smoking 67-year-old is forced by his wife to present to his GP following a “funny turn”. He states that for 20 minutes the day before the right side of his face drooped and he found it hard to find his words. On close questioning he admits that he has once or twice found that his vision has suddenly been lost in one eye for a short time. His pulse is regular.

Which one of the following is correct?

A) Urgent CT scan of the head

B) Urgent Electroencephalogram

C) Urgent Electrocardiogram

D) Urgent Cholesterol check

E) Urgent Carotid Doppler Ultrasound

Answer:E

Explanation:

This gentleman describes a transient ischaemic attack with episodes of amaurosis fugax. This most commonly occurs due to atherosclerotic stenosis of the carotid vessels and is most appropriately and most urgently investigated with carotid Doppler or Duplex imaging. Twenty-four hour ECG monitoring may also be necessary as there may be an intermittent arrhythmia.

Question:

Hypertrophic scars

Which one of the following is correct?

A) are usually seen over the extensor surfaces

B) may result from excessive wound tension

C) commonly extend beyond the margins of the original scar

D) have a strong genetic predisposition

E) never improve with conservative treatment

Answer:B

Explanation:

Hypertrophic scar is a form of excessive healing resulting from overproduction of several components of the healing process, namely fibroblasts, collagen, elastin and proteoglycans. The incidence of hypertrophic scars is highest in: wounds crossing flexor surfaces; wounds crossing tension lines; areas of excessive wound tension and movement; deep dermal burns and wounds left to heal by secondary intention (more than 3 weeks). Hypertrophic scars are confined to the margins of the original scar whilst keloids outgrow the wound (scar) area. Hypertrophic scars do not have a genetic predisposition; keloids are thought to have a genetic link. Hypertrophic scars respond to appropriate conservative treatment, including topical steroids and compression therapy, and subside with time.

Question:

Keloids:

Which one of the following is correct?

A) are caused by wound haematoma and infection

B) are less common in children and young adults

C) usually develop within weeks of initial injury

D) are characterised by an increased collagen degradation

E) extend beyond the margins of the original scars

Answer:E

Explanation:

Keloids are dermo-proliferative disorders unique to humans. The aetiology of keloids is unclear although various theories have been purported including familial tendency such as an autosomal dominant or recessive inheritance, hormonal influence, altered immunological response, enhanced role of transforming growth factor–ß, abnormality of keratinocyte control over fibroblasts, and down-regulation of apoptosis related genes. Factors such as haematoma, infection and wound dehiscence predispose to hypertrophic scar formation (not keloids). Keloids extend beyond the original scar margins whilst hypertrophic scars are confined to the borders of the original wound. Keloids are more common in wounds that cross tension lines and in areas such as the earlobe, presternal and deltoid regions. They commonly affect children and young adults, and they undergo rapid growth during puberty and increase in size during pregnancy. Hypertrophic scars generally develop within weeks of injury, whereas keloids can develop up to one year later. Collagen synthesis is three times higher in keloids than in hypertrophic scars and 20 times higher in keloids than in normal skin. The absolute amount of collagen is also increased in keloids, indicative of increased collagen synthesis or decreased collagen degradation.

Question:

Regarding Staphylococci

Which one of the following is correct?

A) They are never seen as a skin commensal

B) They typically appear as clusters of red, rod shaped organisms on Gram staining

C) Staphylococcus epidermidis is the most common cause of post-operative wound infections

D) They can develop resistance to antibiotics through mutation in the gene coding for penicillin-binding protein

E) They can cause erythema and blistering of the epidermis through release of endotoxins

Answer:D

Explanation:

Staphylococci, including Staphylococcus aureus and Staphylococcus epidermidis, are common skin commensals. Staphylococci are Gram-positive cocci and thus stain purple on Gram staining. They characteristically form clusters on microscopy (staphyle meaning ‘bunch of grapes’ and coccos meaning ‘granule’ in Greek). Staphylococcus aureus is the most common cause of post-operative wound infections. Resistance to commonly used beta-lactam antibiotics, such as penicillins and cephalosporins, develops through acquisition of MecA gene, which codes for a mutated form of the penicillin-binding protein. This protein is required for the binding of all beta-lactam based drugs and leads to infections. They are difficult to treat, requiring treatment with antibiotics such as teicoplanin and vancomycin. Scalded Skin Syndrome is caused by release of exotoxins produced by Staphylococcus aureus that leads to erythema and blistering of the epidermis.

Question:

Which micro-organism is associated with infections following leech therapy?

Which one of the following is correct?

A) Aeromonas hydrophila

B) Pasteurella multocida

C) Streptococcus epidermidis

D) Mycobacterium marinum

E) Pseudomonas aeruginosa

Answer:A

Explanation:

Medicinal leeches can salvage failing flaps or replanted parts when there is venous congestion. They secrete a local anticoagulant, hirudin, which allows bleeding for 8 – 12 hours. Patients on leech therapy can develop infection with Aeromonas hydrophila, a Gram-negatvie anaerobic rod. These bacteria are endosymbiotic within the leech and they inhibit growth of other bacteria. They aid the nutrition of the leeches by producing digestive enzymes to break down red cells and haemoglobin.

Aeromonas hydrophila is commonly sensitive to quinolones such as ciprofloxacin and patients on leech therapy should ideally be commenced on this antibiotic.

Question:

Choose the statement that is true regarding bones:

Which one of the following is correct?

A) Long bones and iliac crest are formed by intramembranous ossification

B) In primary bone healing callus is minimal

C) Nutrient arteries supply the bones at the sites of muscle attachments

D) Osseoconduction is controlled by bone morphogenic proteins (BMPs)

E) Bone grafts without periosteum undergo less absorption

Answer:B

Explanation:

Intramembranous ossification occurs by direct deposition of bone within a vascularized membranous template and occurs in the flat bones of the face, calvarium and ribs. Long bones and iliac crest are developed by enchondral ossification from a cartilage precursor.

The bone derives its blood supply by the following routes: periosteal, apophyseal, epiphyseal and nutrient arteries; the latter supplies via the medullary cavity. Primary bone healing occurs if bone ends are directly apposed rigidly. The inflammatory and proliferative phases are less marked and callus formation is minimal.

Bone graft healing occurs through incorporation (adherence of graft), osseoconduction (bone graft as a scaffold along which vessels and progenitor cells travel), osseoinduction (differentiation of mesenchymal cells into osteocytes – this process is controlled by BMPs) and osteogenesis (formation of new bone by surviving cells within the bone graft). Bone grafts with intact periosteum undergo less absorption.

Question:

During the angiogenesis phase of wound healing there is:

Which one of the following is correct?

A) epithelial cell migration towards the angiogenic stimulus

B) maturation of fibroblasts

C) proliferation of keratinocytes

D) proteolytic degradation of the basement membrane of the parent vessel

E) altered mmp and timp profiles

Answer:D

Explanation:

Angiogenesis refers to the formation of new blood vessels from pre-existing vessels at the site of injury. Four steps are recognised during this process; these include: (i) migration of endothelial cells (not epithelial cells) towards the angiogenic stimulus; (ii) proteolytic degradation of the parent vessel basement membrane; (iii) proliferation of endothelial cells behind the leading front of migrating cells; and (iv) maturation of endothelial cells. Fibroblasts and keratinocytes play crucial roles in other stages of the wound healing process such as granulation tissue formation and epithelialisation. Alteration in MMP and TIMP profiles are seen during the reorganization phase of the wound healing process and not during angiogenesis.

Question:

Myofibroblasts:

Which one of the following is correct?

A) are present in the healing wound from about 72 hours after wounding

B) reach a maximum level within 4-5 days of initial injury

C) have structural property similar to that of collagens

D) help in the proliferation of endothelial cells

E) are responsible for healing of the wound in a scarless fashion as seen in foetal wounds

Answer:A

Explanation:

Myofibroblasts appear in the wound approximately three days after wounding and increase in number to a maximal level between the 10th and 21st days. Myofibroblasts are characterised, among others, by the presence of stress fibres that contain a-smooth muscle actin and indented nuclei, and thus have structural properties between those of a fibroblast and a smooth muscle cell. Their main function is to contract the granulation tissue and deposit new ECM. Although they promote wound closure, myofibroblasts are also responsible for subsequent wound contracture and scarring.

Question:

Marjolin’s ulcer

Which one of the following is correct?

A) is a BCC arising on a background of Bowen’s disease

B) is a premalignant skin condition

C) is an aggressive ulcerating SCC

D) commonly occurs in poorly-controlled diabetic patients

E) is an ischaemic ulcer in patients with chronic arterial insufficiency

Answer:C

Explanation:

Although Jean Marjolin (1828) first described an indolent ulcer arising in a burn scar, this term currently encompasses SCCs arising from any form of long standing chronic ulcers or scars. Other chronic conditions such as sinuses and chronic lymphoedema can give rise to Marjolin’s ulcer. Most series indicate a recurrence of 20-25%. However, it remains rare with an estimated incidence of 1.7% of chornic wounds. Osteomyelitis also predisposes to the development of a Marjolin’s ulcer. It arises secondary to chronic inflammation in a non-healing wound and may occur after a long time, sometimes decades following initial injury. It has a 30-40% rate of metastases Most series indicate a recurrence of 20-50%. However, it remains rare with an estimated incidence of approximately 1.7% of chronic wounds.

Question:

Choose the correct statement regarding the risk factors for the development of skin cancer:

Which one of the following is correct?

A) Ultraviolet B sunlight is only associated with melanomas

B) Actinic keratosis is a precursor of BCC

C) p53 gene is the most commonly mutated tumour suppressor gene

D) Organ transplant recipients have twice the risk than the normal population

E) Fitzpatrick type 6 skin have a higher incidence of skin cancer

Answer:C

Explanation:

Ultraviolet radiation causes mutation in the p53 gene, a tumour suppressor gene. This gene, in the normal state, prevents a cell with DNA damage to progress through the cell cycle and induces apoptosis. p53 is the most commonly mutated tumour suppressor gene and is found in more than 90% of SCCs and in most BCCs and actinic keratoses.

Actinic keratosis (AK) is a precursor of SCC. Approximately 16% of AKs will progress to invasive SCC. Clinical manifestations of this development include erythema, pain, ulceration or hyperkeratotic thickening. Patients who have been on long-term immunosuppressants, e.g., organ transplant recipients are at a greater risk (50-100 times) of developing skin cancers (due to reduced cell-mediated immunity). Fitzpatrick type 6 skin is seen in people of Afro-Carribean descent. People with a fair skin complexion (Fitzpatrick types 1 and 2) have a higher incidence of skin cancer.

Question:

Ewing’s sarcoma:

Which one of the following is correct?

A) usually affects the skull

B) spreads by haematogenous route

C) rarely metastasizes

D) is an eponym for chondrosarcoma

E) is resistant to chemotherapy

Answer:B

Explanation:

Ewing’s sarcoma usually involves the long bones or the soft tissue. Involvement of the skull or facial bones is however rare. In the craniofacial region, the mandible is the most common site of occurrence of these tumours. Patients present with severe pain and secondary swelling of the affected bone. It disseminates via the haematogenous route commonly to the lungs and bones (15-30% of patients may have metastatic disease at the time of presentation). Primary radiotherapy and neo-adjuvant chemotherapy have improved survival rates.

Question:

Rhabdomyosarcomas

Which one of the following is correct?

A) are the most common soft tissue sarcoma of childhood

B) are more common in Afro-Carribeans

C) arise from migratory neural crest cells

D) most commonly affect the long bones

E) are resistant to systemic chemotherapy

Answer:A

Explanation:

Although rhabdomyosarcomas are the third most common solid extracranial tumour of childhood after Wilms tumour and neuroblastoma, they are the most common soft tissue sarcoma of childhood. There is no established racial predilection. It is a malignant tumour arising from cells of mesenchymal origin of a skeletal muscle lineage. They usually manifest as an expanding mass with symptoms dependant on the location; for example, orbital rhabdomyosarcomas may present with proptosis. It commonly involves the soft tissues of the head and neck region (about 25-30%), the extremities (20-25%) and the genitourinary tract (about 18-20%). Surgical exsion is the treatment of choice. However, survival may be increased by adjuvant radiotherapy and multi-agent chemotherapy.

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Answer:A

Explanation:

Although rhabdomyosarcomas are the third most common solid extracranial tumour of childhood after Wilms tumour and neuroblastoma, they are the most common soft tissue sarcoma of childhood. There is no established racial predilection. It is a malignant tumour arising from cells of mesenchymal origin of a skeletal muscle lineage. They usually manifest as an expanding mass with symptoms dependant on the location; for example, orbital rhabdomyosarcomas may present with proptosis. It commonly involves the soft tissues of the head and neck region (about 25-30%), the extremities (20-25%) and the genitourinary tract (about 18-20%). Surgical exsion is the treatment of choice. However, survival may be increased by adjuvant radiotherapy and multi-agent chemotherapy.

Question:

Which amongst the following statements is correct regarding the prevalence of breast cancers?

Which one of the following is correct?

A) Hereditary breast cancer accounts for 2% of cases

B) Presence of the BRCA gene confers a 25% risk of developing breast cancer

C) Lobular carcinoma in situ (LCIS) confers a 20% risk of developing breast cancer

D) LCIS occurs predominantly in women after menopause

E) Tubular carcinoma accounts for 20% of breast cancer

Answer:C

Explanation:

Hereditary breast cancer accounts for 5-10% of breast cancer cases and is mainly caused by BRCA gene mutations. The presence of this gene confers a 60 –85% risk of developing breast cancer.

Lobular carcinoma-in-situ arises from the epithelium of breast lobules and confers a twenty percent risk of developing cancer in either breast. LCIS occurs predominantly in premenopausal women. It is usually an incidental histological finding and has no typical radiologic or physical manifestations. Invasive ductal carcinoma accounts for the majority of all breast cancer cases, followed by invasive lobular carcinoma (5-15%). Other types (medullary, mucinous, tubular) are rare and accounts for about in 2-6% of breast cancers.

Question:

Which of the following statements is correct regarding breast cancers?

Which one of the following is correct?

A) Lobular Carcinoma In Situ (LCIS) differs radiologically from Ductal Carcinoma In Situ (DCIS) by typical diffuse long radio-opaque strands on mammograms

B) Tubular carcinoma of the breast is a poorly differentiated tumour with bad prognosis

C) Microcalcifications on mammograms are typical signs of intraductal carcinoma

D) Stage IV (AJCC classification) disease indicates locally advanced breast cancer

E) Lobular Carcinoma In Situ is confined by the basement membrane of the breast ducts

Answer:C

Explanation:

DCIS, also known as intraductal carcinoma, is confined by the basement membrane of the ducts and can present with a breast mass, nipple discharge or Paget’s disease. They may be asymptomatic and detected through screening programmes as mammographic microcalcifications.

On the contrary, LCIS arise from the epithelium of the breast lobules and has no radiologic manifestations. Tubular carcinoma is a rare histologic variant of breast cancer and tends to be highly differentiated with excellent prognosis.

The American Joint Committee on Cancer (AJCC) TNM staging system is based on clinical and pathologic information. Stage I and II are considered early breast cancer; stage III locally advanced breast cancer and stage IV metastatic breast cancer.

Question:

Which of the following is true regarding lymphatic drainage of breast?

Which one of the following is correct?

A) Fifty percent of the lymphatic drainage of the breast occurs through the axillary nodes

B) The level of axillary lymph nodes is described in relation to the pectoralis major muscle

C) Rotter’s nodes are lymph nodes along the serratus anterior muscle

D) Inadvertent injury to the thoracodorsal nerve during axillary dissection results in a winged scapula deformity

E) Palpable axillary adenopathy is a contraindication to sentinel lymph node biopsy

Answer:E

Explanation:

About 75% of the lymphatic drainage of the breast is to the axillary basin, most of the rest is to the internal mammary nodes and some to the inframammary nodes. Rotter’s nodes are interpectoral nodes between the pectoralis major and minor muscles. The axilla is divided anatomically into three levels in relation to the pectoralis minor muscle. Level I nodes are located lateral to the pectoralis minor muscle, level II behind and level III medial to it. The thoracodorsal nerve supplies innervation to the latissimus dorsi muscle. The long thoracic nerve innervates the serratus anterior muscle, inadvertent damage to which will result in winged scapula.

Sentinel lymph node biopsy (SNLB) identifies the first lymph node receiving drainage from a primary neoplasm. Contraindications to SNLB include multicentric carcinoma, locally advanced disease and palpable axillary adenopathy. A node filled with tumour will not take up mapping agent giving a false-negative result.

Question:

Which of the following is true regarding breast tumours?

Which one of the following is correct?

A) Her-2/neu amplification is associated with a poorer prognosis in node-positive breast cancer patients

B) Aromatase inhibitors are only effective in pre-menopausal women

C) Tamoxifen acts mainly on the progesterone receptors

D) p53 is a tumour suppressor gene which can be found on chromosome 13

E) Patients with high concentrations of cyclic AMP binding proteins have good prognosis

Answer:A

Explanation:

25-30% of breast cancers overexpress the oncoprotein Her2/neu, a transmembrane tyrosine kinase receptor, which is associated with a poorer prognosis in node-positive women. However, it seems to be of less value in delineating the prognosis in node-negative women. Abnormal expression of p53, a tumour suppressor gene found on the short arm of chromosome 17, is often found in patients with Li-Fraumeni syndrome, who have a greatly increased risk of breast, ovarian and bowel cancer.

Tamoxifen acts both as estrogen agonist and antagonist, which may result in incomplete blockage of the estrogen receptor thus contributing to its adverse effects.

High concentrations of cyclic AMP binding proteins, the regulatory subunits of protein kinase A in a major second messenger system, are present in 10-15% of breast cancers and is associated with a very poor survival rate. The concentration of this can be used to identify a subgroup of patients who do not have axillary node involvement but yet a poor prognosis.

Question:

Which of the following is true regarding breast diseases?

Which one of the following is correct?

A) Fibroadenoma typically occurs bilaterally in puberty

B) The majority of phylloides tumours degenerate to sarcoma

C) Women with fibrocystic disease in their breasts have an increased risk of developing breast cancer

D) Accessory nipples may occur outside the milk lines

E) Paget’s disease of the nipple is a benign eczematous condition

Answer:D

Explanation:

Accessory nipples develop along the mammary ridge or milk line (line from the axilla to the groin), most commonly just below the normal breast. Approximately 50% of the patients and sites outside the milk lines have been described: scapula, thigh and head and neck.

Fibroadenoma is most common between women aged 20 –50 and is usually unilateral. It is due to benign fibroepithelial profliferation.

Phylloides tumours (also called cystosarcoma phylloides) are rapidly growing fibroepithelial periductal tumours. The majority are benign, although they may recur locally. Malignant degeneration to sarcoma is reported in 6% of cases. Fibrocystic disease is the most common among all benign breast conditions, commonly presenting as cyclic, diffuse nodules in both breasts. Fibrocystic changes alone do not confer an increased risk of developing breast cancer.

Paget’s disease is a form of intraductal carcinoma that spreads into the surrounding nipple-areola complex. It is associated with an underlying breast malignancy with 50-60% of those having a palpable malignant mass. Of the patients without a mass lesion, 30% will later be found to have an invasive carcinoma.

Question:

A 60-year-old lady sustained a Colle’s fracture of the right wrist, which was treated in a Plaster of Paris cast. A few weeks after removal of the plaster she noticed difficulty in extending the right thumb. The most likely cause is:

Which one of the following is correct?

A) Compression neuropathy of posterior interosseous nerve

B) Transection of posterior interosseous nerve by fracture fragment

C) Adhesion of extensor pollicis longus tendon to fracture callus

D) Rupture of extensor pollicis longus tendon

E) Joint stiffnessc

Answer:D

Explanation:

Colle’s fracture was first described by Abraham Colle in 1814. Originally described as low-energy extra-articular fracture of distal radius, it results from a fall on an outstretched hand with an impact on the palm. The fracture typically occurs through the distal metaphysis approximately 4 cm proximal to the distal end of the radius. There is dorsal displacement of the distal fragment, described as the dinner fork deformity. These fractures can be treated conservatively in Plaster of Paris cast following reduction. One of the complications is rupture of the extensor pollicis longus tendon, which winds around the dorsal tubercle of Lister. This is believed by many to be an attrition rupture over the fracture callus. However, some hold the view that it is due to an avascular necrosis of the tendon due to disruption of its periosteal blood supply.

Question:

The cause of joint deformity in arthritis due to Systemic Lupus Erythematosis is:

Which one of the following is correct?

A) Synovial proliferation

B) Cartilage destruction

C) Ligamentous laxity

D) Osteophyte formation

E) Deposition of amyloid in the joint cavity

Answer:C

Explanation:

Systemic lupus erythematosis (SLE) is an autoimmune disorder characterized by involvement of various organ systems in the body including skin, kidneys, central nervous system, musculoskeletal and cardiovascular system. A malar rash (butterfly rash) is one of the pathognomic clinical sign of this condition.

These patients also develop polyarthritis, mainly of the proximal and interphalangeal joints (Jaccoud’s arthritis). The primary pathology is the laxity of ligaments, which causes secondary joint deformity. Wrist and small joints of the hand are affected and the involvement is usually symmetric. The articular cartilage is unaffected in the initial stages.

Question:

Which of the following statements regarding carbon monoxide toxicity is correct?

Which one of the following is correct?

A) The elimination half-time of carbon monoxide is 2 hours

B) It causes a rightward shift of the oxyhaemoglobin dissociation curve

C) Carboxyhaemoglobin absorbs light at the same wavelength as oxyhaemoblobin (660nm)

D) COHb level of more than 40% is fatal

E) COHb level of 20% are asymptomatic

Answer:C

Explanation:

Carbon monoxide is a colourless and odourless gas, which diffuses rapidly into the blood. It binds very well to haemoglobin with a 240 times greater affinity, so that oxygen cannot be transported causing hypoxaemia. The elimination half-time is 250 minutes and can be reduced to 40 minutes with administration of 100% oxygen.

Carboxyhaemoglobin (COHb) absorbs light at same wavelength as oxyhaemoglobin, therefore pulse oximetry readings are unaffected or even falsely raised.

COHb level of more than 60% can be fatal. Up to a level of 10%, symptoms may be absent; this will be followed by headache, confusion with levels of up to 20%.

Question:

In severe burn injuries

Which one of the following is correct?

A) Patients have inappropriately high growth hormone secretion

B) Oxandrolone may enhance outcome by reducing protein catabolism

C) Thrombocytosis is common

D) Endotoxins are released from Gram-positive bacteria

E) Cytokines are depleted during septic episodes

Answer:B

Explanation:

Oxandrolone is a synthetic derivative of testosterone, which acts as an anabolic steroid and may enhance outcome in severe catabolic state such as starvation and severe burn injuries.

Patients with severe burn injuries have inappropriately low growth hormone secretion and IGF-1 production. Thrombocytopaenia and depletion or impaired synthesis of coagulation factors are common.

Endotoxins are components of the wall of Gram-negative bacteria and are released upon lysis of bacteria. Endotoxaemia stimulate excessive amounts of cytokines(TNF-&Alpha, IL-1&Beta, IL-6, IL-8) secretion leading to widespread tissue injury and organ failure.

Question:

A 25-year-old man has sustained an open fracture of his right leg in a road traffic accident. He has a transverse fracture of the lower third of tibia and fibula and a large soft tissue defect measuring 5X9cm over the medial aspect. The rest of his leg is bruised and covered with abrasions. His ankle pulses are not palpable and the foot feels cold. His Blood pressure is 70/50mmHg. Clinically he has no other injuries. The most important step in the immediate management of this patient is:

Which one of the following is correct?

A) Urgent exploration for repair of vessels

B) Angiography to locate vascular injury

C) Urgent CT scan abdomen to rule out intra-abdominal injury

D) Amputation of foot since unlikely to be salvageable

E) IV fluids to normalise haemodynamic status

Answer:E

Explanation:

Vascular injury can accompany open fractures of the lower limb and may require urgent exploration. However, when a patient is hypotensive, it is not possible to diagnose a vascular injury of the leg. The first line of management of any trauma patient should be along ATLS guidelines and in this patient intravenous fluids are the immediate first step in the management. Once the patient is haemodynamically stable, the vascular status of the leg should be reassessed. The underlying cause of hypovolemia needs to be urgently investigated.

Question:

A 23-year-old man is brought to the Accident and Emergency department with a gunshot injury to his right upper thigh. On examination, the wound lies about 4 cm below the inguinal ligament. Local neurological examination reveals numbness over the anterior thigh and medial aspect of his leg. Although he is able to flex the hip, he is unable to extend the knee on the affected side. The nerve likely to be injured is:

Which one of the following is correct?

A) Pudendal nerve

B) Sciatic nerve

C) Lateral cutaneous nerve of thigh

D) Saphenous nerve

E) Femoral nerve

Answer:E

Explanation:

The femoral nerve arises from the lumbar plexus (L2-4). It exits the pelvis by passing beneath the inguinal ligament to enter the femoral triangle. The femoral nerve innervates the iliopsoas, which helps in flexion of the hip, and the quadriceps, which helps in extension of the knee. The motor branch to the iliopsoas originates in the pelvis proximal to the inguinal ligament. The sensory branch of the femoral nerve, the saphenous nerve, innervates the skin over the medial aspect of the thigh and the anterior and medial aspects of the calf. Motor loss includes weakness of the quadriceps muscle and decreased patellar reflex (knee jerk). The ankle jerk is preserved, since it is innervated by the tibial nerve [S1-S2].

Question:

The commonest pathogen isolated from osteomyelitis of the lower limb following trauma is:

Which one of the following is correct?

A) Coagulase negative Staphylococcus

B) Coagulase positive Staphylococcus

C) Group B Streptococcus

D) Pseudomonas

E) Enterobacter

Answer:B

Explanation:

Osteyomyelitis is a term used to describe acute or chronic infection of the bone. It is a recognised complication of open fractures of the tibia. Ger (1970) identified four major causes of chronic osteomyelitis following lower limb fractures:

Retained necrotic or infected bone

Avascular or infected scar

Dead space in the surgical site

Inadequate skin cover

Prophylactic antibiotics have a role in preventing osteomyelitis. Patients who receive prophylactic antibiotics have 4.5% risk of developing osteomyelitis whereas it rises to 24% in those who did not receive any antibiotics. The commonest organism isolated is Coagulase positive Staphylococcus.

Question:

Which of the following is a contraindication to topical negative pressure therapy?

Which one of the following is correct?

A) Bacterial colonisation of the wound

B) Wounds on the face

C) Exposed tendon

D) Communication with cerebrospinal fluid

E) Advanced age

Answer:D

Explanation:

Prophylactic antibiotics have a role in preventing osteomyelitis. Patients who receive prophylactic antibiotics have 4.5% risk of developing osteomyelitis whereas it rises to 24% in those who did not receive any antibiotics. The commonest organism isolated is Coagulase positive Staphylococcus.

In 1997, Argenta and Morykwass published their results of successfully treated wounds with topical negative pressure therapy. Since then Vacuum Assisted Closure (VAC therapy) has been popular in management of difficult wounds where surgical closure is difficult.

Vacuum Assisted Closure can be used as a temporizing measure or a definitive wound closure method. It is not suitable in the following instances:

a. Communication with cerebrospinal fluid. This poses a risk of coning.

b. Malignancy in the wound bed

c. Wounds with necrotic tissue or slough (although not an absolute contraindication). They have to be surgically debrided prior to application of topical negative pressure therapy

d. Patients on anticoagulation or those with bleeding problems

Question:

Which of the following statements is true regarding compartment syndrome?

Which one of the following is correct?

A) There are three compartments in the leg

B) An open wound does not exclude compartment syndrome

C) The superficial and deep posterior compartment are released through an incision 2cm lateral to subcutaneous border of tibia

D) The hand has two compartments

E) A compartment pressure more than 20 mmHg is always an indication for fasciotomy

Answer:B

Explanation:

The leg has four compartments: anterior, lateral, superficial posterior and deep posterior. All these compartments can be decompressed through two incisions. One incision is made 2cm posterior to the medial border of tibia and through this the posterior two compartments (superficial and deep) are decompressed. The second incision is made 2cm lateral to the lateral border of tibia and through this the anterior and lateral compartments can be decompressed. An open wound in the leg does not indicate released or decompressed compartments.

There are ten compartments in the hand: thenar, hypothenar, adductor pollicis, four dorsal interossei, three volar interossei. These can be released with longitudinal incisions over the dorsum of the index and ring metacarpals, the ulnar aspect of the little finger metacarpal and the radial side of the thumb metacarpal or in first dorsal web space.

Normal tissue pressure varies from 2 – 7 mmHg. Most surgeons agree that a compartment pressure of >30 mmHg is an indication for treatment although a rise in pressures over serial measurements is more significant. In addition, the diastolic pressure of the patient has to be taken into consideration since a fall in diastolic pressure may decrease the threshold for a fasciotomy.

Question:

Which of the following statements regarding tetanus is correct?

Which one of the following is correct?

A) The average incubation period for tetanus is less than 24 hours

B) There are no contra-indications to administering tetanus toxoid

C) Tetanus prophylaxis is not required in patients with a frostbite injury

D) Passive immunization is not necessary in patients who have received two or more tetanus toxoid injections

E) It is caused by a Gram-negative micro-organism

Answer:D

Explanation:

Tetanus, caused by Clostridium tetani, an obligate anaerobic gram-positive bacillus is characterized by acute onset of hypertonia and painful muscular contractions. This forms spores, which are resistant to heat, desiccation, and disinfectants and can persist in normal tissue for months to years. They produce tetanospasmin, a neurotoxin, which causes the clinical manifestations of tetanus. The average incubation period for tetanus is 10 days, with a range of 4 – 21 days. In severe trauma cases, however, tetanus can appear as early as 1 to 2 days.

Tetanus immunization depends on previous immunization status and the tetanus-prone nature of the wound. Tetanus-prone wounds include wounds older than six hours, stellate or avulsed wounds of more than 1cm depth, wounds caused by crush, burn or frostbite injuries, those with contaminated / ischaemic tissue. People who have received tetanus toxoid injections more than two or more doses in their life time do not require passive immunization. A history of neurologic or severe hypersensitivity reaction to a previous dose is a contraindication to tetanus toxoid.

Question:

In the TNM classification of Head and Neck cancer metastasis, a single ipsilateral lymph node more than 6cm in size is classified as:

Which one of the following is correct?

A) N1

B) N2a

C) N2b

D) N2c

E) N3

Answer:E

Explanation:

The TNM classification of regional lymph nodes in head and neck cancer is as follows: Nx: Regional lymph-nodes cannot be assessed

N0: No regional nodes

N1: Metastasis in a single ipsilateral lymph node 3cm or less in greatest dimension

N2a: Metastasis in a single ipsilateral node more than 3cm but no more than 6cm in greatest dimension

N2b: Metastasis in multiple ipsilateral lymph nodes none more than 6cm in greatest dimension

N2c: Metastasis in bilateral or contralateral nodes, none more than 6cm in greatest dimension

N3: Metastasis in a lymph node more than 6cm in greatest dimension

Question:

The commonest site of squamous cell carcinoma of the lip is:

Which one of the following is correct?

A) Upper lip

B) Lower lip

C) Oral commissure

D) Upper gingivobuccal sulcus

E) Lower gingivobuccal sulcus

Answer:B

Explanation:

About 93% of squamous cell carcinoma (SCC) of lips occur in the lower lip. 5% occur in the upper lip and 2% in the commissure. Upper lip is the common site for basal cell carcinoma.

Cancer of the lip is associated with the following risk factors:

Heavy smoking

Poor dental hygiene

Chronic alcoholism

Chronic erosive skin disease such as lichen planus

Immunosuppression

SCCs of the lip occur in three forms; exophytic, verrucous and ulcerative. Of these exophytic tumours are commonest and verrucous carcinomas rare.

Question:

The most common site of leukoplakia is the:

Which one of the following is correct?

A) Buccal mucosa

B) Tongue

C) Upper alveolus

D) Lower alveolus

E) Hard palate

Answer:A

Explanation:

Leukoplakia is a premalignant lesion of the oral cavity. The term leucoplakia means white plaque. It is most common in the buccal mucosa, followed by alveolar mucosa, tongue, lip, palate, floor of mouth and gingiva in that order. A small proportion of these lesions become malignant over time.

There are three clinical variants of leucoplakia:

Leukoplakia simplex

Verrucous leukoplakia

Erythroleukoplakia

Of these three, erthyroleukoplakia characterised by white and red areas is the one that is most likely to change into malignancy.

About 80% of leucoplakias show no evidence of dysplasia; 10% show moderate dysplasia and the rest show severe dysplasia. In patients with histological evidence of dysplasia the risk of malignant change is 13%.

Question:

Leukoplakia

Which one of the following is correct?

A) is commonly seen in the sun-exposed skin

B) transforms into malignancy in 80% of cases

C) usually presents as erythematous lesions

D) can be treated with simple surgical excision

E) could lead to the development of basal cell carcinoma

Answer:D

Explanation:

Leukoplakia, literally meaning “white patch,” is seen primarily on the oral, vulval, or vaginal mucosa. Leukoplakia in the mouth is mostly seen in older men with a history of smoking. Ill-fitting dentures and poor dental state are also often associated with this condition. The lesions are elevated, sharply defined patchy areas of keratinisation and are generally lighter in colour (white to grey) than the surrounding tissues. When long-standing, the lesions may exhibit a verrucoid. In smaller lesions, the treatment is generally non-operative, with lip cream, emollients or ointments. Smokers should refrain from the habit. Poorly fitting dentures are refitted and operative dentistry carried out where indicated. Simple excision of the involved mucosa is the primary form of treatment (over the lips, this procedure is called a lip shave or vermilionectomy). Of untreated lesions, 15% to 20% undergo malignant transformation into a squamous cell carcinoma.

Question:

The commonest site of oral cancer is the:

Which one of the following is correct?

A) Tongue

B) Palate

C) Lower alveolus

D) Buccal mucosa

E) Retromolar trigone

Answer:A

Explanation:

The common sites of oral cancer in decreasing frequency of occurrence are:

Tongue 36%

Floor of mouth 35%

Alveolus 16%

Buccal mucosa 10%

Upper alveolus and hard palate 3%

The commonest site in the tongue is along the lateral aspect of the middle third.

Question:

Elective treatment of the lymph nodes in head and neck cancer is indicated if the risk of subclinical neck disease as:

Which one of the following is correct?

A) >20%

B) >10%

C) >40%

D) >50%

E) >60%

Answer:A

Explanation:

The management of clinically node-negative head and neck cancers remain controversial. However, the evidence from prospective and retrospective studies suggests that elective treatment of neck is justified if the chance of subclinical disease is more than 20-25%. The treatment can be either elective lymph node dissection or radiotherapy.

Occult lymph node secondaries are prognostic indicators of the aggressiveness of the tumour.

Two clinical series (Persky and Lagmay, 1999 & Yuen et al. 1997) have demonstrated increased 5-years survival for patients with N0 necks who underwent elective neck dissections.

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Upper alveolus and hard palate 3%

The commonest site in the tongue is along the lateral aspect of the middle third.

Question:

Which of the following is a useful criterion for diagnosing a positive lymph node in CT scan for head and neck cancer?

Which one of the following is correct?

A) Size greater than 0.5cm

B) Lima-Bean shape

C) Peripheral necrosis

D) Fat atrophy around the node

E) Discrete nodes in level IV

Answer:C

Explanation:

The criteria for diagnosing positive nodes in a CT scan are:

extracapsular nodal spread or extension

cervical node diameter >1.0 cm, or >1.5 cm for jugulodigastric and submandibular nodes

Spherical nodal shape, which is more likely to contain malignant disease than oval- or lima bean-shaped nodes, which are usually benign though hyperplastic

groups of three or more contiguous and confluent lymph nodes, each having a maximum diameter of 8–15 mm

evidence of central necrosis, which is seen as a central area of radiolucency surrounded by an enhancing rim of viable cells

Question:

Within what period of diagnosing the original head and neck cancer are synchronous primaries commonly detected?

Which one of the following is correct?

A) 3 months

B) 6 months

C) 9 months

D) 12 months

E) 18 months

Answer:B

Explanation:

The overall incidence of synchronous primary cancer is approximately 10-15%. Most of these lesions occur in the head and neck region, lung and esophagus. Approximately 6% of them may be detected on endoscopy.

Synchronous tumours are diagnosed within 6 months of diagnosing the primary and those diagnosed after 6 months are called metachronous tumours. Treatment of synchronous tumours will require modification of the management plan.

The incidence of metachronous tumour is 15-25% and is mostly identified within the first three years. Metachronous tumours can occur in the head and neck region or in the lungs.

Question:

The commonest malignancy of the parotid gland is:

Which one of the following is correct?

A) Mucoepidermoid tumour

B) Adenocarcinoma

C) Acinic cell tumour

D) Carcinoma ex pleomorphic adenoma

E) Adenoid cystic carcinoma

Answer:A

Explanation:

Approximately 25% of neoplasms in the parotid gland are malignant, of which the commonest type is the muco-epidermoid carcinoma. It is divided into three grades depending on the proportion of the glandular component. Low-grade tumours have a five-year survival of 74%, whereas it is 5% for high grade tumours.

The prognosis is better for patients with low-grade tumours showing more glandular remnants, tumours of increasing histological differentiation and those without lymphatic spread in the nodes.

The tumours involving the superficial lobe are treated by superficial parotidectomy and those involving the deep lobe by total conservative parotidectomy.

Question:

The commonest cause of submandibular gland enlargement is:

Which one of the following is correct?

A) Pleomorphic adenoma

B) Enlargement of lymph nodes within the gland

C) Mucopeidermoid carcinoma

D) Adenoid cystic carcinoma

E) Calculus in the duct

Answer:E

Explanation:

The commonest cause of enlargement of submandibular salivary gland is a calculus in the duct (85%). This is due to the non-dependent drainage of the gland and the mucoid secretions as compared to the parotid gland. Calculous disease manifests as pain and swelling of the gland especially during eating. A calculus can sometimes be felt over the floor of the mouth. A sialogram taken by injecting a dye into the duct can demonstrate the obstruction. Treatment includes, removal of the calculus and marsupialisation of the duct for distal calculi. For proximal calculi near the gland, removal of the entire gland may be indicated. Tumours can also occur in the submandibular gland and almost 50% of the neoplasms in the submandibular gland are malignant.

Question:

Tumours of the lower lip:

Which one of the following is correct?

A) have a late metastases rate of about 40%

B) may present with metastases to neck nodes in up to 30% of patients at time of presentation

C) are significantly more frequent in males

D) are associated with poor oral hygiene

E) are most commonly basal cell carcinomas

Answer:C

Explanation:

Squamous cell carcinomas account for 98% of lower lip tumours. Lower lip cancers predominantly affect males with a male: female ratio of 80:1. The tumours are commonly located between the midline and lateral commisure. Most lip cancers are 1 to 2 cm in size at presentation and require a full-thickness resection of the skin, muscle and underlying mucosa. Clinical metastases to cervical (neck) lymph nodes are seen in less than 10% of patients and approximately 5 -15% of patients will develop cervical lymph node metastases at some time in the future; if so, an appropriate neck dissection may be indicated. The tumour may arise as a single lesion or as the most neoplastically advanced area in a diffusely premalignant vermilion with leukoplakia. This pre-malignant change can be treated by a lip-shave and the mucosa lining the lip can be advanced for closure and resurfacing of the lip margin.

Question:

Which amongst the following statements is true regarding thyroglossal duct cysts?

Which one of the following is correct?

A) They present as painful masses during swallowing

B) They mostly occur above the hyoid bone

C) Excision is required due to its malignant potential

D) The duct arises from the foramen caecum in the anterior tongue

E) They may be imbedded in the strap muscles

Answer:E

Explanation:

The thyroid gland develops as a diverticulum from the floor of the pharynx, which later becomes the foramen caecum at the base in the posterior tongue. The thyroid gland then descends inferiorly into the anterior neck through a hollow canal, the thyroglossal duct. This duct normally involutes; however, if this involution fails to occur, a thyroglossal duct cyst may develop. Thyroglossal duct cysts present as asymptomatic masses in the anterior neck and mostly occur below the level of the hyoid bone in the midline. Most patients present before the age of 30. The cysts may become imbedded in the strap muscles. They rarely turn carcinomatous, but may become infected. Recurrent infection is an indication for surgical excision.

Question:

Which amongst the following statements regarding Frey’s syndrome is CORRECT?

Which one of the following is correct?

A) Results from involvement of the buccal branch of the facial nerve

B) It is caused by growth of the divided sympathetic nerve fibers into the skin

C) Treatment using 1% glycopyrrolate lotion is based on a sympatholytic effect

D) A positive starch-iodine test is diagnostic

E) It can lead to sialolithiasis if left untreated

Answer:D

Explanation:

Gustatory sweating associated with the parotid gland was first described by Duphenix in 1853. In 1923, Lucja Frey, a Polish neurologist, reported a case of parotid gland infection complicated by gustatory sweating and suggested a possible role of the auriculotemporal nerve. Since then, gustatory sweating related to parotid surgery or infection is called Frey’s syndrome. It presents as localized flushing and sweating of the skin overlying the surgical site. It is caused by sprouting of the divided parasympathetic nerve branches to the parotid into the divided sympathetic nerve fibers to the sweat glands. The reported incidence ranges from 7 to 50%. The diagnosis is usually made from history but can be confirmed by the starch-iodine test (Minor’s test - the affected skin is painted with iodine and dusted with starch. The appearance of a bluish discoloration during eating is diagnostic. A positive test is due to a reaction of the starch and iodine in the presence of moisture/sweat). The symptoms are usually a minor problem. Occasionally, treatment may be required if the symptoms are significant. Medical treatment consists of topical scopolamine (may have significant central nervous system side effects if systemically absorbed), or 1% glycopyrrolate, a parasympatholytic cream. The other treatment option is the injection of botulinum toxin into the affected area; the effect however is not durable and will need repeated injections every four to six months. Surgical options are less commonly employed. These include: (i) re-elevating the skin flap and placing temporalis fascia or a dermal flap in the intervening space (ii) Jacobsen’s neurectomy or division of the preganglionic parasympathetic nerve in the middle ear.

Question:

Mucoceles in the oral cavity

Which one of the following is correct?

A) commonly occur in the floor of the mouth

B) are due to aberrant lymphoid tissue

C) are characterized by dark red lesions filled with thrombosed blood

D) are pre-cancerous and hence excision is recommended

E) have a high recurrence rate after excision

Answer:E

Explanation:

Mucocoeles are mucous retention cysts commonly seen in the buccal mucosa or the lower lip. They are benign, smooth, round nodules usually measuring 1 - 2 cm in diameter and filled with saliva or mucus. They are commonly caused by trauma (e.g., biting) to the inner lower lip (75% of cases), buccal mucosa, tongue or gingiva. When they appear on the floor of the mouth they are called ranulas. They are usually very thin-walled and transparent or bluish in colour (because of the thin layer of epithelium covering capillaries). Bleeding into the lesion may cause a bright red colour and occasionally resemble a haemangioma. Mucocoeles located deep in the lip tissue may present as ill-defined discrete masses. These lesions may persist for several days or weeks, rupture spontaneously, usually while eating, but often recur. If they become symptomatic, they can be marsupialized or excised in its entirety. The recurrence rate after removal of these lesions is however high due to the numerous minor salivary ducts and glands present in the lip and other oral mucosal areas.

Question:

Gillick competence is a medico-legal term that refers to:

Which one of the following is correct?

A) Competence of a medical practitioner to perform a procedure

B) Competence of an elderly individual to consent for a medical procedure

C) Competence of an individual below the age of 16 years to consent for a medical procedure

D) Competence of an individual with learning disability to consent for a procedure

E) Competence of a medical practitioner to perform a surgical procedure after being out of work for three years.

Answer:C

Explanation:

Gillick competence is a term used in medical law to decide whether a child (16 years or younger) is able to consent to his or her own medical treatment, without the need for parental permission or knowledge.

The standard is based on a decision of the House of Lords in the case Gillick vs West Norfolk and Wisbech Area Health Authority [1985). The case is binding in England, and has been approved in Australia, Canada and New Zealand.

Question:

Which is a true statement regarding consent:

Which one of the following is correct?

A) The next of kin can give consent for an individual with severe dementia

B) Fathers can always give consent for a medical procedure for children

C) A child less than 16 years can legally give consent for a medical procedure

D) Parents always have a right to deny medical treatment for their children

E) A consent is not legally valid if it is not signed by the patient

Answer:A

Explanation:

A child can give consent if he/she is Gillick competent (able to understand the treatment proposed and its implications).

In the case of a demented person family members cannot give consent, though they are usually involved in the decision making. These patients require two doctors to make a combined decision and document it.

Although mothers can always consent on behalf of children, fathers can give consent only if they are married to the child’s mother at the time or have parental rights.

Parents do not have a right to deny a medical treatment for their child.

Consent can be implied, verbal or written. For most significant medical/surgical procedures a written consent is obtained. If a patient is unable to sign, it can be documented that the patient has agreed to treatment in the presence of a witness.

Question:

Which of the following statements regarding lymphoedema is true?

Which one of the following is correct?

A) Secondary lymphedema is due to an abnormal development of the lymphatic system

B) Milroy’s disease typically affects the lower extremities of young boys

C) Filariasis is a form of primary lymphoedema affecting the lower extremities

D) Lymphoedema praecox usually affects isolated lower limb

E) Lymphoedema praecox is more common in young boys than girls

Answer:D

Explanation:

Lymphoedema can be classified as primary and secondary. Congenital lymphoedema is a primary form and is often noted at birth or soon after. Multiple limbs, genitalia and face may be involved. Bilateral lower limb oedema is the most common presentation. Milroy’s disease is an autosomal dominant form of hereditary lymphoedema both congenital lymphoedema and lymphoedema praecox with a female preponderance. Lymphoedema praecox is usually unilateral and limited to the foot and the calf.

Question:

Which parasite is associated with filariasis?

Which one of the following is correct?

A) Schistosoma mansoni

B) Wuchereria bancrofti

C) Trypanosoma brucei

D) Echinococcus species

E) Clonorchis sinensis

Answer:B

Explanation:

There are several causes of secondary lymphoedema but filariasis due to parasitic infection is the commonest cause worldwide. In Western countries, however, damage to the lymphatic system by surgery, radiation or tumour invasion is the commonest cause. There are two main parasites causing filariasis: Wuchereria bancrofti and Brugia malayi. Wuchereria bancrofti is a nematode worm spread by a mosquito vector. It affects about 120 million people worldwide, primarily in Africa and other (sub) tropical countries. After infection, the worms reside in the lymphatic channels in the lower limbs and disrupt the lymphatic flow causing lymphoedema. In early stages, filariasis can be successfully treated using a drug known as Diethyl Carbamazine. However, in established cases of filariasis with skin changes, even surgical excision fails to obtain satisfactory results.

Question:

Which of the following statements regarding lymphoedema is correct?

Which one of the following is correct?

A) Lymphoedema is limited to tissues superficial to the deep fascia

B) Muscles have an established lymphatic drainage system

C) Embryologically, lymphatics develop from the arterial system

D) About 51% of the body’s albumin is processed daily via the lymphatic system

E) In secondary lymphoedema, 30% of the cases are caused by lipodystrophy

Answer:E

Explanation:

Lymphatics are located in the superfical tissues and therefore lymphoedema is limited to tissues above the deep fascia. Muscles do not have an established lymphatic system. Embryologically, lymphatics develop from the arterial system. About 50% of the body’s albumin is processed daily in the lymphatic system.

Lymphoedema can be classified as primary or secondary. Primary lymphoedema is due to hypoplasia of lymphatics and can manifest in childhood (lymphoedema congenita), adolescence (lymphoedema precox) or in later life (lymphoedema tarda).

Causes of secondary lymphoedema include: obstruction or disruption in the lymphatic system by tumour invasion, infections, irradiation or iatrogenic.

The clinical picture of lymphoedema may be confused with lipodystrophy but the latter is an entity quite distinct from lymphoedema.

Question:

Which amongst the following statement is true regarding treatment of leg ulcers?

Which one of the following is correct?

A) Class III compression stockings provide about 40 to 50 mmHg of pressure at the ankle

B) Diuretics have no role in the treatment of leg ulcers

C) Occlusive dressings are contra-indicated

D) Flaps are never used in the treatment of venous ulcers

E) The commonest location of a venous ulcer is over the lateral malleolus

Answer:A

Explanation:

Compression therapy plays a significant role in the management of chronic venous insufficiency and venous ulcers. Graded compression bandages come in four classes depending on the pressure. Class III (40-50 mmHg) and Class IV (> 60mmHg) stockings are recommended for severe oedema and chronic venous insufficiency. Diuretics, used in conjunction with compression therapy, may assist in fluid mobilization.

Occlusive dressings are less painful to the patient and provide a moist environment promoting a more rapid wound healing.

Surgical intervention for venous ulcers is indicated in intractable pain or failure of non-operative treatment. In exceptional circumstances, fasciocutaneous or free flaps can be used to reconstruct defects. The commonest location of venous ulcers is over the medial malleolus.

Question:

Which amongst the following statements regarding research and statistical methods is correct?

Which one of the following is correct?

A) With a 95% confidence interval there is a 1 in 20 chance of finding a significant result by chance alone

B) A p-value less than 0.05 indicates the difference is too small to be detected by the study

C) A non-parametric test is used for analyzing observations from a population with a normal distribution

D) A type I error is a false-negative result

E) A meta-analysis is a review of multiple case reports

Answer:A

Explanation:

Conventionally, a confidence interval of 95% is taken as the level of statistical significance. This means that a sample difference has a 1 in 20 chance of occurring. A p-value greater than 0.05 does not provide evidence that there is no difference between the groups; rather it states that the difference is too small to be detected by the study.

Parametric tests (e.g. Student’s t-test) are based on the known parameters. If no distributional assumptions can be made, samples must be analysed by non-parametric methods (e.g. Wilcoxon test

A type I error occurs if the null hypothesis is rejected, i.e. a significant result is obtained when the null hypothesis is in fact true, thus producing a false-positive result. A type II error is a false-negative result when an insignificant result is obtained, when the null hypothesis is in fact not true.

Meta-analyses are systematic reviews in which the measures of effect from individual studies are combined into a single overall measure that synthesizes the findings. They are particularly well suited to combine data from randomized controlled trials.

Question:

Which of the following statements regarding body mass index (BMI) is correct?

Which one of the following is correct?

A) It is calculated by dividing height by weight

B) The unit for measuring BMI is kg /cm

C) It is a measure of body fat against muscle mass

D) The upper limit of the normal range is 30

E) The lower limit of the normal range is 18

Answer:E

Explanation:

Body mass index (BMI) is a measure of body fat based on the height and weight that applies both to adult men and women.

It is calculated by dividing the body weight (in kg) by the square of the height (in m). Hence the unit is Kg/m2

Normal limit is: 18 – 25

25 - 30 is considered as overweight

30 – 40 is considered obese and

Greater than 40 is morbidly obese.

A high BMI is associated with an increased complication rate in all major surgical proceures.

Question:

Which amongst the following statements regarding Positron Emission Tomography (PET scan) is CORRECT?

Which one of the following is correct?

A) The tracer is highly specific for cancer cells

B) Inflammation and neoplasia can easily be differentiated

C) PET combined with CT scans provide excellent soft tissue resolution

D) The role of PET scans is in the assessment of the unknown primary

E) PET scans are able to define tumour deposits of only a few cells

Answer:D

Explanation:

Positron Emission Tomography is a noninvasive nuclear medicine imaging technique that measures the metabolic activity of cells (thus it is a metabolic imaging modality looking at function). PET-FDG scans use FDG (fluoro-deoxyglucose – a glucose molecule tagged with a small amount of radioactive element), which is concentrated in cells exhibiting high rates of glycolysis. The tracer-uptake is therefore high in neoplastic cells as well as inflammatory cells. When used in conjunction with CT-scans, PET scan is very effective in detection of cancer or its spread. A significant tumour load more than a few cells is required to define tumour deposits. Although anatomical localization of tumours has improved in combination with CT-scans, efforts to enhance the resolution of soft tissues is currently ongoing.

Question:

Pressure ulcers

Which one of the following is correct?

A) may develop in up to 10% of hospitalised patients

B) most frequently occur over the malleoli

C) are staged by the size of the wound

D) can be predicted using Water’s scale

E) in immobile patients treatment should always be conservative.

Answer:A

Explanation:

In general, about 10% of patients in hospital develop pressure ulcers. They most frequently occur around the pelvic girdle (up to 75%).

The Waterlow scale is often used to score the risk of developing pressure ulcers and include patient’s weight, skin type, continence, mobility, sex and age. Additional points are given for specific risk factors such as poor nutrition, sensory disturbances, smoking and previous orthopaedic surgery or fractures below the waist.

Pressure ulcers are classified into four grades depending on the depth of the ulcer.

Well-motivated, young patients with stable clinical conditions are the best candidates for surgery, whilst patients who are expected to regain their mobility are generally treated conservatively as their pressure ulcers will improve once pressure is relieved.

Question:

Which amongst the following is correct regarding pressure ulcers?

Which one of the following is correct?

A) In stage III pressure ulcers, the ulcer involves the tendon or bone

B) The initial pathologic changes occur in the muscle overlying the bone before involvement of the skin

C) The mainstay of treatment in pressure ulcers is prevention of infection

D) A parabolic relationship exists between time and pressure in the development of pressure ulcers

E) Patients with a Waterlow ulcers of 6 have a very high risk of developing a pressure ulcer

Answer:B

Explanation:

Pressure ulcers are staged as follows:

Stage I: non-blanchable erythema without breach of the epidermis

Stage II: Partial skin loss involving the epidermis and dermis

Stage III: Full-thickness skin loss extending into the subcutaneous tissue but without breach of the underlying fascia

Stage IV: Ulceration through the underlying fascia with extensive deep destruction where bone, muscle, joint or tendon may be involved.

Studies have demonstrated an inverse parabolic relationship between pressure and time. It has also been proven that initial pathologic changes occur in the muscle, followed by the more superficial soft tissue and skin (inverted cone). The mainstay of treatment is therefore relieving the source of pressure.

Question:

The visiting registrar in dermatology is teaching medical students in a tutorial. He mentions that the 5-year survival for patients with malignant melanoma is 100% when histologically, the deepest malignant cell identified has not penetrated this structure.

Which one of the following is correct?

A) Basement membrane

B) Deep fascia

C) Stratum corneum

D) Stratum granulosum

E) Stratum spinosum

Answer:A

Explanation:

Malignant melanoma that has not penetrated the basement membrane is referred to as malignant melanoma in situ. The basement membrane is located at the dermo-epidermal junction, and since the vascular and lymphatic vessels lie in the dermis, there is a much lower likelihood of metastatic spread when the malignancy is confined to the epidermis – an avascular structure. The other strata mentioned in this question are located in the epidermis, superficial to the basement membrace and have no prognostic significance.

Melanocytes are located predominantly in the stratum basale and on malignant transformation can penetrate deeper structures through the basement membrane and into the dermis. The prognosis of malignant melanoma is most closely related to the depth of tumour invasion, Breslow’s thickness. This is measured histologically following excision biopsy of a suspicious lesion. Ulceration, perineural invasion, regional lymphadenopathy, distant metastases are other indicators of a worse prognosis. The location of the lesion has prognostic significance – facial lesions have a poorer prognosis than lesions on the trunk or limbs.

Question:

A general surgeon is performing a laparotomy and asks the medical students in theatre which structure that he will divide can form up to 3cm thick on the abdominal wall and functions to reduce the loss of heat from the internal viscera to the environment. He mentions that it is metabolically active particularly in oestrogen metabolism and can help to contribute to insulin resistance.

Which one of the following is correct?

A) Epidermis

B) Fascia transversalis

C) Peritoneum

D) Rectus abdominis

E) Subcutaneous fat

Answer:E

Explanation:

The subcutaneous fat provides insulation over body cavities and can differ tremendously in thickness between body areas and between individuals. It is made up of adipose cells, fibroblasts and macrophages and is metabolically active, particularly in oestrogen metabolism (the production of oestrogen by subcutaneous fat is one of the explanations behind infertility in the overweight and may serve roles in the pathophysiology of polycystic ovarian syndrome). Furthermore, it provides a store of energy which can be utilized through lipolysis under the influence of steroids and to a lesser extent, adrenalin.

The other structures listed are also divided at laparotomy.

Question:

The consultant neuroradiologist is reviewing T2 weighted MRI scans with the trainee neurologist who strongly suspects multiple sclerosis in one of his outpatients. The radiologist points to a demyelinating lesion within a structure located in the posterior fossa. The neurologist explains this structure is responsible for co-ordination, timing and precision of complex motor movements required for walking and speaking. It receives ascending information on joint position sense.

Which one of the following is correct?

A) Cerebellum

B) Midbrain

C) Occipital cortex

D) Pons

E) Thalamus

Answer:A

Explanation:

The cerebellum is located in the posterior fossa, separated from the occipital cortex superiorly by the tentorium cerebelli. Lesions in cerebellum do not cause paralysis but in-coordination of complex motor movements such as walking, pointing, writing etc. Clinical manifestations of cerebellar disease follow the mnemonic DANISH (Disdiadochokinesia, Ataxia, Nystagmus, Intention tremor, Scanning dysarthria, Heel-shin test positivity). It is commonly involved in multiple sclerosis, tumours, strokes and paraneoplastic disease from solid tumours elsewhere in the body.

Question:

An anatomy demonstrator is presenting pro-sections of the brainstem to a group of medical students. She demonstrates the pyramids of the medulla oblongata, explaining that a group of neuronal axons originating in the primary motor cortex decussates in the pyramids of the medulla oblongata before synapsing with the cell body of the lower motor neurone which relays signals to the skeletal muscle via the motor end plate of the neuromuscular junction.

Which one of the following is correct?

A) Corticospinal tract

B) Dorsal columns

C) Rubrospinal tract

D) Spinocerebellar tract

E) Spinothalamic tract

Answer:A

Explanation:

The corticospinal tract contains first order motor neurones (upper motor neurones) from the primary motor cortex in the frontal lobe to the synapse with the lower motor neurones in the anterior horn of the spinal cord. The majority of these fibres decussate in the medulla, and therefore control motor functions on the opposite or contralateral side of the body. This is the reason why lesions such as infarction or haemorrhage in the cerebral cortex can cause contralateral motor deficits or weakness, that is described as pyramidal in nature (weaker flexors in the legs and weaker extensors in the arms – since gravity trains these muscles to grow stronger compared with their antagonist muscles). The corticospinal tract is therefore also known as the pyramidal tract. Damage to the tract in the spinal cord will cause ipsilateral motor deficits below the lesion which will result in upper motor neurone signs below it, but may cause lower motor neurone signs at the level of the lesion due to damage caused to exiting lower motor neurones.

Question:

A 27-year-old individual with intractable epilepsy, resistant to multiple anti-convulsant medications in combination has a surgical procedure to separate his right and left cerebral hemispheres. As a result, he cannot name objects he holds in his non-dominant left hand, or objects in his left visual field, but can do this if they are held or viewed on the opposite side. His epilepsy has now far less impact on his quality of life.

Which one of the following is correct?

A) Anterior commissure

B) Corpus callosum

C) Interventricular foramen

D) Optic chiasm

E) Septum pellucidum

Answer:B

Explanation:

All of the above named structures lie in the midline on saggital sections of the brain, but it is the corpus callosum that was divided surgically in this patient. The corpus callosum is a huge white matter tract connecting the right and left hemispheres of the brain, containing over 200 million myelinated axons. This procedure is still occasionally used in severe, intractable epilepsy as a treatment of last resort, but leads to a split-brain disconnection syndrome in which objects on the same side as the language centres cannot be named if held or seen in that visual field, since they their names are recognized and processed on the contralateral side of the brain, in the other dominant hemisphere.

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Question:

A 32-year-old local gang leader is involved in a shooting and is brought to casualty against his will although now is in too much pain to resist admission. Although he is not forthcoming with details of the history, he complains that he has been shot in his back and in his shoulder, that he cannot move his leg. On examination he is haemodynamically stable. The consultant examines him soon after and finds he has left leg spastic weakness with hyperreflexia and equivocal plantars with absent joint position sense, vibration and fine touch. His right leg is normal on motor examination but has reduced sensation to pain and temperature sensation from the level of T11 with intact joint position and proprioception.

Which one of the following is correct?

A) Cauda equina traction

B) Complete transection of the spinal cord

C) Damage to conus medullaris

D) Hemisection of the left side of the spinal cord

E) Hemisection of the right side of the spinal cord

Answer:D

Explanation:

This patient has complete hemisection of the left side of his spinal cord, known as the Brown-Sequard syndrome. This causes a characteristic pattern of neurological signs owing to the organisation and decussation of motor and sensory nerve tracts within the spinal cord. Damage to half of the spinal cord causes upper motor neurone signs in the ipsilateral lower limb (since these fibres decussate in the medulla oblongata), loss of fine touch, vibration and proprioception in the ipsilateral limb (dorsal columns), but loss of pain and temperature sensation in the contralateral limb (since the spinothalmic tract decussates close to the entry point of the spinal nerve). The contralateral limb also demonstrates normal motor function without any weakness in a pure lesion.

Brown-Sequard hemisection can be complete or partial and can result from trauma, tumours or demyelinating plaques.

Question:

A 62-year-old receptionist suffers from polymyalgia rheumatica for a number of years and is maintained on 30mg of prednisolone, the minimum dose of steroids required to contain symptoms of morning stiffness and pain. As a consequence of long-term steroids she has developed multiple vertically orientated, atrophic purple linear marks symmetrically on her abdomen that have never been painful, but are a cosmetic problem.

Which one of the following is correct?

A) Burrow

B) Excoriation

C) Fissure

D) Keloid

E) Striae

Answer:E

Explanation:

Long term use of glucocorticosteroids are discouraged due to the length and severity of their adverse side effect profile which increase the risk of dangerous diseases such as hypertension, diabetes and osteoporosis. Steroids also have a number of effects on the skin such as easy bruising, poor wound healing, increased susceptibility to infections and often a rebound flare of inflammatory skin disease, such as psoriasis on cessation. Some individuals develop acne when started on high dose steroids. The lesions described here are abdominal striae which are a result of abnormalities of cutaneous connective tissues in the skin induced by corticosteroids.

Burrow is classically seen in the finger webs of patients with Scabies caused by the parasite Sarcoptes Scabeii, and can be teased out by skilful hands to clinch the diagnosis. Excoriations represent objective evidence of pruritus and may be seen around vesicles, bullae or overlying any skin lesions. Chronic scratching of eczema for example may cause lichenification, where the skin becomes thickened and plaque-like with exaggeration of skin creases – an example of a secondary lesion.

A fissure is a break in the skin, often linear that can result from trauma, infection or inflammation and can be painful. A keloid is a form of scarring caused by an exaggerated response to wound healing with granulation tissue forming beyond the original wound. It is often seen in the context of surgery or piercings, but can also affect inflammatory skin disease such as acne vulgaris. They are more common in certain ethnic groups such as those of African and Asian descent. Keloids are firm, rubbery lesions and are non-tender.

Question:

A 39-year-old retail manager with rheumatoid arthritis presents to her GP with a one month history of pain radiating up her forearm at night, associated with tingling in her thumb, index and middle fingers. She has also noticed that her hands have become a little weaker. On examination, there is wasting of the thenar eminence with loss of sensation over most of the palm lateral to the ring finger, and at the tips of the index and middle finger on the dorsal side. Tapping over the flexor aspect of the wrist seems to reproduce the tingling sensation in her hands and forearm, as does flexion for a prolonged period in the examination room.

Which one of the following is correct?

A) Anterior interosseous nerve

B) Median nerve

C) Posterior interosseous nerve

D) Radial nerve

E) Ulnar nerve

Answer:B

Explanation:

This patient has carpal tunnel syndrome, a very common mononeuropathy that results from compression of the median nerve at the wrist in the carpal tunnel. Females are most at risk because their tendons are a similar size to those in men, although their carpal tunnels are smaller. Patients with rheumatoid arthritis, diabetes, acromegaly, hypothyroidism, amyloidosis or who are pregnant are predisposed to carpal tunnel syndrome. The disease is often bilateral and presentation with pain, typically at night where the hand may be held in a hyperextended position, which compresses the carpal tunnel, increasing pressure on the median nerve. There is weakness in the hand of the pronator teres (pronation), flexor digitorum profundus and superficialis (flexion of the fingers), flexor pollicis longus (flexion of the thumb) abductor pollicis brevis (abduction of the thumb) opponens pollicis (apposition of the thumb and base of little finger. There is sensory loss in the distribution of the nerve, over the lateral aspects of the hand, particularly on the palmar side.

Tinel’s test is often positive where tapping over the carpal tunnel on the flexor aspect of the wrist reproduces paraesthesia in the distribution of the median nerve. Phalen’s test is where there is reproduction of the pain or paraesthesia is produced on flexion of the wrist in less than 60 seconds.

Treatment is with splints that keep the wrist extended at night, steroid injections or decompressive surgery where the flexor retinaculum is divided, thereby increasing the space in the carpal tunnel.

Question:

An 18-month-old child stops playing with his toys and becomes less responsive during the course of the day, developing a fever of 39 degrees. His mother removes his clothes in response to the fever and under his socks finds several purple flat lesions around 6-8mm in diameter bilaterally that do not blanch when she rolls a glass tumbler over them. She calls the ambulance immediately.

Which one of the following is correct?

A) Ecchymosis

B) Haemangioma

C) Haematoma

D) Pupura

E) Telangiectasia

Answer:D

Explanation:

A bleed under the skin (therefore non-blanching due to extravasated blood rather than reactive hyperaemia) can variously be described as purpura, ecchymosis or petechiae. Petechiae are small red-brown lesions, whereas purpura are larger and appear more purple in colour initially although both can appear in meningococcal septicaemia and will result in a positive tumbler test. However, the lesions described in this vignette are more typical of purpura than petechiae owing to their size and colour.

The distinction between ecchymosis and purpura is not clear, although it is the convention that an ecchymosis is used to refer to a larger collection of blood under the skin that may occur commonly from warfarin therapy. Ecchymosis is a term used less by specialists. A haematoma is most often reserved for a palpable collection of blood that can contribute a mass effect if within a mass limited structure (cranium), or can separate tissue planes (subaponeurotic haematoma). They are commonly traumatic rather than secondary to infectious or inflammatory disease.

Telangiectasia are superficial dilated blood vessels that can be blanched with pressure (tel = end, angi = blood vessel, ectasia = dilatation).

Question:

A 34-year-old swimwear model presents to the dermatology outpatient clinic with a two month history of a flesh colour papule on her face. It does not cause any symptoms of itching or bleeding but she feels it is unsightly at photo shoots. On examination there is a 4mm firm flesh coloured papule at her left nasolabial fold. There is no pigmentation.

Which one of the following is correct?

A) Compound naevus

B) Dermatofibroma

C) Intradermal naevus

D) Junctional naevus

E) Viral wart

Answer:C

Explanation:

A naevus is a benign proliferation of a cellular component of the skin. Junctional naevi, intradermal naevi and compound naevi are proliferations of melanocytes and are therefore examples of melanocytic naevi. Junctional naevi appear as flat macular pigmented lesions with collections of melanocytes at the dermo-epidermal junction, intradermal naevi are collections of melanocytes in the dermis and appear as flesh coloured, non pigmented papules, and compound naevi are collections of melanocytes at both the dermo-epidermal junction and the dermis, and are therefore pigmented and raised lesions.

Dermatofibromas are flesh coloured, nodular lesions that commonly grow as a solitary lesion on the legs after an insect bite typically in young adult females. It can cause pain and itching and classically feels like a frozen pea on the skin surface and demonstrates a dimple sign due to tethering to the epidermis. Rarely, malignant transformation within the lesion can occur called dermatofibrosarcomaprotuberans (DFSP).

Question:

A 49-year-old male is gardening when he pricks himself with a rose thorn. It bleeds minimally and he returns to gardening soon after applying a plaster. Two days later he presents to his GP with a deep red pedunculated nodule around 1cm in length from the site of the original trauma. It bleeds substantially on minor trauma and is irritating the patient because he is not able to use his hand properly owing to the bulk and friability of this lesion.

Which one of the following is correct?

A) Basal cell carcinoma

B) Keratoacanthoma

C) Nodular malignant melanoma

D) Pyogenic granuloma

E) Strawberry naevus

Answer:D

Explanation:

This is a classical description of a pyogenic granuloma, a misnomer since it is an acquired capillary haemangioma demonstrating no granulomatous features at all. It commonly follows trauma, and therefore occurs on areas that are prone to it, particularly the hands. It grows quickly as a red nodule that bleeds easily on contact, enlarging over several weeks. Treatment is to remove it surgically, either with a curette, cryotherapy or excision. The major differential is nodular malignant melanoma and the biopsy specimen requires histological analysis to exclude this diagnosis.

A keratoacanthoma is a rapidly growing squamoproliferative nodule that has a keratin plug at its apex, often growing on the face or arms. It is very similar histologically to a squamous cell carcinoma differentiated most accurately on the history of rapid onset from previously healthy skin. Treatment is excision biopsy and exclusion of SCC, although the lesion will resolve spontaneously in most cases.

Question:

A 38-year-old bricklayer of Irish descent presents to general dermatology clinic with a four week history of a change in a mole situated on his upper back that was noticed by his girlfriend. He mentions that it has become larger, with an irregular border, bleeds spontaneously and it has become darker in its central area. He mentions that he frequently suffered from sunburn on his back as a teenager and during his working life.

Which one of the following is correct?

A) Excisional biopsy

B) Incisional biopsy

C) Observation with clinical photographs

D) Punch biopsy

E) Shave biopsy

Answer:A

Explanation:

This patient has a lesion that is very suspicious of a malignant melanoma. Public health campaigns have sought to inform the public to be vigilant for change in moles, to look for the ABCD of change: Asymmetry, Border changes, Colour changes, Diameter. In addition, elevation, enlargement, itch or irritation could indicate malignant transformation. Examination with a dermatoscope by experienced clinicians can identify microscopic features of malignant melanoma. Treatment of suspicious lesions (and clinical examination, even in experienced hands is not 100% sensitive, or 100% specific) is excision biopsy which serves to confirm the histological diagnosis. The primary excision is performed 2mm from the margin of the lesion, since histological depth and grade of lesion will dictate the surgical margins for excision of the scar, to the depth of fascia. Prognosis is closely related to the depth of invasion (Breslow’s thickness, or Clarke’s level) with the thickness of the lesion inversely proportional to the 5 year survival rate, and the presence of nodal or distant metastases. Lesions are poorly responsive to radiotherapy and chemotherapy, contributing to the poor prognosis of advanced malignant melanoma. A clinician should always examine for regional and general lymphadenopathy and abdominal organomegaly in the setting of any suspicious mole.

A punch biopsy is often reserved for medical dermatoses whose diagnoses is uncertain and for removing circular lesions easily with a margin. Incisional biopsies can be useful for looking for malignant change within an existing lesion, or for microbiological analysis. Clinical photographs are useful in patients with multiple atypical moles, or at high risk of malignant transformation and can be used to monitor lesions for change at serial follow-up.

Question:

During a neuroanatomy teaching session, pro-sections are used to teach medical students about the anatomy of the cranial nerves. One particular nerve is described as unique as it is the only one to emerge from the dorsal aspect of the brainstem, it has the longest intracranial course of any of the cranial nerves, it decussates before its motor target and is the smallest nerve in that it contains the least number of axons.

Which one of the following is correct?

A) Abducens nerve

B) Hypoglossal nerve

C) Olfactory nerve

D) Spinal accessory nerve

E) Trochlear nerve

Answer:E

Explanation:

The trochlear nerve provides motor innervation to a single skeletal muscle, the superior oblique and for this reason, contains the smallest number of axons. It exits the brainstem from the dorsal (posterior) rather than the ventral (anterior) aspect and decussates before reaching its target organ, the only cranial nerve to do so. The superior oblique muscle is responsible for depression of the adducted eye (therefore looking down and in, like when descending stairs or reading), and its secondary action is intorsion (inward rotation). Its complex action results from the fact that the muscle is not a rectus muscle (straight muscle) which only has a single action – the superior oblique in contrast attaches eccentrically to the posterior surface of the globe. Damage to the trochlear nucleus affects the contralateral eye (since this nerve decussates before its target muscle), but since the contribution of this nerve is small, other clinical manifestations due to damage to adjacent structures will dominate the clinical picture. Damage to the peripheral nerve in isolation is rare, and usually only happens in the context of trauma, although mononeuritis (inflammation of the vasa nevorum) can affect any peripheral nerve.

Question:

A 57-year-old Japanese male presents to his family doctor with a two week history of dyspepsia, poor appetite and difficulty swallowing. He mentions that he has lost 8kg in weight in the previous month. On examination, he is obviously cachectic, has an epigastric mass, a lymph node palpable in the left supraclavicular fossa. When the physician is palpating for axillary lymph nodes, he notices that there is a purple, velvety lesion affecting both the patient’s axillae.

Which one of the following is correct?

A) Acanthosis nigricans

B) Congenital naevus

C) Metastases

D) Necrolytic migratory erythema

E) Tylosis

Answer:A

Explanation:

Acanthosis nigricans is a paraneoplastic phenomenon, in that it is caused by the humoural effects of a tumour on distant organs rather than a result of direct metastasis. It is associated particularly with adenocarcinoma of the stomach and oesophagus, with insulin resistant states such as type II diabetes, polycystic ovarian syndrome, the metabolic syndrome and obesity. This man has adenocarcinoma of the stomach as evidenced by clinical findings and the nationality – Japan has an epidemic incidence of gastric cancer owing to the frequent consumption of pickled foods and meats.

Tylosis is paraneoplastic thickening of the epidermis of the hands, and necrolytic migratory erythema is associated with a glucagonoma.

Question:

A 64-year-old female fractures her femoral neck after falling down the stairs at home. This is repaired under spinal anaesthetic and sedation with a hemi-arthroplasty. Eight hours later she is sitting up in bed complaining of a severe headache that she says is 8/10 on a severity scale and unresponsive to paracetamol that the nurses gave 1 hour earlier. She is afebrile, her respiratory rate is 22 and pulse rate 110/min. She was given 1.2g of co-amoxiclav during her operation intravenously. There is no neck stiffness or photophobia.

Which one of the following is correct?

A) Analgesia misuse headache

B) Idiopathic intracranial hypertension

C) Meningitis

D) Post dural puncture headache

E) Tension headache

Answer:D

Explanation:

This patient has had a spinal anaesthetic which involves inserting a needle into the subarachnoid space in sterile conditions and injecting small amounts of local anaesthetic bupivacaine and often an opiate such as diamorphine. This provides adequate analgesia below the level of infiltration and sedation is used to relax the patient, who often is not fit for a general anaesthetic.

Much like lumbar punctures, patients who have spinal anaesthetics can suffer from leakage of CSF from the puncture site which leads to intrathecal hypotension, causing a postural headache that is worse in an upright position (and can be severe), and is alleviated by lying recumbent. This can happen after neurosurgical procedures, trauma or lumbar puncture. The treatment of choice is a blood patch in which blood is collected under sterile conditions and injected over the meninges at the site of puncture, which then clots and seals the dural defect.

Meningitis is clearly a worry in any patient with a severe headache, particularly those who have had instrumentation of the CSF space. However, the patient is apyrexial with no neck stiffness or photophobia, and the headache of meningitis should not be orthostatic as in this case. Eight hours post-operative is perhaps too short a period of time for bacteria to have multiplied to cause clinical pyogenic meningitis without underlying immunosuppression.

Question:

A 35-year-old male presents to his GP suffering from excruciating headaches that start behind his left eye and feel as if it is boring into his head. This always starts at around 2am and lasts around three hours during which he cannot sleep and finds himself pacing up and down the corridor to get some relief but unsuccessfully. During these episodes his left eye turns red with left sided ptosis and lacrimation. These occur every night for several weeks before an intermission of several months without them followed by relapse.

Which one of the following is correct?

A) Acute angle closure glaucoma

B) Acute iritis

C) Cavernous sinus thrombosis

D) Cluster headache

E) Scleritis

Answer:D

Explanation:

This patient is suffering from cluster headaches which are so severe as to be designated as the worse pain ever felt by most patients who experience them. They occur with remarkable regularity, waking patients up from sleep, but in contrast to migraines do not cause nausea or a desire to lie still in a quiet, dark environment but restlessness. They are however, unilateral and last for weeks before remitting and then return to affect the patient in the same pattern. They are much more common in men and more common in smokers. Standard analgesics have no effect on cluster headaches, and high flow oxygen therapy with sumatriptan can be attempted. Prophylactic treatments include verapamil and steroids, although others such as lithium may be tried. Cluster headaches in a minority of patients can be chronic and therefore suffered by patients every day for years. It is considered to be due to vascular dilatation that impinges on the trigeminal nerve.

Question:

A 12-year-old boy presents to the dermatology tumour clinic wearing long sleeved clothing, gloves and a wide-brimmed hat. He is accompanied by his mother who relates a history of severe burning on the child’s first exposure to sunlight, and that despite sun avoidance and sunblocks ever since, he repeatedly burned on minimal exposure. She is concerned about new growths on her son’s skin, particularly around his face and arms. On examination, he has multiple freckles and telangiectasia around his nose and cheeks with scaly skin with palpable actinic keratoses. Of particular concern, he has a nodular, pearly telangiectatic growth on his left ear and a squamoproliferative growth on the back of his hand near several other actinic keratoses. This lesion is 2 by 3 cm with a heavily crusted surface and a palpable dermal component. There is ipsilateral axillary lymphadenopathy. His parents are alive and well, with no comparable history.

Which one of the following is correct?

A) Ehlers-Danlos syndrome

B) Gorlin’s syndrome

C) Pseudoxanthoma elasticum

D) Von-Hippel Lindau syndrome

E) Xeroderma pigmentosum

Answer:E

Explanation:

This patient has xeroderma pigmentosum, an autosomal recessive disorder of DNA repair in which there is defective cellular repair mechanisms for UV induced damage to cellular components of the skin. The phenotype can vary depending on the specific mutations but commonly patients burn on first and repeated exposure to sunlight, and suffer from cutaneous malignancies at a very young age, commonly dying of metastatic squamous cell and malignant melanomas.

Patients develop freckles at an early stage, telangiectasia with areas of hyper- or hypo-pigmenation with the development of scaly skin and actinic keratoses. Soon after this, the development of basal cell carcinomas (such as on this patient’s ear) and squamous cell carcinomas (on this patient’s hand) develop in addition to malignant melanoma.

Treatment is by very strict avoidance of any sunlight but severe forms of the disease are fatal in the second or third decades. Genetic counselling is advised for parents of patients who can be treated for skin cancers as they present, although the fight against malignancy will prove ultimately futile.

Question:

A 10-year-old boy is brought to the GP by his mother by a rash on his legs and buttocks which does not blanch under a glass tumbler. He also complains of pain in his large joints and his abdomen. His mother mentions that he has been otherwise well apart from a sore throat two weeks ago that has now cleared. The GP carries out a urine dipstick which demonstrates microscopic haematuria.

Which one of the following is correct?

A) Henoch-Scholein purpura

B) Idiopathic thrombocytopenic purpura

C) Meningitis

D) Meningoccoal septicaemia

E) Non-accidental injury

Answer:A

Explanation:

This is a typical case of Henoch-Schonlein purpura, a rash that presents in young individuals in dependent extensor regions, associated with immune complex deposition of IgA complexes in the glomeruli (microscopic haematuria), the joints (arthralgia), the GI tract (GI involvement; haemorrhage). It is often associated with an upper respiratory tract infection thought to trigger the immunological reaction which forms the basis of the disease. The rash is purpuric, caused by bleeding into the skin – as in other causes of purpura such as meningococcal sepsis. Whilst this diagnosis should always be considered, it will usually occur in an unwell child who is febrile. Non-accidental injury should always be similarly considered as it can be fatal if missed, however the findings here suggest primary organic disease rather than child abuse which must be correlated with the individual’s physical abilities, medical history and current social circumstances. Meningtitis is unlikely without a fever, headache or neck stiffness.

Treatment of HSP is often with steroids if there is severe systemic involvement, and around 5% of patients will go on to develop end stage renal failure requiring renal transplantation or dialysis.

Question:

A 15-year-old girl is a newly diagnosed type 1 diabetic schoolgirl and complains to her mother at 11am of having a headache and feeling lethargic, and is given 1 gram of paracetamol and encouraged to sleep it off. Thirty minutes later, she looks sweaty, is shaking and complains of pins and needles in her arms and appears particularly irritable. When she attempts to walk, she appears ataxic as if she were acutely intoxicated with alcohol. Her mother takes her straight to casualty where upon waiting for triage, she loses consciousness and falls to the floor, shaking all limbs and unresponsive to central pain.

Which one of the following is correct?

A) Acute alcohol intoxication

B) Drug withdrawal

C) Epilepsy

D) Hypoglycaemia

E) Multiple sclerosis

Answer:D

Explanation:

This patient, a known diabetic, has had a life-threatening episode of hypoglycaemia – a medical emergency. Most hypoglycaemic episodes occur in known diabetics who take hypoglycaemic drugs, either insulin or the sulphonylureas and may be accidental or purposeful self-harm, and not uncommonly taken for the purposes of self-harm by those who have access to the medications such as family members. Symptoms relate to the autonomic reaction to hypoglycaemia (shaking, sweating, palpitations, tachycardia), the neuroglycopenia (fatigue, change in mood or personality, focal neurological signs, paraesthesia, ataxia). If left untreated, this will eventually result in unconsciousness, seizure, permanent brain damage or death. The human brain is dependent on a constant supply of glucose for function (around 70g/day) and therefore resulting in progressive neurological dysfunction as the blood glucose drops. Every patient, particularly a known diabetic, should have their glucose checked when presenting with such symptoms, and patients experiencing seizures should have a capillary glucose estimation and rapid replacement (intravenous) of glucose to correct it before irreversible damage ensues.

Multiple sclerosis, although can cause ataxia and paraesthesias would not have an onset this quick. Acute alcohol intoxication would not result in progressive loss of consciousness without continuing consumption of alcohol and often clinically this would be suspected from the alcoholic foetor. Drug withdrawal is unlikely given her age, but sweating, shaking, and mood change could occur in withdrawal from depressants such as heroin “cold turkey withdrawal”. However, the seizure is not characteristic. Epilepsy is defined as continuing predisposition to suffering unprovoked seizures, and therefore a single seizure cannot be diagnosed as epilepsy on this basis alone.

Question:

A 42-year-old male presents to his GP complaining of itching and flaking of his scalp and skin on various parts of his face that are also red. On examination there is erythematous, greasy scaling of his forehead, eyebrows, hairline, chin, the nasolabial fold, chest and upper back. He has evidence of scaling of his scalp and says he uses a medicated shampoo with some improvement in the scaling.

Which one of the following is correct?

A) Lichen simplex chronicus

B) Pityriasis rosea

C) Seborrhoeic dermatitis

D) Systemic lupus erythematosus

E) Tinea capitis

Answer:C

Explanation:

This is a typical description of seborrhoeic dermatitis, an inflammatory papulo-squamous skin disease characterized by erythema, flaking, scaling and itchiness association with the yeast Malassezia furfur although with a complex aetiology. Dandruff or scaling of the scalp and crusting and scaling of the nasolabial fold is particularly classic of seborrhoeic dermatitis. Flares of disease can be triggered by intercurrent illness and it is more common in patients with HIV.

Treatment is with medicated shampoos (such as ketoconazole) to reduce scaling of the scalp, topical therapies to reduce the itch, scaling and flaking symptoms, and consideration is given to a course of oral anti-fungal agents targeted at the yeast may help. Topical corticosteroids can be used for short courses but can lead to a rebound flare effect if used for long periods.

Question:

A 3-year-old boy develops warm, red lesions on his left cheek which develop blisters containing cloudy fluid and then rupture leaving golden crusts on an erythematous base. The GP prescribes antibiotics for this infection and wishes the drug to be active against the most common causative organism of this disorder.

Which one of the following is correct?

A) Group A streptococcus

B) Group B streptococcus

C) Mycobacterium tuberculosis

D) Staphylococcus aureus

E) Staphylococcus epidermidis

Answer:D

Explanation:

This is a case of impetigo, a highly contagious infection in young children most often occurring on the face. It starts as a warm erythematous rash that develops vesicles or bullae which eventually rupture leaving golden crusts (crusts are exudates). The most common bacteria implicated in impetigo is Staphylococcus aureus, although group A streptococcus, or Streptococcus pyogenes, can less commonly cause impetigo infection or co-exist with Staphylococcus aureus. Because of this, topical fusidic acid or oral flucloxacillin if the infection is widespread (both anti-staphyloccocal agents) are given in its treatment.

Impetigo can occur within a primary skin disease such as eczema, psoriasis, herpes or scabies. Staphylococcus aureus (a specific subtype of the bacteria – type71) in the very young can cause staphylococcal scalded skin syndrome (SSSS), an acute toxic illness characterised by widespread, generalised blistering and desquamation as a toxin produced by the bacteria acts against desmoglein-1 which attaches the stratum granulosum and spinosum, resulting in a sheeting off of epidermis, resembling scalding.

Staphylococcus aureus can infect the hair follicle causing folliculitis (multiple follicles), carbuncles (group of follicles) and furuncles (adjacent to follicles).

Mycobacterium tuberculosis can cause lupus vulgaris in the skin, staphylococcus epidermidis is a skin commensal that rarely causes skin disease, often a contaminant in microbiological samples and group B streptococcus causes sepsis in newborns.

Question:

A 46-year-old woman who is regularly under the care of a consultant dermatologist with chronic skin disease is referred to the medical admissions unit by her GP as an emergency with generalised erythema covering the more than 90% of her body. She is unwell with a fever of 37.9 degrees Celsius, a blood pressure of 100/70 and a pulse rate of 110/min. She is admitted to the ward, although there is no evidence of desquamation of epidermis.

Which one of the following is correct?

A) Erythrasma

B) Erythroderma

C) Sepsis

D) Staphylococcal scalded skin syndrome

E) Toxic epidermal necrolysis

Answer:B

Explanation:

Erythroderma is a state in which more than 90% of a patient’s skin is inflamed. It is a dermatological emergency as inflamed skin cannot provide effective barrier function, resulting in a marked increase in fluid loss across the skin, loss of albumin, difficulties in thermoregulation and susceptibility to infection – a state of skin failure. Causes of erythroderma are eczema, psoriasis, pityriasis rubra pilaris, drugs and cutaneous T-cell lymphoma (Sezary syndrome).

Treatment is as an inpatient for intravenous fluid resuscitation, anti-pyretics, and treatment of the underlying cause with topical or systemic treatment as appropriate to that disease. This condition does not require antibiotics as the fever is not a septic phenomenon but a response to thermodysregulation.

Question:

A 26-year-old male presents to casualty with lower abdominal pain that is found secondary to urinary retention. He says that he cannot bring himself to pass urine as it is too painful. When he eventually agrees to catheterization, the house officer finds two genital ulcers that the patient did not mention. He states that they have been present for two weeks and are tender. He also has bilateral tender inguinal lymphadenopathy.

Which one of the following is correct?

A) Chancroid

B) Granuloma inguinale

C) Herpes simplex

D) Lymphogranuloma venerum

E) Syphillis

Answer:E

Explanation:

This patient has genital ulcers secondary to the herpes simplex virus. There are two main forms of the virus, with HSV-1 most often causing disease in the peri-oral regions and HSV-2 causing genital disease although genital ulceration caused by HSV-1 is increasing. Genital herpes is transmitted sexually in most cases and causes vesicles which rupture and ulcerate. It can affect the urinary epithelium causing dysuria and occasionally, urinary retention. Painful inguinal lymphadenopathy is characteristic. The diagnosis is made on clinical features supported with PCR testing of fresh fluid from the ulcer base. Treatment is with painkillers and oral acyclovir which can reduce the pain and number of lesions but is not curative. Testing for other sexually transmitted infections, contact tracing and contraceptive advice often provided.

Urinary retention can occur because of involvement of the sacral roots of the spinal nerves or because of dysuria. In such cases, catheterisation may need to be considered to prevent hydronephrosis and renal impairment.

Syphillis and granuloma inguinale cause painless genital ulceration whereas herpes simplex and chancroid cause painful ulceration.

Granuloma inguinale is a sexually transmitted disease common in Australia, India, the Carribean and Africa and is characterised by a painless indurated nodule that ulcerates. It is in the differential diagnosis of a painless genital ulcer with syphilis. It is characterised by Donovan bodies which are intracellular inclusions caused by the responsible organism Calymmatobacterium granulomatis.

Question:

A 28-year-old lady presents to the dermatology outpatient clinic with blistering eruptions that affect her hands, forearms, upper back and chest most often when she is on holidays. She admits she drinks more alcohol than she should and enjoys all-inclusive holidays in sunny resorts. On examination there are a few active blisters that have ruptured and are in the process of healing, and multiple scars are evident on the sites she reports as being affected by these blisters.

Which one of the following is correct?

A) Bullous pemphigoid

B) Herpes simplex

C) Pemphigus vulgaris

D) Porphyria cutanea tarda

E) Systemic lupus erythematosus

Answer:D

Explanation:

The porphyrias are a group of disorders in which there is abnormal metabolism of haem molecule that is a breakdown product of haemoglobin. Porphyria cutanea tarda is the most common form of porphyria and is genetic with environmental influences such as alcohol, oestrogen and iron. Patients present with recurrent sub-epidermal blistering on sun exposed sites such as face and hands, healing with scarring. There is an association with chronic hepatitis C, and commonly of excessive alcohol. Treatment is with avoidance of exacerbating factors, such as sensible sun behaviours and sun block, reduction of alcohol intake and in resistant cases cholorquine can increase the excretion of uroporphyrin which is increased in the urine in this disease. If excess iron is contributory, venesection can reduce total body iron and help in the management of this patient group.

Systemic lupus erythematosus causes a photosensitive rash in which blistering is not a prominent feature.

Question:

A 43-year-old woman with known anti-phospholipid syndrome with previous pulmonary emboli and cerebrovascular events presents to casualty with a six hour history of weakness in her legs. On examination, her cranial nerves and upper limbs are normal but there is spastic paraparesis of her legs with 3/5 power symmetrically below the hip, hyperreflexia and extensor plantars. There is reduced perception of pain and temperature sensation in the same distribution but intact perception of joint position sense and proprioception.

Which one of the following is correct?

A) Anterior spinal artery thrombosis

B) Cauda equina syndrome

C) Motor neurone disease

D) Spinal cord compression

E) Syringomyelia

Answer:A

Explanation:

This woman has anti-phospholipid syndrome and is at risk of recurrent arterial and venous thromboses, often despite being on anti-coagulant therapy. This is a case of anterior spinal artery thrombosis which perfuses the anterior two-thirds of the spinal cord, and therefore the corticospinal tracts and spinothalamic tracts which run anteriorly in the spinal cord are damaged, and posterior columns which carry fine touch and proprioception are preserved. This is similar to syringomyelia in that it demonstrates a dissociated sensory loss, although a syrinx would cause lower motor neurone signs in the upper arms. Cauda equina syndrome often causes saddle anaesthesia as it affects sensory innervation around the anus and perineum and also affects lower motor neurones, thereby causing a flaccid rather than spastic paraparesis with hyporeflexia. Motor neurone disease does not cause sensory loss as evidenced here.

Question:

A 69 year old male presents to casualty with dizziness, nausea and vomiting and double vision. He says he is unable to swallow water properly and that the room feels like it is spinning. On examination he has left sided ataxia, left sided miosis and ptosis with loss of pain and temperature sensation on the right hand side below the neck, and on the left side of his face. His uvula deviates to the right and he has some dysarthria with his voice sounding nasal in quality.

Which one of the following is correct?

A) Anterior cerebral artery

B) Internal carotid artery

C) Posterior cerebral artery

D) Posterior communicating artery

E) Posterior inferior cerebellar artery

Answer:E

Explanation:

This is a patient has suffered occlusion of his posterior inferior cerebellar artery (PICA) causing the lateral medullary syndrome in which there is ischaemia or infarction of the lateral portion of the medulla oblongata. This causes lower motor neurone palsies of the bulbar (or brainstem) cranial nerves (such as the vagus – causing difficulties in swallowing and speaking), the sympathetic outflow to the eye resulting in ipsilateral Horner’s syndrome. Involvement of the descending spinothalamic tracts causes a crossed sensory loss contralaterally below the lesion and ipsilaterally at the level of the lesion. Cerebellar signs such as vertigo (sensation of the room spinning), nystagmus are common as are nausea and vomiting. An MRI of the brainstem is more discerning than a CT scan, and may show ischaemic necrosis. Treatment will depend on the cause.

This questions tests the distinction between anterior circulation strokes (those which affect the internal carotid artery and its branches) and posterior circulation strokes affecting the vertebrobasilar arteries and its branches, as the in this case a carotid Doppler would be an unnecessary investigation since the disease is not related to the carotid arteries.

Question:

A 29-year-old hotel administrator presents to the dermatology outpatients clinic where he is a regular attendee. The dermatology registrar asks the house officer to inspect the patient’s nails before full examination to determine what signs are present and what the likely diagnosis is. The house officer inspects the patient’s hands and notices prominent nail pitting, splitting off of the distal nail plate from the nail bed, thickening of the nails with brown discoloration and subungal hyperkeratosis in some fingers.

Which one of the following is correct?

A) Alopecia areata

B) Darier’s disease

C) Eczema

D) Lichen planus

E) Psoriasis

Answer:E

Explanation:

All of the listed options are dermatological diseases which are known to affect nail growth. However, the specific abnormalities described here are typical of psoriatic nail dystrophy with nail pitting the most sensitive clinical sign, which in severe cases can cause onycholysis (splitting of nail from nail bed), nail thickening and discoloration and subungal hyperkeratosis.

Darier’s disease (keratosis follicularis) affects young females, made worse by the sunshine, and is characterised by longitudinal ridges in the nails. Eczema and alopecia can cause nail pitting and lichen planus can cause the distal nail plate to become tethered to the nail bed. Nail pitting, trachyonychia (roughness of the nail) and loss of nails occur in alopecia areata and lichen planus.

Dilated nail fold capillaries can be seen with a dermatoscope in connective tissues diseases such as dermatomyositis, scleroderma and systemic lupus erythematosus. Hyperthyroidism can cause clubbing (thyroid acropachy) and distal onycholysis. Periungal fibromas are typical of tuberous sclerosis. Trauma to nails is common and often there is a difficulty clinically separating subungal haematomas from subungal/acral melanomas when no clear history of trauma exists. Nail infection (paronychia) can be acute in which setting the responsible organism is Staphylococcus aureus, or chronic in which it is often Candida albicans in patients who work with their hands in moist conditions. Fungal nail infection is known as onychomycosis and presents as a thickened, discoloured, dystrophic nail often affecting the toes and beginning distally. It is rare for all the toenails to be involved, differentiating it from psoriatic nail changes. Treatment is with a long course of anti-fungal drugs.

Question:

A 3-year-old pre-school infant is brought to the GP by his mother as she is worried about a rash on the child’s, face, neck and trunk. On examination, the child appears well but there are numerous scattered flesh coloured, pearly papules with an umbilicated centre around 2-3mm in diameter. Some have been excoriated to reveal a cheesy white material that can be expressed from lesions when they are squeezed.

Which one of the following is correct?

A) Molluscum contagiosum

B) Orf

C) Skin tags

D) Tinea corporis

E) Warts

Answer:A

Explanation:

This child has the typical lesions of molluscum contagiosum, a cutaneous disease caused by a poxvirus which has now been named the molluscum contagiosum virus. It often affects children less than 10 years of age, but can also occur through sexual transmission and in patients with HIV/AIDS spectrum disease where immunosuppression can increase the risk of infection.

Lesions are pearly or flesh coloured, classically with a dimpled or umbilicated top. It is a self-limiting infection although is very contagious and can infect broken skin in the same patient. Most lesions disappear within 12 months, but can take longer, and treatment is symptomatic to control itching and to treat secondary infections. Sometimes cryotherapy, curettage, and even excision may be attempted in older individuals, but these management strategies are poorly tolerated in children.

Question:

A 23-year-old medical student is seen at follow up in the dermatology outpatient clinic. She is known to suffer from acne vulgaris for three years and is on a long term oral treatment for this disease which does show evidence of improvement with fewer inflammatory comedones with a more restricted distribution on her face, chest and back. However, she complains of a discoloration of her skin which on examination has a generalised grey-blue hue with some discoloration of the gums.

Which one of the following is correct?

A) Amiodarone

B) Chlorpromazine

C) Erythromycin

D) Gold

E) Minocycline

Answer:E

Explanation:

This patient has acne vulgaris and the two medications listed which are consistent with treatment of acne vulgaris are minocycline and erythromycin. Minocycline can cause blue-grey pigmentation of the skin, sclera, gums and teeth which appears not predictably dose dependent but is most severe in those treated long term for acne vulgaris or rosacea. Pigmentation can reverse on cessation of treatment but discoloration of teeth is permanent. Tetracyclines of all varieties can cause teeth discoloration as they chelate calcium which explains their contraindication in pregnant or breast feeding women and children under 12 years of age. Additionally, they must be taken on an empty stomach as foods such as milk interfere with their absorption.

Amiodarone can cause slate grey pigmentation of the skin and photosensitive reactions but the patient will be older with a history of cardiac disease, typically atrial fibrillation. Gold therapy, most commonly used in rheumatoid arthritis as a disease modifying agent can cause bronze discoloration of the skin due to cutaneous deposition, and chlorpromazine can cause grey discoloration in patients treated for psychotic disease.

Question:

A 28-year-old female with learning difficulties is brought to accident and emergency where her triage observations are BP 80/40mmHg, pulse 130bpm, temperature 39.5 degrees. Her chest is clear, heart sounds are normal, although she has a generalized blanching rash over her trunk and limbs. Her mother says she has got more ill throughout the day and has had a couple of episodes of diarrhoea, with some abdominal pain and one episode of vomiting. Her only medication is tranexamic acid. Initial blood tests show evidence of renal impairment.

She is taken to the intensive care unit for inotropic support as her blood pressure is not responsive to fluids.

Which one of the following is correct?

A) Echocardiogram

B) Serum aspirin estimation

C) Skin biopsy

D) Stool microscopy and cultures

E) Vaginal examination and removal of foreign body

Answer:E

Explanation:

This is a case of toxic shock syndrome, a life-threatening condition that results from toxin-mediated disease most commonly from Staphylococcus aureus, but also Streptococcus pyogenes. It is associated with retained superabsorbent tampons in which these bacterial are able produce a superantigen (TSST-1) which unlike conventional antigens, can bypass immunological antigen presentation mechanisms and produce a severe, generalized and fulminant immune response in which up to 20% of T-cells can be activated at any one time.

Patients with this condition have clinical shock, which may not respond to fluids and evidence of multiple organ involvement. Its onset is too quick and severe for gastroenteritis or endocarditis (in the absence of a murmur). Treatment is by recognition of TSS as a possibility and removing the source of the infection. In a patient with learning difficulties and history of heavy periods (tranexamic acid is used to treat menorrhagia), a vaginal examination with removal of the tampon is the only intervention which will arrest the production of TSST-1.

The rash of TSS is erythematous and blanching, resembling sunburn and can affect any part of the body. In surviving patients, this rash desquamates 10-14 days after its onset.

Question:

A 16-year-old girl is referred to general dermatology clinic for acne vulgaris that she has suffered from for three months. She becomes very upset during the consultation saying it is interfering with her relationship with her boyfriend and that others at school are noticing it and commenting. She has already tried some topical therapies, but states she wishes it “would go away” and that she is afraid of scarring. On examination there are mixed comedones, papules and pustules affecting her face, upper chest and back but no nodulocystic changes

Which one of the following is correct?

A) Optimization of topical therapies

B) Oral tetracyclines

C) Oral macrolides

D) Isotretinoin

E) Reassurance

Answer:D

Explanation:

This patient has moderate acne vulgaris, unresponsive to initial therapies. It must always be considered however that dermatological disease carries a significant psychological burden that at vulnerable ages can particularly cause a huge global morbidity to those affected by it. This impact must be assessed together with the objective findings on examination to determine whether Roaccutane or isotretinoin is appropriate for that patient. This girl would be a candidate for this drug as although her acne vulgaris is moderate, the impact of it on her life is considerable.

Isotretinoin is a vitamin A analogue and is highly teratogenic. Therefore patients must remain on strict contraception during treatment and for a month afterwards, with pregnancy excluded before commencing treatment. Other side effects include hepatitis, hyperlipidaemias, dry mucocutaneous surfaces (dry eyes, dry mouth). Patient should be advised not to wax as the skin is fragile during treatment and will easily desquamate. Contact lenses are not well tolerated during treatment.

Question:

A 45-year-old car mechanic presents to the accident and emergency department with a 36 hour history of a spreading, warm, tender rash on his left leg which appears swollen. At triage his vital signs were of a heart rate 110/min, BP 110/70mmHg and a respiratory rate of 18, temperature of 38.2 degrees Celsius and he feels unwell. On examination there is well demarcated region of erythema, which blanches on pressure, but is palpably warmer and more tender than the surrounding skin. He has ipsilateral tender inguinal lymphadenopathy and there is evidence of tinea pedis between the toes of the left foot. He cannot walk on his leg due to the pain and swelling. He has no known drug allergies.

He had initially presented the previous day to casualty at the onset of the rash and had three doses of oral amoxicillin but without any clinical improvement. Blood cultures taken by the previous day in casualty grow gram positive cocci growing in clusters which are both catalase and coagulase positive.

Which one of the following is correct?

A) Intravenous flucloxacillin

B) Oral clindamycin

C) Oral prednisolone

D) Topical 1% hydrocortisone

E) Topical fusidic acid

Answer:A

Explanation:

This patient demonstrates classical clinical signs and symptoms of cellulitis, an infection of the subcutaneous tissues. The source of infection is often a break in the skin of the foot or shin (classically, athlete’s foot or tinea pedis), particularly in those who have peripheral vascular disease or diabetes which lead to increased susceptibility to infection. The causative organism is in most cases Streptococcus pyogenes or Staphylococcus aureus and treatment should be guided according to microbiological results. The coagulase and catalase positive cocci growing in clusters indicates Staph. aureus as the responsible organism, and the optimal treatment for methicillin sensitive staphylococcus aureus is flucloxacillin.

Topical anti-biotics do not reach deep tissues in sufficient concentrations to be effective, and the choice is between oral and intravenous antibiotic agents depending on how septic or unwell the patient is. In this case, there is confirmed bacteriaemia (temperature of 38.2) and tachycardia with evidence of spreading erythema and an immobile patient, and intravenous anti-biotics are warranted in this setting. If the patient is ambulatory and well, then oral anti-biotics may be sufficient, although clindamycin is often used as second line in patients with severe penicillin allergies. Oral and topical steroids do not have any role in the treatment of cellulitis.

Question:

A 29-year-old male is an unrestrained passenger a road traffic accident and suffers a head injury that causes him to lose consciousness at the scene, the paramedics report that he was still drowsy when they arrived. He is brought to casualty where he is orientated, asking continuously after the driver of the car. He is haemodynamically stable, and he has no focal neurological signs with pupils equal and reactive to light. Overlying his temporo-parietal region on the left side near his temple, there is a boggy swelling at the site of trauma which is tender to palpation. Two hours later, he becomes more confused screaming that it was “all his fault” and of an awful headache. Shortly after, he is found seizing in his examination room.

Which one of the following is correct?

A) Extradural haematoma

B) Pseudoseizure

C) Subarachnoid haemorrhage

D) Subdural haematoma

E) Transient ischaemic attack

Answer:A

Explanation:

This history is typical of an extradural (or epidural) haematoma, a collection of blood that accumulates rapidly between the dura and the cranium, and causes an acute increase in intracranial pressure typically in the setting of significant trauma. The vessels most commonly involved are the middle meningeal vessels which run along the inside of the cranium behind the temporo-parietal bones on the lateral sides of the head. Trauma to these areas, particularly if producing a fracture or severe enough to cause loss of consciousness should alert a clinician to the possibility of this diagnosis. Typical of these cases is a “lucid interval” that occurs between the initial trauma and the acute bleed and deterioration and this is evident in this case. Confirmation is with CT head and will demonstrate a lens (biconvex) shaped haematoma between the dura and the skull. Treatment is with urgent neurosurgical decompression and evacuation.

Question:

A 67-year-old lady complains to her GP of a headache lasting three days, jaw claudication and visual loss affecting her right eye. The medical students enquire as to how temporal arteritis most commonly causes visual loss, and the GP explains that it is due to vasculitis affecting the vessels that perfuse the anterior optic nerve.

Which one of the following is correct?

A) Anterior ciliary arteries

B) Central retinal artery

C) Long posterior ciliary arteries

D) Ophthalmic artery

E) Short posterior ciliary arteries

Answer:E

Explanation:

This question revolves around an understanding of the arterial supply of ophthalmic structures. The internal carotid arteries feed the ophthalmic arteries which supply structures in the eye and orbit. Those branches that supply structures within and adjacent to the globe include the short posterior ciliary arteries (optic nerve, choroid) and long posterior ciliary arteries (iris, ciliary body and choroid), the anterior ciliary artery (conjunctiva and sclera), the central retinal artery (inner third of the retina – visible on fundoscopy at the optic disk), and others. This patient has anterior ischaemic optic neuropathy due to vasculitis of the short posterior ciliary arteries in the setting of temporal arteritis and is the most common mechanism of blindness in these patients. It is much less common for temporal arteritis to cause central retinal artery occlusion through embolism of the ophthalmic artery.

Question:

A 28-year-old female who takes the oral contraceptive presents to her GP with headaches that are worse in the morning, some nausea and vomiting. Her headache is made worse be sneezing, coughing or bending forwards. She has no significant past medical history. She is admitted to hospital and bilateral papilloedema is noted on fundoscopy, although a CT head scan are normal. She then develops a sudden onset severe headache and sudden onset of hemiplegia with hemisensory involvement but no visual field loss or dysphasia. A repeat CT head shows a haemorrhage in the frontoparietal region and a delta sign in the posterior saggital sinus.

Which one of the following is correct?

A) Intracranial venous thrombosis

B) Meningitis

C) Middle cerebral artery haemorrhage

D) Pituitary apoplexy

E) Subarachnoid haemorrhage

Answer:A

Explanation:

This is a case in intracranial venous sinus thrombosis, in this case affecting the saggital sinus. Just as thromboses can develop in peripheral veins, such as in deep venous thrombosis, Virchow’s triad can apply similarly to cerebral venous sinuses. In this case, the oral contraceptive pill has contributed to cause abnormalities in blood constituents, which together with venous stasis (which may occur due to dehydration) may result in venous sinus thrombosis. This can present subacutely with a gradually rising intracranial pressure (which acts to compress sinuses further) before complete occlusion and the development of a venous infarct (often haemorrhagic due to extravasation of blood in venules) corresponding to onset of focal neurological signs. The neurological signs may not correspond to an arterial vascular bed and seem irregular in their pattern. The diagnosis can be clinched on contrast enhanced CT head where the venous phase of the scan can show filling defects in the affected sinuses, but the investigation of choice is magnetic resonance venography. Treatment is with rehydration, cessation of prothrombotic drugs and anticoagulation with heparin.

Question:

The consultant vitreoretinal surgeon is operating in theatre and wishes to gain access to the posterior chamber of the eye to perform a vitrectomy on a 47-year-old patient with a full thickness macular hole. He wishes to make an incision that avoids damage to the ciliary body anteriorly and the anterior limit of the retina posteriorly.

Which one of the following is correct?

A) Cornea

B) Flattened pars plana

C) Ora serrata

D) Pars plicata

E) Suspensory ligaments

Answer:B

Explanation:

The pars plana is part of the ciliary body lying 1mm behind the limbus and continuing for around 6mm in the adult eye. The first 2mm of the pars plana is the pars plicata and the posterior 4mm is the flattened pars plana. Incision through the pars plicata would damage the ciliary body, threatening the lens, and possibly the suspensory ligaments interfering with accommodation in the post-operative period. The flattened pars plana is incised commonly during vitrectomy, permitting excellent access to the vitreous cavity whilst minimising trauma to anterior structures such as the iris and lens. The ora serrata is the anterior most limit of the retina, and the boundary of light sensitive function, serrata referring to its serrated appearance. It is preferable to avoid damage to the retina, and hence incisions into the vitreous cavity are not commonly made posterior to the flattened pars plana.

Question:

A 72-year-old male with known atrial fibrillation and osteoarthritis presents to his GP thirty minutes after sudden loss of vision in his right eye. He says that he was making breakfast in the morning when he saw a black curtain coming down over his right eye. Visual field testing to confrontation reveals an upper altitudinal field defect in the right eye with a normal left eye. In the eye casualty three hours later, there has been no change in his symptoms.

Which one of the following is correct?

A) Amaurosis fugax

B) Branch retinal artery occlusion

C) Central retinal artery occlusion

D) Cerebrovascular accident

E) Papilloedema

Answer:B

Explanation:

This question tests the ability to differentiate causes of sudden visual loss on a historical basis, since most of the information relevant to making a diagnosis is found in the history. This patient has suffered a branch retinal artery occlusion secondary to atrial fibrillation. In this setting, a thrombus has formed in his left atrium and embolised into the retinal arterial tree, in this case to the inferior retinal vessels, causing ischaemia of the inferior retina and corresponding visual loss in the upper visual field. A cholesterol emboli can cause branch retinal artery occlusion and embolic material can be seen occluding the affected vessel with oligaemia of the altitudinal hemiretina.

An altitudinal field defect is one that respects the horizontal meridian in that there is visual loss above or below a line across the equator of the visual field. Lesions localized to the superior or inferior hemiretina, the optic nerve or the cerebral cortex can produce altitudinal visual loss – although a cortical lesion would result in bilateral homonymous field changes not present in this case. Central retinal artery occlusion would cause complete loss of vision in the affected eye since the central artery perfuses all the distal superior and inferior retinal arterioles.

Papilloedema and amaurosis fugax cause transient visual loss, and historically often the patient will describe this fleeting character, with recovery often by the time of presentation. Amaurosis fugax is secondary most commonly to carotid artery atheromatous plaques which produce emboli to the retinal artery, and carotid Doppler is therefore the investigation of choice. It produces unilateral visual loss which can be at the level of the retina or optic nerve, and result in total loss, an arcuate scotoma or an altitudinal field defect – but in each case transient. Papilloedema is optic disc swelling secondary to raised intracranial pressure, and there is an absence of cues from the history, such as headache, nausea etc to suggest this. Enlargement of the blind spot due to an increase in the size of the optic nerve head is characteristic, although the peripheral visual fields can be affected if papilloedema is chronic.

Question:

A 24-year-old male is diagnosed with diabetes having presented with ketoacidosis, discharged on a regime of insulin. His compliance is poor on his first three weekly diabetic nurse reviews, and on the fourth review he develops unilateral loss of vision that has progressed over the course of three days. Visual acuity has reduced to 6/60 in the right eye and the GP attempts fundoscopy but cannot elicit a red reflex in this eye.

Which one of the following is correct?

A) Background diabetic retinopathy

B) Diabetic maculopathy

C) Retinal detachment

D) Sugar cataract

E) Vitreous haemorrhage

Answer:D

Explanation:

This question revolves around the wide differential diagnosis of visual loss in patients with diabetes mellitus. In this patient, the onset of visual loss over three days makes vitreous haemorrhage and retinal detachment less likely since these would result in more acute visual loss. Diabetic maculopathy is a possibility since this grossly affects visual acuity, but is less likely given that the diagnosis of diabetes was very recent, and this does not explain the inability to generate a red reflex. A vitreous haemorrhage would however interfere with the red reflex.

Background diabetic retinopathy cannot on its own reduce visual acuity. However, if it allowed to progress to neovascularisation, or the grown of new vessels from the retina secondary to ischaemia and production of vascular endothelial growth factor (VEGF), it can lead to sight threatening disease – retinal detachment and vitreous haemorrhage.

This patient has developed a sugar cataract. Sugar cataracts occur in young patients who have type I diabetes and are poorly compliant with insulin. Severe and persistent hyperglycaemia results in sugar being metabolised in the crystalline lens by the aldose reductase pathway into sorbitol which accumulates in the lens and attracts water by osmosis. This disrupts the parallel arrangement of cellular fibres which form the lens, resulting in reduced transparency, and the development of a cataract. This form of cataract is unique to diabetes and the treatment is good blood glucose control which will resolve the lenticular oedema and opacity.

Question:

A 26-year-old mountain biker is riding along a hillside in Malaysia when his face strikes the branch of a tree whilst he is travelling at speed. His left eye is a little painful initially, but two days later becomes red in a circumcorneal distribution and more painful with a watery discharge. There is some photophobia, with a sensation of a foreign body that wasn’t initially present. Visual acuity is reduced slightly on the left at 6/12 and 6/4 on the right. Fluorescein staining reveals an epithelial defect that appears brown on examination with a feathery border and smaller satellite lesions. There is a corneal stromal infiltrate with an hypopyon evident in the anterior chamber. Gram staining does not reveal any organisms.

Which one of the following is correct?

A) Bacterial keratitis

B) Fungal keratitis

C) Herpes simplex keratitis

D) Protozoan keratitis

E) Subtarsal foreign body

Answer:B

Explanation:

Trauma to the external eye with organic matter such as tree branches, particularly in tropical climates should alert the clinician to the possibility of fungal keratitis. One should maintain a high index of suspicion for this disease as failure to identify it can lead to loss of vision due to corneal scarring. In contrast to bacterial keratitis, its onset is slower and there is less mucopurulent discharge with symptoms initially less severe. The negative gram staining also makes bacterial keratitis less likely.

Herpes simplex keratitis causes dendritic ulceration and is a significant cause of corneal scarring. Protozoan keratitis is most commonly a tropically acquired infection that is associated with fresh water swimming, and more common in those who wear contact lenses. Acanthamoeba is a feared organism as it is difficult to treat, and can cause severe, sight threatening corneal scarring. Subtarsal foreign body classically presents as a constant or intermittent foreign body sensation with vertical corneal epithelial excoriations that result as it scrapes vertically along the cornea on blinking. It is for this reason that the eyelids should be inverted and inspected on ocular examination when a foreign body is clinically suspected.

Question:

A 42-year-old male with known acne rosacea presents to his GP with bilateral red eyes and a gritty sensation. He described burning and grittiness of the eyelid margins all year round which crust over particularly on waking and eventually flake off. On examination his eyelids appear red with mild redness in a general distribution affecting both eyes. There is no chemosis or pus evident on the eye, but there is debris at the eyelid margins which the GP clears with soaked cotton wool.

Which one of the following is correct?

A) Allergic conjunctivitis

B) Blepharitis

C) Chalazion

D) Hordeolum

E) Seborrhoeic dermatitis

Answer:B

Explanation:

Blepharitis is a disease characterised by chronic inflammation of the eyelid margins, often bilaterally, causing the eyes to appear red (particularly with conjunctival and corneal involvement), and feel gritty and sore, particularly around the lid margins. Crusting is a prominent feature and blepharitis may be associated with bacteria such as Staphylococcus aureus or with skin diseases such as seborrhoeic dermatitis and acne rosacea.

Treatment of this condition is with good ocular hygiene, removal of crusts with warm compresses and lid massage. Oral tetracyclines can be used in severe cases to combat the infective component of blepharitis.

Allergic conjunctivitis can often, but not always, be seasonal and associated with conjuctival signs on slit lamp examination, such as cobblestoning and will typically cause itching without flaking of the eyelid margins. Seborrhoeic dermatitis is also associated with blepharitis with flaking and seborrhoea affecting the scalp, face and often back and chest. A chalazion is an eyelid cyst that results from bacterial infection and blockage of a Meibomian gland, and a hordeolum is an abscess and presents often with acute inflammation and is more common in patients with blepharitis.

Question:

An 81-year-old male presents to casualty with a 30 minute history of visual loss. His visual acuity remains unchanged at 6/12 bilaterally although the emergency physician finds loss of his right visual field in both eyes. She asks the medical student in casualty where the pathological lesion is considering there is a right homonymous hemianopia and preservation of the visual acuity.

Which one of the following is correct?

A) Occipital cortex – middle cerebral artery territory

B) Occipital cortex – posterior cerebral artery territory

C) Optic chiasm

D) Optic radiations

E) Optic tracts

Answer:B

Explanation:

This case demonstrates the phenomenon of macular sparing in neuro-ophthalmology. Lesions affecting the occipital cortex may spare macular vision since there is a spatial separation of the fibres representing the macula at the posterior occipital pole from the fibres representing the remainder of the retina in the anterior occipital cortex. Therefore, lesions which affect the anterior occipital cortex can spare the macula cortex.

Additionally, the occipital pole representing the macula in some patients has dual perfusion from the posterior cerebral artery and branches of the middle cerebral artery lying close to their anastomosis. Therefore, posterior circulation disturbances such as basilar artery thromboses can spare the cortical representation of the macula since the middle cerebral arterial anastomoses perfuse the cortex representing the macula. These scenarios can demonstrate the phenomenon of “macular sparing” and only occurs in lesions distal to the lateral geniculate nucleus; therefore lesions in the optic tract (anterior to the thalamus and LGN but posterior to the optic chaism) will not produce macular sparing but contralateral complete homonymous hemianopia. If a patient has preserved visual acuity, this indicates functionality of the macula and its central connections – the only portion of the retina capable of 6/6 vision.

Remember that posterior circulation abnormalities do not require carotid Doppler investigations since they cause ischaemia in the anterior circulation (anterior and middle cerebral artery territories).

Question:

A 24-year-old male has suffered from Juvenile Idiopathic Arthritis for 12 years and is regularly reviewed by the ophthalmologists to screen for and treat recurrent anterior uveitis. During acute flares of his eye disease, the consultant ophthalmologist prescribes ocular medication to prevent the intraocular inflammation causing adhesions between the inflamed iris and the lens which would result in an irregularly shaped pupil. The patient mentions that he is off work and does not mind blurred vision from this eye, only that he take drops as infrequently as possible as he often forgets his medication.

Which one of the following is correct?

A) Atropine

B) Cyclopentolate

C) Phenylephrine

D) Pilocarpine

E) Tropicamide

Answer:A

Explanation:

This question tests the ability to think logically through a clinical problem based on first principles. Chronic anterior uveitis is inflammation of the anterior uveal tract – the iris and the ciliary body. Knowledge of ocular anatomy will confer that the iris is closest to the lens of the eye toward the centre, and more distant at the periphery of the iris where the lens and iris do not contact one another. The pharmacological agents listed all affect pupillary size, either by constriction through muscarinic agonism (pilocarpine) or dilatation by sympathomimetic agents (phenylephrine) or muscarinic antagonism (atropine, tropicamide, cyclopentolate).

Pupillary dilatation in this instance pulls the iris away from the lens and reduces the formation of adhesions between the lens and the iris. The choice between these four agents lies in understanding that atropine has a far greater duration of action than the other four mydriatic drugs listed here, and therefore has a more convenient schedule of dosage for the patient (necessitating daily drops rather than six times a day). Atropine is given to patients with anterior uveitis to prevent the development of posterior synechiae or adhesions between lens and iris. Anterior synechiae are adhesions between the iris and the peripheral cornea, and are clinically less important.

Tropicamide and cyclopentolate are shorter acting mydriatic agents that are used to dilate the pupil for ocular examination.

Question:

A 34-year-old woman with systemic lupus erythematosus has joint pain, and troubling cutaneous photosensitivity, hair loss and oral ulceration. She is treated with a medication that reduces the severity of these symptoms. Seven years after starting this therapy she notices a reduction in her visual acuity. Ophthalmological assessment reveals acuity reduced to 6/36 and 6/24 in the left and right eyes, and slit lamp examination reveals a “bulls eye” macular lesion.

Which one of the following is correct?

A) Azathioprine

B) Cyclophosphamide

C) Glucocorticosteroids

D) Hydroxychloroquine

E) Methotrexate

Answer:D

Explanation:

Hydroxychloroquine is an anti-malarial medication that is used in various inflammatory disorders as a steroid sparing agent, most notably in systemic lupus erythematosus where it is effective in reducing symptoms of skin and joint involvement.

Hydroxychloroquine is toxic and can affect the corneas in an idiosyncratic manner that is not dose related causing corneal vortex keratopathy, and the macula which is a threat to vision and is dose dependent. Therefore each patient is assessed for their maximum cumulative dose prior to commencement of hydroxychloroquine to prevent maculopathy and regular screening whilst on this medication to detect early macular changes which are reversible on cessation of treatment. Toxicity related to this medication is very rare when used for less than 5 years, and has a weaker association with maculopathy in comparison to chloroquine.

Glucocorticosteroids cause open angle glaucoma and increase the probability of cataract formation.

Question:

A 52-year-old nurse from California presents to her family doctor with reducing visual acuity, itchy and gritty eyes and a foreign body sensation. She has been seen by ophthalmologists for some time for an overgrowth of her conjunctiva, but was lost to follow up. The GP notices that the nasal conjunctiva seems to have grown over the cornea such that it is now impinging on the visual axis.

Which one of the following is correct?

A) Exposure keratopathy

B) Pingecula

C) Pseudopterygium

D) Pterygium

E) Squamous cell carcinoma

Answer:D

Explanation:

A pterygium (ptery- is Greek for “wing”) is a triangular or wing shaped overgrowth of the conjunctiva over the cornea that occurs almost always on the nasal side of the sclera. It is associated with living in hot, dusty and windy environments around the equator, and actinic damage from sun exposure is thought to be contributory. The reason for the development of pterygia on the nasal aspect of the bulbar conjunctiva is the focussing of light through the cornea originating from the lateral aspect. The nasal profile reduces the effect of light focussed on the temporal aspect of the bulbar conjunctiva. It is not a threat to vision until it impinges on the visual axis of the cornea, and when this is threatened, surgical removal of the pterygium is indicated, often with an autologous conjunctival graft taken from the upper scleral surface.

A pinguecula is a yellow degenerative conjunctival nodule, and is benign, requiring no treatment unless cosmetically desired. A pseudopterygium is an adhesion of the conjunctiva to the cornea following a burn or other injury.

Question:

A 34-year-old female with known multiple sclerosis presents to her GP with horizontal diplopia that is maximal on looking to her left. On examination the GP finds that when asked to look to her left, she is unable to adduct her right eye with her left eye going into abductive nystagmus.

Which one of the following is correct?

A) Cerebellum

B) Medial longitudinal fasciculus – left side

C) Medial longitudinal fasciculus – right side

D) Medulla oblongata

E) Primary motor cortex

Answer:C

Explanation:

This patient has developed internuclear ophthalmoplegia due to a lesion of the medial longitudinal fasciculus – a neuronal tract that connects the oculomotor nucleus in the midbrain on one side to the abducens nucleus on the contralateral side to co-ordinate conjugate horizontal eye movements.

An interruption of this tract causes internuclear ophthalmoplegia which manifests by an inability to adduct the ipsilateral eye, with the contralateral eye going into abductive nystagmus. Bilateral INO is almost pathognomonic of MS, although tumours, strokes etc can cause unilateral disease.

Question:

A 14-year-old boy from Nigeria is seen by a World Health Organization team working to provide additional ophthalmology services to native populations. He lives close to the river Niger and is blind in his left eye as a result of sclerosing keratitis from recurrent infections with the organism Onchocerca volvuvlus. The ophthalmologist knows that a particular vector that breeds in fast flowing water is responsible for transmitting this disease to humans.

Which one of the following is correct?

A) Aedes egypti mosquito

B) Anopheles mosquito

C) Blackfly

D) Ixodes tick

E) Sandfly

Answer:C

Explanation:

River blindness is a major cause of world blindness that is transmitted by the Blackfly vector which also serves as its larval host. It transmits the parasite when the insect bites humans. It causes a range of inflammatory dermatological abnormalities caused by the immune response to dying parasites, which eventually migrate to the cornea where they cause chronic inflammation, scarring opacity and blindness.

The Aedes egypti mosquito transmits yellow fever and dengue fever, the Anopheles mosquitoes transmit malaria, the Ixodes deer tick transmits Lyme disease and other tick borne diseases, and the sandfly transmits leishmaniasis.

Question:

A 43-year-old woman is diagnosed by her GP to with Bell’s palsy after she presented with a two hour history of weakness involving the left side of her face. She is unable to fully close her left eye and the GP explains to the medical student that this results from paralysis of the muscle responsible for this action.

Which one of the following is correct?

A) Buccinator

B) Corrugator

C) Frontalis muscle

D) Orbicularis oculi

E) Orbicularis oris

Answer:D

Explanation:

The facial nerve innervates the skeletal muscles of the face and provides parasympathetic innervation to the lacrimal, submandibular and sublingual glands in addition to the stapedius muscles. Palsy of this nerve from any cause therefore causes an inability to fully close the eye, an action of the orbicularis oculi muscle - an orbital muscle surrounding the eye. This can lead to exposure keratopathy and corneal scarring if left untreated, as the cornea dehydrates and is left prone to environmental insults. Temporary eyelid closure is therefore required, either with tape, or if prolonged, tarsorrhaphy in which the eyelids are temporarily sutured together.

Question:

A 75-year-old male is started on a topical eye medication for primary open angle glaucoma after tonometry carried out at his optometrist demonstrated raised intraocular pressures and some optic disc cupping (cup to disc ratio of 0.65), confirmed on ophthalmology outpatient review. He then presents to casualty two days later after a syncopal episode. A 24 hour tape reveals episodes of complete heart block. He is known to have ischaemic heart disease and is currently taking aspirin, ramipril, atorvastatin and dilitiazem. The topical anti-glaucoma medication is stopped at the consultant physician’s instruction.

Which one of the following is correct?

A) Acetazolamide

B) Brimonidine

C) Latanoprost

D) Pilocarpine

E) Timolol

Answer:E

Explanation:

Topical medications administered as eye drops are often selected for this route on the basis that they have good tissue penetration when applied onto the surface of the eye - that is they are sufficiently lipid soluble. Excess drug quickly travels through the inferior punctum, down the lacrimal drainage system to the nasal cavity below the second nasal conchae. This is a highly vascularised mucous membrane where the drugs undergo significant systemic absorption.

Timolol is a beta-blocking agent that works in glaucoma by reducing the production of aqueous humour through beta receptor blockade of the ciliary body. It is absorbed systemically and is contraindicated in patients at risk of bronchospasm, such as asthma and COPD. Additionally, beta-blockers when given with cardiac calcium channel blockers can precipitate complete heart block due to their cumulative negative inotropy and can cause syncope. This is the reason why the medication was stopped in this case. Topical ocular medications must therefore be prescribed carefully and their contra-indications considered.

Question:

An 83-year-old lady has age related macular degeneration and has difficulty to recognizing the faces of her three grandchildren. She then experiences an acute deterioration with metamorphopsia and relates that the clinic doorframe looks wavy to her even though she knows it to be straight. A fluorescein angiogram reveals a choroidal neovascular membrane under the macula. The consultant mentions there is a medication that can be given by the intravitreal route which binds to and blocks the action of vascular endothelial growth factor, the molecule which drives the growth of abnormal vessels behind the retina.

Which one of the following is correct?

A) Adalimumab

B) Etanercept

C) Omalizumab

D) Pegaptanib sodium

E) Rituximab

Answer:D

Explanation:

Biologic agents are being developed for many inflammatory, neoplastic and degenerative diseases of various organ systems in which a target molecule is identified, and another molecule such as an immunoglobulin generated to block its action. Biological agents are becoming more frequent in their use and medical students should be familiar with the most common agents in clinical use.

Wet ARMD is driven principally by vascular endothelial growth factor (VEGF) which drives angiogenesis and the production of a neovascular membrane, and increased permeability of vessels. There are three agents used as anti-VEGF agents in wet or neovascular ARMD, Lucentis (ranibizumab), Avastin (bevacizumab) and Macugen (pegaptanib sodium). These are given by intravitreal injection at intervals. Lucentis and Avastin are monoclonal antibodies, as indicated by the suffix “mab” – monoclonal antibody.

Adalimumab is a monoclonal antibody used in the treatment of rheumatoid arthritis, Rituximab a monoclonal antibody raised against the CD20 receptor expressed on B lymphocytes, therefore used in lymphomas, Etanercept is a soluble tumor necrosis factor receptor used in rheumatoid arthritis, and omalizumab is a monoclonal antibody used in severe allergic disease such as bronchial asthma.

Question:

A 57-year-old lady with diabetic neuropathy causing neuropathic pain in her feet at night presents to casualty in tears. She says the pain is so severe she wanted to try something to make it go away. Her husband who brought her to casualty mentions that she has been more tearful of late, and that he found an empty bottle of medications by her bed where he found her. She is tachycardic, agitated and is complaining of a dry mouth, dry eyes and nausea. Her pupils are dilated on examination and her ECG demonstrates a broad QT interval. Two hours after arriving in casualty she begins seizing.

Which one of the following is correct?

A) Gliclazide

B) Insulin

C) Metformin

D) Paracetamol

E) Tricyclic antidepressants

Answer:E

Explanation:

Tricyclic antidepressants are used for the treatment of depression and neuropathic pain, but have become less common in clinical practice due to newer medications that have improved side-effect profiles (TCA have significant anti-cholinergic properties that cause dry eyes, dry mouth, difficulty with micturition and constipation), such as the serotonin selective reuptake inhibitors for depression. TCAs are also very dangerous in overdose owing to their effect on the central nervous system and the heart in which they block sodium channels and have effects on cardiac rhythm (as in this case).

Treatment is by recognition (and dilated pupils should alert you to the possibility of TCA poisoning in patients who have access to them), intensive monitoring with cardiac monitor/ serial ECGs and blood gases. Severe poisoning necessitates ITU admission with intravenous bicarbonate and full supportive care. If the patient presents within 1-2 hours, activated charcoal can reduce further absorption of the medication.

None of the other drugs listed as potential answer would affect the pupil size, although insulin and gliclazide can cause seizures and many diverse neurological symptoms (such as agitation) secondary to hypoglycaemia.

Question:

A 52-year-old surgeon has a family history of glaucoma, and despite Latanoprost daily, has difficult to control intraocular pressures, 28 and 26mmHg on the left and right respectively at his last review. Visual field testing reveals an early arcuate scotoma on the right and his cup to disc ratios are 0.6 and 0.65. The ophthalmologist wishes to measure the intraocular pressure.

Which one of the following is correct?

A) Applanation tonometry

B) Estimation from optic cup to disc ratio

C) Examination under anaesthesia

D) Manual palpation of globes

E) Pneumatic tonometry

Answer:A

Explanation:

Goldmann applanation tonometry remains the gold standard for the assessment of intraocular pressure. Measurement is taken at the slit lamp after application of fluorescein and local anaesthetic drops since the procedure requires corneal contact. A blue filter light is used and the patients eyelids are parted, the prism applied to the corneal surface. Two semicircular rings are seen and their edges approximated to measure the intraocular pressure. This method measures the force required to flatten a given surface area of cornea.

Pneumatic non-contact tonometry is often used by the optometrist for screening for ocular hypertension. The cup to disc ratio does not give an indication as to the degree of ocular hypertension since is it possible to have advanced glaucoma with abnormal fields and significant evidence of optic nerve disease but with normal intraocular pressure. Manual palpation through closed lids can be useful if the intraocular pressure is very high, the globe will feel firm in comparison to the other. Examination under anaesthesia is useful in children in whom Goldmann tonometry and other more detailed analysis may not be possible in an uncooperative child.

Question:

A 74-year-old male with known age-related macular degeneration presents with a three hour history of deteriorating vision in his left eye and metamorphopsia. His acuities are 6/36 on the left and reduced to counting fingers on the right. Examination reveals evidence of a choroidal neovascular membrane.

Which one of the following is correct?

A) 24 hour blood pressure monitoring

B) CT scan orbit

C) Fasting blood sugar

D) Fundus fluorescein angiography

E) Ultrasound scan of eye

Answer:D

Explanation:

This patient has progressed from geographical atrophy (dry ARMD) to wet or neovascular ARMD as evidenced by the subretinal neovascular membrane. This is a result of neovascularisation and like in diabetes, the vessels are not grounded in perivascular support structures and are liable to bleed or leak beneath the macula causing visual abnormalities and loss.

The investigation of choice is fluorescein fundus angiogram whereby fluorescein is injected intravenously and a filtered light is used to scan the retina, identifying the contrast in the retina and choroid. Areas of hyperperfusion, or ischaemia can be identified, as can vascular leakage and abnormal vessels. FFA requires clear media and is contraindicated in renal impairment. Photos are taken at various time frames, with those early after administration of IV contrast giving the clearest images of arterial structures, and late images of venous structures.

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Question:

An 87-year-old male presents to the general ophthalmology clinic with glare and a gradual loss of vision affecting his right eye more than his left. Visual acuities are 6/24 OD and 6/12 OS, and ophthalmoscopy reveals bilateral nuclear sclerosis cataracts. In addition he has suffered from left sided-ectropion, left-sided epiphora and a long-standing mucocoele of his left lacrimal sac. During the consultation, pus was expressed with gentle pressure over the mucocoele, expressed through the superior and inferior medial canthi. He says that his cataracts cause him much more trouble than his mucocoele and wishes to get them removed as soon as possible, stating that he can better tolerate the epiphora.

Which one of the following is correct?

A) Simultaneous bilateral phacoemulsification and cataract extractions

B) Staggered bilateral phacoemulsification and cataract extractions

C) Dacrocystorhinostomy

D) Dacryoadenectomy

E) Dacryocystectomy

Answer:C

Explanation:

Despite the obvious visual deficit caused by this man’s bilateral nuclear sclerotic cataracts, the presence of an active infection within the immediate vicinity of the external eye precludes phacoemulsification cataract surgery as the risk of post-operative endophthalmitis – a serious threat to vision – in either eye far outweighs the benefit of early intervention. The mucocoele therefore requires surgical management with an external dacrocystorhinostomy performed under general anaesthetic to remove the static secretions and reservoir of infection sitting adjacent to, and in the presence of an ectropion, extending into the tear film and inferior fornix. Once this has been performed and a post-operative assessment confirms its success, then the patient can be listed for cataract surgery. In order to reduce the risk of intraocular infection, cataracts are not performed simultaneously since endophthalmitis affecting one eye is far more likely to affect both eyes resulting in potential bilateral blindness. They are often performed a few weeks apart for this reason.

Question:

A 45-year-old male has trouble reading his newspaper and finds that has to hold it at progressively longer distances in order to read it. He finds if particularly difficult to read the finer prints. He sees his optician who finds that his capacity to accommodate has reduced as a consequence of aging. He recommends lenses that refract for multiple distances and will allow him to read and to see clearly at multiple distances.

Which one of the following is correct?

A) Bifocal lenses

B) Fresnel lenses

C) Prismatic lenses

D) Toric lenses

E) Varifocal lenses

Answer:E

Explanation:

This patient has presbyopia, a condition in which the elasticity of the lens reduces to a critical threshold with age that results in a reduction in the refractive power of the lens and therefore difficulty with near vision. During the accommodation reflex, the ciliary body contracts, the suspensory ligaments relax and the elasticity of the lens fibres determines the refractory power of the lens. Presbyopia commonly starts to become a problem at around the age of 40-45 years, although the reduction in elasticity of the lens starts much earlier. The near point of vision become progressively longer in presbyopia until the individual seeks advice from an optometrist.

Bifocal lenses refract for two distances, for near vision and for distance vision but varifocals refract for multiple distances. Fresnel lenses are used to spread light, for example in lighthouses or car headlights. Prismatic lenses are used for corrections of squints and toric lenses to correct astigmatism.

Question:

A 61-year-old male with a four year history of chronic diarrhoea and malabsorption, who is also under treatment by the rheumatologists for uncharacterised but recurrent joint disease presents to the general neurology clinic with a history of recent and progressive cognitive decline reported to him by established colleagues at work and double vision. On examination, his MMSE score is 25/30, he has nystagmus and ophthalmoplegia, and is noted to contract his jaw muscles when he looks at a target moving from side to side in front of him. He is noted to have generalised lymphadenopathy and has lost 10kg of weight since his last review nine months ago.

Which one of the following is correct?

A) Creutzfeld-Jakob disease

B) Korsakoff’s psychosis

C) Normal pressure hydrocephalus

D) Pellagra

E) Whipple’s disease

Answer:E

Explanation:

Whipple’s disease is a multisystemic infectious disease caused by the organism Tropheryma whippelli. It is a cause of chronic diarrhoea and malabsorption typically affecting Caucasian males. Jejunal biopsy in such cases reveals periodic acid Schiff (PAS) positive macrophages. The disease can also cause chronic arthritis and if disseminated, can affect the heart (endocarditis) or the central nervous system (dementia, ophthalmoplegia). The finding of contraction of the jaw muscles with ocular movements (oculomasticatory myorhythmia) is pathognomonic. Although this is rare, it is an important responsibility of the clinician to understand that there are many treatable causes of dementia such as syphilis, vitamin B12 deficiency, hypothyroidism etc that if identified and treated can dramatically improve cognitive function and independence from a clinical course that would result otherwise in progressive decline and death.

Creuztfeld-Jakob disease is a prion disease in which prion proteins (non-degradable proteins) accumulate in the brain and may be genetic, sporadic or linked to environmental agents. It has no known cure. Korsakoff’s psychosis occurs most often in the setting of chronic alcoholism, not treated by thiamine replacement characterised clinically by confabulation and anterograde amnesia. Normal pressure hydrocephalus should be suspected in individuals with confusion, ataxia and urinary incontinence. Pellagra is nicotinic acid deficiency that presents with dermatitis, diarrhoea and dementia. It is treatable with nicotinic acid replacement

Question:

A 32-year-old alcoholic is admitted to casualty after he presents with some upper gastrointestinal bleeding which is thought to be a Mallory-Weiss tear due to forceful vomiting. He is resuscitated with copious intravenous normal saline although his haemoglobin hadn’t dropped sufficiently to warrant a blood transfusion. His blood results were notable for a raised MCV, raised ?GT and a serum sodium of 115mmol/L. Two days after admission he experiences quadriparesis, unable to move arms or legs, he has slurring of his speech, is unable to swallow water properly and complains of some double vision. A repeat set of blood tests shows a serum sodium of 152mmol/L.

Which one of the following is correct?

A) Bilateral stroke

B) Central pontine myelinolysis

C) Delerium tremens

D) Multiple sclerosis

E) Myasthenia gravis

Answer:B

Explanation:

This patient has suffered central pontine myelinolysis due to rapid correction of his stable, chronic hyponatraemia – a condition characterised by demyelination of the pons in the brainstem through which descending corticospinal and corticobulbar tracts traverse. It can present with para- or quadriparesis with evidence of bulbar skeletal muscle weakness such as dysarthria or dysphagia and double vision. A T2 weighted MRI of the brainstem is the investigation of choice and shows an area of high signal in the pons. A serum sodium estimation compared with admission sodium may gather evidence for CPM over other diseases.

Central pontine myelinolysis is one of the reasons why hyponatraemia must be corrected slowly, and junior clinicians who are often responsible for fluid management (particularly out of hours) should consider this when prescribing fluids. CPM is most often seen in alcoholics, but can occur in anorexia, hyperemesis gravidarum, malnutrition, burns and non-alcoholic liver disease.

Question:

A 21-year-old female presents to her GP with right sided visual loss associated with pain on eye movements, red desaturations, a central scotoma, and a relative afferent pupillary defect. Fundoscopy showed no abnormalities at the time. Four months later, she experiences paraesthesias affecting the right side of her body which get worse on taking a hot bath. An MRI scan demonstrates white matter lesions affecting her parietal cortex on the left side with optic nerve disease on the right, and peri-ventricular white matter. A lumbar puncture demonstrates oligoclonal bands on CSF electrophoresis not present in the blood and visual evoked potentials from the right eye are delayed. Repeat fundoscopy of the right eye demonstrates optic disc pallor, although her left optic disc appears normal.

Which one of the following is correct?

A) Cerebral lymphoma

B) Glaucoma

C) Multiple sclerosis

D) Neuromyelitis optica

E) Progressive multifocal leucoencephalopathy

Answer:C

Explanation:

This patient has evidence of demyelinating lesions in the central nervous system white matter separated in space and time, highly suggestive of multiple sclerosis. MS is an inflammatory neurodegenerative disease characterised by episodes of demyelination, which can follow a relapsing-remitting cycle or become progressive with little neurological recovery between flares and accumulating disability. MS is much more common in extremes of latitude, and complex genetic and environmental influences are thought to contribute to disease development. Diagnosis is by MRI scanning demonstrating evidence of demyelinating white matter lesions, paired CSF and serum electrophoresis demonstrating oligoclonal bands localised to the CSF (and therefore the CNS) often supported by visual or somatosensory evoked potentials demonstrating delayed conduction.

Neuromyelitis optica (Devic’s disease) is a variant of MS that as the name suggests, only affects the optic nerve and spinal cord (myelitis), and not the brain itself. Progressive multifocal leucoencephalopahy is caused by the JC virus and occurs most often in the setting of advanced HIV infection heralding the onset of AIDS. Glaucoma can cause visual loss that is non-reversible as opposed to optic neuritis (the presenting feature here) which often resolves over a period of weeks with steroid therapy. Glaucoma does not cause MRI white matter lesions of CSF abnormalities. Cerebral lymphoma would demonstrate malignant cells in the CNS associated with raised intracranial pressure and seizures which are not typical features of MS although focal neurological signs may exist. Fundoscopy would demonstrate papilloedema in this setting, rather than a unilateral disc pallor indicative of optic atrophy (typical in multiple sclerosis after an episode of optic neuritis).

Question:

A 54-year-old male presents to his GP with a four month history of difficulty walking, particularly in the mornings. He also feels dizzy when he gets up, which in itself is more difficult than it was six months ago. On examination there is proximal muscle weakness in the arms and legs which improves in strength with each contraction. There is global hyporeflexia but no sensory loss with mild ptosis evident. He has smoked 20 cigarettes per day since the age of 24 years. After the examination he asks if he can have something to treat his erectile dysfunction.

Which one of the following is correct?

A) Dermatomyositis

B) Lambert-Eaton myasthenic syndrome

C) Myasthenia gravis

D) Polymyalgia rheumatica

E) Polymyositis

Answer:B

Explanation:

This patient has Lambert-Eaton myasthenic syndrome (LEMS), a disease characterised by antibodies generated against the presynaptic calcium channels at the motor-end plates. It is therefore a disease of the neuromuscular junction. It is associated strongly with small-cell lung cancer in around 50% of patients which may predate the radiological appearance of the cancer by many years. It also occurs in patients with a history of autoimmune disease and therefore the aetiology of LEMS is not clear. Most affected individuals are male (5:1).

It is characterised clinically by proximal muscle weakness which improves with repetitive activity in the affected muscle groups (in contrast to MG which strength decreases with repetition), autonomic disturbance (postural hypotension, erectile dysfunction, constipation etc), less severe involvement of ocular and respiratory muscles when compared with myasthenia gravis, hyporeflexia (reflexes are normal in MG). Individuals diagnosed with LEMS may have a screening chest x-ray serially to detect malignancy and anti-bodies to voltage gated calcium channels. Treatment is with 3,4-dihydropyridine or IV immunoglobulins.

Question:

A 49-year-old female presents to her GP with weakness that she feels is worse towards the end of the day over the past month. On examination, her voice becomes softer as she is speaking although recovers after a period of silence. She has bilateral ptosis worse on the right and diplopia that is variable in nature initially worse on left lateral gaze, then on looking up although her pupils are equal and reactive to light. She says she sometimes finds swallowing her dinner difficult towards the end of a meal, particularly chewy foods like steak. When asked to get up from a seated position repeatedly, she quickly tires, equal in both shoulder and hip girdles symmetrically. When the GP applies a block of ice to her eyelid on the right, there is resolution of her ptosis temporarily in that eye of around 4mm.

Which one of the following is correct?

A) Antibodies against pre-synaptic voltage-gated calcium channels

B) CT scan of chest

C) Edrophonium test

D) MRI scan brain

E) Muscle biopsy

Answer:C

Explanation:

This patient has myasthenia gravis, an autoimmune disorder of the neuromuscular junction caused by antibodies generated against the nicotinic acetylcholine receptors at the motor end plate. This causes a reduction in available receptors for acetylcholine to activate, causing a fatigable muscle weakness in numerous muscle groups, particularly limb girdles, extraocular muscles (diplopia), levator palpebrae superioris (ptosis), bulbar muscles (difficulty in swallowing or chewing), and laryngeal muscles (difficulty vocalising). It may eventually affect respiratory muscles at which point it represents a threat to life and may require intensive care admission with ventilatory support. The diagnosis is made on the basis of the edrophonium test (Tensilon test) in which a short acting acetylcholine-esterase inhibitor is injected, causing a temporary reversal of muscular fatigue by increasing the availability of acetylcholine at the motor end plate (by preventing its degradation) and competitive agonism of available receptors. This should only be done with full resuscitation to hand as it may cause parasympathomimetic effects such as bradycardia, and in extreme cases may result in cardiac arrest.

Myasthenia gravis is associated with thymic hyperplasia in patients under 50, and thymic tumours in predominantly male patients over 50, and therefore often a CT scan of the chest is done in confirmed cases to identify thymic tumors that may be amenable to surgery (particularly in refractory cases). Antibodies against the nicotinic acetylcholine receptors are positive in 90%, and those negative may test positive for anti-MUSK antibodies. Neurophysiology may reveal reduced amplitude signals with repetitive nerve stimulation and can be used to gather evidence for the diagnosis. Antibodies against pre-synpatic voltage gated calcium channels are used to diagnose Lambert-Eaton myasthenic syndrome. MG is not a muscular disease, it is a disorder of the neuromuscular junction, and therefore muscle biopsy will be negative. MRI scans of the brain have no role in diagnosing myasthenia gravis.

Treatment is with acetylcholine-esterase inhibitors such as neostigmine, which in a more protracted action than edrophonium, reduce muscular fatiguability but predictably can cause cholinergic side effects (miosis, sweating, difficulty in micturition, constipation etc). Immunosuppressant such as steroids, or cytotoxic agents can improve symptoms. In patients more acutely unwell, treatment with plasmapheresis or plasma exchange can deplete the patient’s plasma of antibodies and result in some degree of clinical resolution. Intravenous immunoglobulins can also be used in the acute setting, and vital capacity measurements to screen for respiratory compromise.

Question:

A 73-year-old man presents to the general neurology clinic with recurrent falls, recently escalating in frequency. On examination he has difficulty initiating walking with a stooped posture, shuffling his feet as he walks. His facial expressions are blunted, he has a reduced blink rate, and has cogwheel rigidity in his right wrist. Flexion of both elbows demonstrates rigidity that appears constant throughout the range of movement, equivalently present on extension. He has a resting tremor between his thumb and forefinger.

Which one of the following is correct?

A) Benzatropine

B) Deep brain stimulation

C) Levodopa and benserazide

D) Oral desferrioxamine

E) Subcutaneous apomorphine

Answer:C

Explanation:

This patient has idiopathic Parkinson’s disease, a neurodegenerative disease resulting from degeneration of the dopaminergic neurons that connect to the substantia nigra in the basal ganglia. It presents as a triad of bradykinesia, tremor and ridigity. Bradykinesia is demonstrated by eliciting difficulty in the initiation and termination motor actions such as walking and the gait of a patient with Parkinson’s disease is characteristic shuffling with difficulty turning, resulting from a loss of postural reflexes - resulting in recurrent falls. Tremor results in cogwheeling, most demonstrable at the wrist, and may be unilateral accentuated by distraction. The rigidity in contrast to spasticity is present equally in flexors and extensors (and is therefore not pyramidal), and is equal throughout the range of movement (“lead pipe” in contrast to spasticity which is described as “clasp knife” as resistance decreases throughout the range of movement).

Treatment of Parkinson’s disease is started when symptoms start to interfere with function. Levodopa is the precursor of dopamine which is deficient in Parkinson’s disease, but peripherally causes nausea and vomiting (it is a dopamine agonist). It is therefore given concurrently with a peripheral (it does not cross the blood brain barrier) dopa-decarboxylase inhibitor. Levodopa becomes less effective with time, resulting in “on-off” effects in which rigidity and excessive involuntary movements occur close together and can be helped with modified release preparations. It is becoming more common to use dopamine agonist drugs before levodopa to delay the onset of this phenomenon, especially in younger patients. Subcutaneous apomorphine can be given as an infusion to control severe on-off effects as an inpatient. Muscarinic antagonists are often given to reduce the tremor and movement disorder seen in PD. Desferrioxamine is given in patients with Wilson’s disease who can manifest parkinsonian clinical features due to deposition of copper in the basal ganglia. Deep brain stimulation can be given to patient’s refractory to medical therapy with intractable symptoms as a treatment of last resort.

Question:

An 86-year-old lady is making a cup of tea in her residential home one morning when she experiences weakness of her right arm and face. She reports that it came on quite suddenly, that she managed to walk several paces to a chair and called for help. Her fellow resident noted that she was talking in sentences that seemed words spoken at random with no meaning. Her face was also sagging on the right side, and an ambulance was called immediately. In casualty two hours later she has 5/5 strength in both arms and legs, with no evidence of facial weakness or speech disorder. Her sensory examination and gait are normal, mobilising with a stick.

Which one of the following is correct?

A) Aspirin and clopidogrel

B) Aspirin and dipyridamole

C) Carotid Doppler

D) MRI scan of brain

E) Thrombolysis

Answer:B

Explanation:

This patient has suffered a transient ischaemic attack, a sudden onset focal neurological deficit that reverses completely within 24 hours of onset. It is often described to patients as a “mini stroke” as it heralds the increased risk of a stroke in the near future, unless measures are taken to reduce this risk. Evidence suggests the most effective immediate medical treatment of transient ischaemic attacks is with aspirin and dipyridamole, which are anti-platelet agents that act through two different mechanisms. This reduces the likelihood of thromboembolism from a carotid atherosclerotic plaque, the most common source of a TIA. Aspirin and clopidogrel are used to treat unstable angina. Carotid Doppler and echocardiogram can be useful in identifying the source of a clot and to determine whether the patient fulfils the clinical criteria for carotid endarterectomy (70-99% stenosis of the ipsilateral carotid artery). However, in this case the patient is likely to be too frail to survive this operation and therefore preventative treatment must take priority, in this case with dual anti-platelet therapies. The history is typical of TIA, and the absence of neurological signs on examination would make an MRI scan difficult to justify. However, if these signs persisted, an MRI scan is the most sensitive imaging modality to detect ischaemia or infarction, and a CT scan may remain negative for three days before demonstrating an infarct. Thrombolysis is not indicated to treat TIAs, but has a role to play in MRI/CT confirmed ischaemic strokes that present acutely to hospital with severe neurological deficits, provided no contraindications exist.

Question:

A 3-month-old boy is diagnosed with congenital hydrocephalus at birth, suspected on initial neonatal examination from a large cranial circumference which has grown progressively, now is at the 98th centile. The paediatric neurosurgeons inform the parents that this is due to an obstructive hydrocephalus at the base of the fourth ventricle and that the spinal fluid would need to be kept drained continuously to prevent the pressure in the child’s head from escalating and causing symptoms, which could eventually be life threatening.

Which one of the following is correct?

A) Decompressive craniectomy

B) Dural patch

C) Repeated aspiration through a lumbar puncture

D) Temporal lobectomy

E) Ventriculoperitoneal shunt

Answer:E

Explanation:

The Monroe-Kelly doctrine models an understanding of intracranial pressure by viewing the cranium as a fixed volume structure containing the brain, CSF and blood. If the amount of any of these substances increases the intracranial pressure will elevate (hence, a haematoma or a CSF blockage, or cerebral oedema). This child has hydrocephalus and requires chronic drainage of CSF to prevent increased intracranial pressure which would compress vascular structures and the brain parenchyma. Rather than repeatedly perform lumbar punctures which would not be practical as a long term solution, a CSF shunt can be placed that drains CSF from the ventricles in the brain to the peritoneal cavity most commonly (ventriculoperitoneal shunt), but also to the right atrium or the pleural space. Care must be taken that the flow of CSF is regulated: too slow and the intracranial pressure will increase, and too fast and cerebral hypotension will occur causing postural headaches. The VP shunt is made of plastic and does not grow as the patient does. Therefore it will need to be replaced once the excess of tubing left in the peritoneal cavity shortens. The shunt can be seen and monitored on plain radiography.

Question:

A 55-year-old heavy smoker with a history of angina, hypertension and hypercholesterolaemia presents to his GP complaining of a 2-month history of severe episodic abdominal pains. These pains occur about 20 to 30 minutes after meals, and are especially severe after large meals. His fear of meals has resulted in him having lost 5 kg in this time. The GP suspects peptic ulcer disease but a gastroscopy and colonscopy in hospital have shown no abnormalities.

Which one of the following is correct?

A) Acute mesenteric infarction

B) Chronic cholecystitis

C) Chronic mesenteric ischaemia

D) Chronic pancreatitis

E) Referred cardiac angina

Answer:C

Explanation:

Chronic mesenteric ischaemia usually results from atherosclerotic disease of the superior mesenteric trunk and eventually the mesenteric arteries. Progressive stenosis of the arteries leads to inadequate gut perfusion at times of increased demand (i.e. during digestion after meals). The condition usually presents with severe, sharp abdominal pain approximately 30 minutes post-prandially. Patients often anticipate this pain and fear to eat, thereby losing significant amounts of weight in the process. Chronic ischaemia like this should be differentiated from acute mesenteric infarction, which occurs after rupture of local atherosclerotic plaques or after arterial occlusion by emboli (i.e. from the heart, as a result of atrial fibrillation). Mesenteric infarction is extremely painful and typically lacks clinical signs (therefore necessitating urgent surgical review if suspected), although rapid hypovolaemia and shock may ensue.

Question:

An 85-year-old man presents to Casualty with shortness of breath, mild chest pain and palpitations. Examination reveals an irregularly irregular pulse, a first heart sound of variable intensity and signs of LVF.

Which one of the following is correct?

A) Atrial fibrillation

B) Atrial flutter

C) Lown-Ganong-Levine syndrome

D) Ventricular tachycardia

E) Wolff-Parkinson-White syndrome

Answer:A

Explanation:

Atrial fibrillation (AF) is a common supraventricular tachycardia that is seen in up to 10% of patients above 65 years of age. It is usually secondary to ischaemic heart disease and heart failure but can also be precipitated by hypertension, MI (seen in 22%), pulmonary embolism, mitral valve disease, pneumonia, hyperthyroidism, alcohol, surgery, hypokalaemia and hypomagnesaemia. In AF, the sinoatrial node depolarizes in a rapid and disorganized manner, causing the atria to contact ineffectively at a rate of 300-600 beats per minute. Only sporadic impulses from the sinoatrial node depolarize the atrioventricular node and ventricular muscle, causing the ventricles to contract in an ‘irregularly irregular’ rhythm. For the purpose of undergraduate exams, the use of this term to describe rhythm is almost always limited to AF. Other features of AF include palpitations, dyspnoea, syncope and the sequelae of systemic emboli such as stroke, acute limb ischaemia and even mesenteric ischaemia. ECG will demonstrate a fibrillating baseline with irregularly spaced QRS complexes and absent P waves. Treatment involves the use of anticoagulants (e.g. warfarin) or antiplatelet agents (e.g. aspirin) to reduce the likelihood of thrombosis and embolism. Patients should also receive rate-controlling medication such as digoxin or beta-blockers, or rhythm-controlling agents such as amiodarone.

Question:

An 80-year-old man presents to Casualty with a 6-hour history of central, crushing chest pain that occurred whilst he watching a horror movie. He describes the pain as radiating to his neck and down his left arm, and it has not been relieved by his usual GTN spray. He feels nauseous and on examination, appears pale and sweaty. A 12-lead ECG is immediately performed and demonstrates ST segment depression leads I, III and aVF and non-specific T wave changes. Another vital investigation is scheduled for later, whilst a chest X-ray is performed and returns as ‘normal’.

Which one of the following is correct?

A) Exercise (stress) ECG

B) Myocardial perfusion scan

C) Serum lactate dehydrogenase

D) Serum troponin

E) Transthoracic echocardiography

Answer:D

Explanation:

The most likely diagnosis in this case is a non-ST elevation myocardial infarction (NSTEMI). Since the ECG findings in this condition are often non-specific, the diagnosis is based on the triad of history, examination and the presence of serum markers of myocardial necrosis (e.g. cardiac enzymes). Troponin is currently the most sensitive and cardiospecific marker available, and is used preferentially to the more traditional markers like creatine kinase, lactate dehydrogenase and aspartate transaminase. Following MI, troponin is released into the circulation from dying cardiac myoctes. Serum troponin levels peak at 12 hours post-infarction and remain elevated for up to 10 days. The sensitivity of troponin in diagnosing MI has been shown to be as high as 100% when measured 12 hours after the onset of symptoms (compared to sensitivities as low as 21% when measured at only 6 hours). Therefore, a non-elevated troponin level at 12 hours after symptom onset makes MI an unlikely diagnosis but a second sample after a further 12 hours should nonetheless be obtained, if the diagnosis remains uncertain. Troponin may also be elevated in conditions like myocarditis, arrhythmia and pulmonary infarction – but to a lesser extent than in MI.

Question:

A 72-year-old man presents to Casualty with an hour’s duration of central chest pain radiating to his left arm. He is nauseous, sweaty and short of breath. The pain reminds him of his heart attack 3 years before, during which he was prescribed a ‘clot busting’ drug that he was instructed never to have again. His ECG shows ST elevation of 3 mm in V2, V3 and V4. There are no contraindications to thrombolysis. The drugs already administered to him include aspirin, clopidogrel, morphine and metoclopramide.

Which one of the following is correct?

A) Alteplase alone

B) Alteplase followed by intravenous heparin infusion

C) Beta-blocker

D) Low molecular weight heparin

E) Streptokinase

Answer:B

Explanation:

This patient’s anterior myocardial infarction is an indication for thrombolysis. Streptokinase is the first-line thrombotic agent in most hospital but following the administration of streptokinase, patients develop anti-streptokinase IgG antibodies that will reduce the thrombolytic activity and potentially trigger a severe allergic reaction if administered a second time. To prevent this, patients who have received streptokinase carry a card or wear a MedicAlert bracelet to warn medical staff, should such an emergency recur. The other major class of thrombolytic drugs is the tissue plasminogen activator (tPA) – these include tenecteplase, alteplase and reteplase. When tPA is given, it is followed by an intravenous infusion of heparin in order to improve the chance of reperfusion. The main complications of thrombolysis are bleeding, reperfusion arrhythmias, allergic reactions and hypotension. Haemorrhagic stroke is regarded by some as the most serious complication of thrombolysis – this occurs in about 0.5% of all cases.

Question:

A 70-year-old woman with a longstanding history of hypertension that has been poorly responsive to treatment presents to her GP with general lethargy, malaise and increasing dyspnoea at rest. Cardiovascular examination reveals a collapsing pulse, laterally displaced apex beat and an early diastolic murmur heard loudest at the left sternal edge, radiating to the apex.

Which one of the following is correct?

A) Aortic regurgitation

B) Aortic stenosis

C) Atrial septal defect

D) Mitral regurgitation

E) Ventricular septal defect

Answer:A

Explanation:

The clinical signs in this case strongly suggest an acute presentation of aortic regurgitation. Causes of this include infective endocarditis, rheumatic fever and severe hypertension (although it is also associated with a wide range of other acquired and congenital disorders). Chronic stable aortic regurgitation is commonly asymptomatic but fatigue and dyspnoea become apparent with progressively worsening regurgitation as the left ventricle dilates and begins to fail. Signs include collapsing (‘waterhammer’) pulse, visible capillary pulsations in the nailbed (Quincke’s sign), visible pulsations in the neck (Corrigan’s sign), head-nodding in time with the pulse (de Musset’s sign), a pistol-shot sound on auscultation of the femoral pulses (Traube’s sign), a to-and-fro murmur audible on compression of the femoral artery with the stethoscope (Duroziez’s sign), a laterally displaced and heaving apex beat, an early diastolic murmur loudest at the left sternal edge (radiating to the apex), an ejection systolic flow murmur (due to increased ventricular load from regurgitation; not necessarily due to aortic stenosis), and a rumbling mid-diastolic murmur at the apex (Austin-Flint murmur; caused by anterior mitral valve leaflet vibrating in the regurgitant jet). Management includes antibiotic prophylaxis against infective endocarditis, while aiming to replace the valve before left ventricular function deteriorates.

Question:

A 45-year-old bartender with no significant past medical history presents to his GP with a 3-month history of paroxysmal nocturnal dyspnoea and orthopnoea (now using 3 pillows). Examination reveals a mild degree of ankle oedema and auscultation of the chest finds bibasal crackles. Initial blood tests are ordered: full blood count reveals a macrocytic anaemia and liver function tests reveal raised liver transaminases and a raised gamma-glutamyltransferase.

Which one of the following is correct?

A) Cor pulmonale

B) Dilated cardiomyopathy

C) Hypertensive heart failure

D) Infective cardiomyopathy

E) Ischaemic cardiomyopathy

Answer:C

Explanation:

This patient’s presenting symptoms and signs are strongly suggestive of progressively worsening heart failure. The lack of a significant past medical history and the patient’s occupation type lead one to believe that alcohol consumption may be the cause of the underlying pathology. This is supported by initial blood test results, all of which are in keeping with the picture of chronic alcohol over-consumption. Alcohol abuse has many deleterious effects on the body, not least of which is its effect on the myocardium, resulting in dilated cardiomyopathy and subsequent heart failure. Although standard treatment for heart failure will be initiated in this patient, the underlying issue of alcohol abuse must be addressed to prevent further complications from it.

Question:

A 69-year-old gentleman with diet-controlled type 2 diabetes mellitus and peripheral vascular disease develops asymptomatic hypertension. A 24-hour urine collection is negative for protein and blood tests reveal normal U&Es. He is started on lisinopril and reviewed one week later. However, repeat blood tests show an elevated serum urea (23.4 mmol/L) and serum creatinine (302 µmol/L).

Which one of the following is correct?

A) Coarctation of the aorta

B) Diabetic nephropathy

C) Glomerulonephritis

D) Polycystic kidney disease

E) Renal artery stenosis

Answer:E

Explanation:

In this case, the patient’s peripheral vascular disease and diabetes mellitus suggest that he may have a degree of arterial atherosclerosis, predisposing him to renal artery stenosis (a less common cause of which is fibromuscular dysplasia – common in young females). ACE inhibitors can drastically reduce the glomerular filtration rate of a patient with occult renal artery stenosis (by inhibiting ACE from constricting the efferent arteriole of the glomerulus, thereby decreasing filtration pressure). This can quickly result in acute renal failure. Therefore, patients’ U&Es should always be checked before, and at regular (1-2 week) intervals after starting ACE inhibitor treatment.

Question:

A 59-year-old man presents to Casualty complaining of visual blurring and headaches. He is mildly disoriented and routine observations show his blood pressure to be 250/140 mmHg and pulse to be 90 beats per minute. Fundoscopy demonstrates papilloedema and flame haemorrhages. Neurological examination is otherwise grossly normal and an emergency head CT scan does not demonstrate any obvious abnormality.

Which one of the following is correct?

A) Admit to High Dependency Unit + intravenous antihypertensive medication

B) Admit to ward + oral antihypertensive medication

C) Outpatient treatment: single oral antihypertensive agent

D) Outpatient treatment: two oral antihypertensive agents

E) No further assessment + review after 4 weeks

Answer:A

Explanation:

This is a case of severe malignant hypertension, as evidenced by the patient’s altered mental state, papilloedema and other symptoms. It warrants urgent treatment and monitoring to prevent serious complications (e.g. haemorrhagic stroke, blindness, renal failure, aortic dissection and death). All patients with features of severe disease require admission to the high-dependency or intensive care unit. Intravenous sodium nitroprusside and furosemide are first-line treatments of hypertensive encephalopathy and should be used to reduce blood pressure by approximately 25% over 2 hours and then to normal levels over the next 72 hours. Intravenous beta-blockers (e.g. labetalol) and long-acting calcium channel blockers may be considered as second-line agents if first-line medications are inadequate. As mentioned previously, blood pressure should not be dropped too rapidly as this may result in retinal, cerebral and myocardial infarction, due to the failure of autoregulatory perfusion mechanisms.

Question:

A 75-year-old man suffers a massive anteroseptal myocardial infarct and after being treated in hospital for a week, is discharged in a relatively good state of health. 7 months later, an episode of severe pneumonia necessitates a chest radiography, which incidentally demonstrates a left ventricular ‘bulge’. Echocardiography confirms this bulge to expand during systole.

Which one of the following is correct?

A) False aneurysm within myocardium

B) Mural thrombus

C) Ventricular aneurysm

D) Ventricular wall rupture

E) Vitamin D deficiency

Answer:C

Explanation:

A large myocardial infarction (usually an anteroseptal infarct) may result in a transmural (i.e. full-thickness) infarction of the myocardium. A late complication of this is a ventricular aneurysm. This results from replacement of the infarcted muscle by a thin layer of collagenous scar tissue that progressively stretches and bulges as the intraventricular pressure rises during systole. Ventricular aneuryms may cause complications including arrhythmias, left ventricular failure and mural thrombosis with systemic embolization. However, the aneurysm itself is unlikely to rupture. Patients with a left ventricular aneurysm should be anticoagulated because of the increased risk of systemic embolisation. Indications for surgical aneurysmectomy include congestive heart failure, angina pectoris, recurrent ventricular tachyarrhythmias and systemic emboli. Patients undergoing resection of an aneurysm may also require coronary revascularization.

Question:

An 82-year-old man with a longstanding history of angina pectoris presents to Casualty with shortness of breath, chest pain and palpitations. His pulse is 140 beats per minute and regular. An ECG is performed immediately and reveals a regular, broad-complex tachycardia with complete lack of concordance between P waves and QRS complexes.

Which one of the following is correct?

A) Sick sinus syndrome

B) Sinus tachycardia

C) Supraventricular tachycardia

D) Ventricular fibrillation

E) Ventricular tachycardia

Answer:E

Explanation:

This case demonstrates a type of broad-complex tachycardia, which is potentially life-threatening and requires prompt diagnosis so that the correct treatment protocols may be initiated. In broad-complex tachycardias, the underlying arrhythmia may be supraventricular in origin, with co-existing bundle-branch block, or it can be of ventricular origin. An ECG demonstrating a broad-complex tachycardia with QRS concordance in the chest leads, left axis deviation, fusion and capture beats is all strongly suggestive of ventricular tachycardia. In this patient, as long as his blood pressure is stable, the treatment of choice is intravenous lidocaine followed by amiodarone, if necessary. Electrolyte abnormalities (e.g. kypokalaemia, hypomagnesaemia) should be urgently corrected. If the drugs prove ineffective, or if the blood pressure drops even further, synchronized DC shock should be administered (i.e. according to the European Resuscitation Council Guidelines, 2005) to help to restore normal cardiac rhythm.

Question:

A previously healthy 35-year-old man presents to his GP with polyuria, polydipsia and an 18-month history of weight gain, fatigue, weakness, easy bruising and loss of libido. He claims to have quit his job because of his lack of energy but the GP believes he may have become too depressed to work.

Which one of the following is correct?

A) Cushing’s syndrome

B) Depression secondary to diabetes mellitus

C) Drug abuse

D) Hypothyroidism

E) Late-onset diabetes mellitus

Answer:A

Explanation:

Cushing’s syndrome results from prolonged, inappropriate exposure to glucocorticoids. The common cause of Cushing’s syndrome in general medical practice is chronic use of steroid medication. Endogenous causes are rarer and include autonomous adrenal secretion by adrenal tumours, ectopic ACTH secretion by a neuroendocrine-derived tumour (e.g. small-cell lung carcinoma and carcinoid tumours), and Cushing’s disease, where ACTH is secreted by a pituitary adenoma. The complications of Cushing’s syndrome include DM, cardiovascular disease, osteoporosis and infection. Management depends on the cause:

Iatrogenic: Stop medications if possible.

Cushing's disease: Selective removal of pituitary adenoma via a trans-sphenoidal approach. Bilateral adrenalectomy if the source cannot be located or recurrence post-surgery (complications include Nelson's syndrome: post adrenalectomy development of a locally aggressive pituitary tumour (corticotrophinoma) due to lack of negative feedback). Pituitary radiotherapy is effective in children and is used in adults to prevent Nelson's syndrome.

Adrenal adenoma or carcinoma: Adrenalectomy: curative for adenoma, rarely for carcinoma. Radiotherapy & adrenolytic drugs (mitotane) follow if a carcinoma is present.

Ectopic ACTH: Surgery if the tumour can be located and has not spread.

Medical treatment, e.g. metyrapone or ketoconazole, are used to reduce cortisol secretion pre-surgery or while awaiting radiation to become effective.

Question:

An 85-year-old man with a longstanding history of type 2 DM presents to his GP with pain in his left thigh of 3-month duration. On examination, the left quadriceps is wasted and exquisitely tender, with a diminished knee-jerk reflex on that side.

Which one of the following is correct?

A) Delayed healing of fractured left femur

B) Diabetic amyotrophy

C) Diabetic neuropathy

D) Mononeuritis multiplex

E) Myositis secondary to infection

Answer:B

Explanation:

Diabetic amyotrophy implies a painful wasting of the quadriceps and other pelvifemoral muscles. The pathogenesis of this is not fully understood but it generally occurs in the context of poor glycaemic control. It has been known to resolve once treatment is optimized and glycaemic control is established. The use electrophysiology may demonstrate lumbosacral radiculopathy, plexopathy, or proximal crural neuropathy. The natural course of amyotrophy is variable with gradual but often incomplete improvement. IV immunoglobulins have been trialled with some success.

Question:

An 80-year-old man with a 30-year history of poorly-controlled Type 2 DM presents to his GP with a sudden, painless, total loss of vision in his left eye. Fundoscopy reveals loss of the red reflex in the affected eye, with a grey haze obscuring the retina. There is also clearly an element of proliferative retinopathy present, although the patient has not complained of visual problems until now.

Which one of the following is correct?

A) Retinal artery occlusion

B) Retinal vein occlusion

C) Retinal detachment

D) Retinal haemorrhage

E) Vitreous haemorrhage

Answer:E

Explanation:

Vitreous haemorrhage is one of the commonest causes of sudden visual loss. It can occur in poorly-controlled diabetes as a result of proliferative retinopathy, and can cause floaters or a complete visual loss. It can also occur in severe hypertension, following retinal tears, or as a result of neovascularisation secondary to retinal branch vein occlusion. The haemorrhage may be resorbed over a period of months (thereby allowing a degree of visual improvement) but further haemorrhage or tractional retinal detachment can supervene. In any case, emergency ophthalmological referral is warranted to rule out retinal detachment as a cause of sudden visual loss.

Question:

A 62-year-old man with a 20-year history of reasonably well-controlled type 2 DM has recently been started on a new drug by his GP, to further optimize glycaemic control. However, he begins to suffer from disturbing flatulence after taking it.

Which one of the following is correct?

A) Acarbose

B) Glibenclamide

C) Gliclazide

D) Nateglinide

E) Rosiglitazone

Answer:A

Explanation:

Acarbose is an intestinal a-glucosidase inhibitor that delays carbohydrate absorption (by decreasing breakdown of starch to sugar), thereby reducing post-prandial hyperglycaemia. It is used as an add-on drug to many diabetic treatment regimes, and is chewed at the start of each meal. Its principle side-effects are intestinal (especially flatulence, which is usually poorly tolerated; diarrhoea; and abdominal distension and pain), but note that it can rarely cause hepatic dysfunction as well.

Question:

A 24-year-old man presents to his GP with a 2-day history of progressive polyuria and polydipsia after a head injury. After searching the online literature, he is concerned that he has begun to develop type 1 diabetes mellitus. After preliminary investigations, he is trialled on intranasal desmopressin, which surprisingly cures his symptoms.

Which one of the following is correct?

A) Cranial diabetes insipidus

B) Diabetes mellitus

C) Drug-induced diuresis

D) Nephrogenic diabetes insipidus

E) Primary polydipsia

Answer:A

Explanation:

Cranial diabetes insipidus is caused by a deficiency of secretion of antidiuretic hormone (ADH, also known as ‘arginine vasopressin’) by the posterior pituitary. It is a recognized complication of head injuries (especially involving basal skull fractures which may traumatize the pituitary stalk), as well as a common complication of pituitary and hypothalamic surgery. Biochemically, it can be demonstrated by an elevated serum osmolality with an inappropriately low urine osmolality. The correction of this by desmopression (a synthetic ADH analogue), as part of the ‘water deprivation test’, is confirmatory and excludes nephrogenic diabetes insipidus.

Question:

A 50-year-old man attends a routine health check, at which his blood pressure is found to be 180/110 mmHg on average. Initial blood tests reveal a normal serum sodium concentration but a degree of hypokalaemia. After trying a number of anti-hypertensives (to which he responds poorly to), he is started on spironolactone, which causes his BP to drop to gradually to 120/90 mmHg.

Which one of the following is correct?

A) Acromegaly

B) Adrenal carcinoma

C) Conn’s syndrome

D) Cushing’s syndrome

E) Phaeochromocytoma

Answer:C

Explanation:

Primary hyperaldosteronism involves the excess production of aldosterone, independent of the renin-angiotensin system, causing increased sodium and water retention, and decreased renin release. It should be considered in all individuals with hypertension, hypokalaemia or alkalosis, who are not on diuretics. Sodium tends to be mildly raised or normal. Conn’s syndrome itself is responsible for about 2/3 of cases and is due to a solitary aldosterone-secreting adenoma. Diuretics that block the distal tubular Na+/K+ ATPase pump (e.g. potassium-sparing diuretics like spironolactone) are effective forms of treatment but if an adenoma can be demonstrated and localized, surgery (e.g. laparoscopic adrenalectomy) offers the best chance of a long-term cure. Conn’s syndrome is probably often missed since not all patients are overtly hypokalaemic. Renin and aldosterone measurements, taken whilst supine and after the patient has been upright for 4 hours, help to confirm the diagnosis.

Question:

A 34-year-old woman presents to her GP with a 4-month history of a painless, enlarging mass in her neck. Examination reveals a smooth, painless lump just right of the midline and in the lower third of the neck. The lump demonstrates some degree of fluctuance and moves on swallowing. Although clinically euthyroid, the patient’s thyroid function tests demonstrate elevated levels of free thyroxine but no detectable TSH.

Which one of the following is correct?

A) Multinodular goitre

B) Thyroglossal cyst

C) Thyroid adenoma

D) Thyroid carcinoma

E) Viral thyroiditis

Answer:A

Explanation:

In this case, the patient’s clinical findings suggest a solitary thyroid nodule. However, one must bear in mind that in clinical practice, this type of lump is most commonly a single prominent nodule within a multinodular thyroid gland. The nodule could also be a carcinoma but the investigative finding of increased thyroid function is extremely rare with thyroid carcinoma. This can, however, occur in multinodular goitre due to the development of autonomous hyperfunctioning nodules (toxic multinodular goitre or Plummer’s syndrome). Note that although a thyroglossal cyst is commonly associated with upward movement on tongue protrusion, these cysts are not known to affect thyroid hormone levels.

Question:

A 52-year-old man is brought into Casualty by the ambulance crew after feeling extremely unwell whilst in the park. On examination, he is drowsy, confused and sweating profusely with a pyrexia of 39oC. He is tachypnoeic (respiratory rate 30), tachycardic (heart rate 120 bpm) and in atrial fibrillation.

Which one of the following is correct?

A) 50% glucose

B) Hydocortisone

C) Lugol’s iodine

D) Propranolol

E) Propylthiouracil

Answer:C

Explanation:

Thyrotoxic crisis is an endocrine emergency, the signs and symptoms of which are similar to those of severe hypothyroidism (e.g. fever, agitation, confusion, coma, tachycardia, atrial fibrillation, diarrhoea and vomiting, goitre, thyroid bruit, an overall ‘acute abdomen’ picture.) Precipitants include recent thyroid surgery or radioiodine, infection, myocardial infarction and trauma. The diagnosis may be confirmed with technetium uptake if possible, but this should not delay any necessary urgent treatment. It should be treated with propylthiouracil or carbimazole (the former also inhibits peripheral conversion), steroids, beta-blockers and fluids. Note that Lugol’s iodine should not be used acutely as it can lead to further thyroid hormone release, but it may be used a few hours after anti-thyroid medication to help inhibit thyroid function

Question:

A 43-year-old man experiences perioral tingling and weakness 24 hours after undergoing a subtotal thyroidectomy for thyroid malignancy. Routine blood tests demonstrate a normal full blood count, normal renal function and albumin, but a corrected serum calcium level of 1.9 mmol/L.

Which one of the following is correct?

A) Dietary calcium deficiency

B) Hypoparathyroidism

C) Pseudohypoparathyroidism

D) Pseudopseudohypoparathyroidism

E) Vitamin D deficiency

Answer:B

Explanation:

Hypoparathyroidism is a relatively common and transient complication of subtotal thyroidectomy. The reduced PTH levels result in high phosphate and low calcium levels. Symptoms of hypocalcaemia include perioral paraesthesia, cramps and depression; signs include Trousseau’s sign (carpal spasm after inflating a blood pressure cuff over the brachial artery for 3 minutes) and Chvostek’s sign (ipsilateral contraction of facial muscles induced by tapping over the facial nerve passing through the parotid gland). If the patient is stable and only mildly symptomatic, oral calcium supplementation may suffice. However, for significant symptoms, 10 ml of 10% calcium gluconate may be administered intravenously. Approximately 1% of patients undergoing subtotal thyroidectomy will suffer from permanent hypoparathyroidism afterwards. Pseudohypoparathyroidism is an autosomal dominant condition characterized by end-organ resistance to PTH. Features of this include learning difficulties, short stature and short 4th and 5th metacarpals. This is accompanied by a low PTH, low calcium and high phosphate. Pseudopseudohypoparathyroidism describes the condition where all phenotypic features of pseudohypoparathyroidism are present despite relatively normal serum biochemistry.

Question:

An 82-year-old woman with a recent diagnosis of small-cell lung carcinoma complains to her GP of embarrassing hirsutism. Physical examination reveals a plethoric face, acne, abdominal striae and multiple bruises of varying ages. Upon referral to the endocrinologist, a test is performed to confirm the diagnosis.

Which one of the following is correct?

A) Aldosterone and renin levels

B) Dexamethasone suppression test

C) Hydrocortisone suppression test

D) Short Synacthen test

E) Urinary free catecholamines

Answer:B

Explanation:

This patient presents with hirsutism, striae, acne, plethora and bruising, all of which are features of Cushing’s syndrome. Other ‘Cushingoid’ features include psychosis, cataracts, impaired wound healing, impaired glucose tolerance (which may progress to diabetes mellitus) and proximal myopathy. From her history of small-cell lung carcinoma, the cause of her Cushing’s syndrome is likely to be ectopic ACTH secretion from the tumour. The diagnosis of Cushing’s syndrome is established by finding a raised 24-hour urinary free cortisol or by the dexamethasone suppression test (i.e. not a random cortisol level, as this exhibits diurnal variation.) In the dexamethasone suppression test, the high serum cortisol in Cushing’s syndrome will not be suppressed by low-dose (‘overnight’) dexamethasone. Plasma ACTH may then be measured to ascertain whether it is the adrenals or an ACTH-secreting tumour (i.e. of either the pituitary or an ectopic source) that is causing the problem. If it is the latter, a high-dose dexamethasone suppression test (which would suppress an ACTH-secreting pituitary adenoma, thereby confirming primary Cushing’s disease) may be performed. After this, abdominal CT or MRI scanning, adrenal venous sampling or inferior petrosal sinus sampling (i.e. for an ACTH-secreting source) may be performed.

Question:

A 2-week-old neonatal boy has been vomiting since birth. There was initially some spilling of his feed but the vomiting has since become persistent and contains greenish fluid suggestive of bile.

Which one of the following is correct?

A) Congenital pyloric stenosis

B) Duodenal atresia

C) Intussusception

D) Meningitis

E) Viral gastroenteritis

Answer:B

Explanation:

The presence of bile in the vomitus of a neonate who begins to vomit immediately after birth is a serious sign. In this case is it indicative of duodenal atresia. Other possible causes of obstruction are a band, midgut volvulus, meconium ileus and an annular pancreas. If untreated, any of these conditions may progress to perforation and infarction of the gut.

Duodenal atresia may be due to a complete absence of the duodenum, a fibrous band, a diaphragm, or a partial diaphragm. It most commonly occurs at the point of junction of fore- and midgut. It should be investigated by electrolyte and acid-base status measures (with subsequent correction of abnormalities), plain abdominal X-ray (which may show a 'double bubble' sign of duodenal obstruction) and barium studies (which may show stenosis). Treatment involves surgical correction via a duodenojejunostomy with resection of the atretic section.

Question:

A 67-year-old man presents to his GP with a 2-month history of constipation, flatulence and colicky left-sided abdominal pain relieved by defecation. He has lost 3 kg in weight over the last month but puts this down to an intensive exercise regime. He has no family history of malignancy and initial blood tests are all normal.

Which one of the following is correct?

A) Chronic idiopathic constipation

B) Colorectal cancer

C) Diverticular disease

D) Irritable bowel syndrome

E) Simple constipation

Answer:C

Explanation:

Diverticula are herniations of the gut wall (commonest in the sigmoid colon) that are suggested to result from high intraluminal pressures, which are presumably due to the low fibre diets common in developed (especially Western) countries. The incidence of diverculosis increases with age, such that a third of the UK population will have it by the age of 65. The main complications of this are severe inflammation (diverticulitis) with subsequent fistulae, haemorrhage, diverticular abscess formation, perforation and post-infective strictures. Note that if diverticulitis is suspected (i.e. with fever, raised CRP or WCC, etc.), barium enema is contraindicated because of the risk of perforation and subsequent chemical peritonitis due to the contrast used.

Question:

A 15-year-old girl is brought to the GP by her mother, who says that her daughter has been ‘going to the toilet’ up to six times daily over the last month. The mother also says that her clothes have appeared more loose-fitting over this time. Examination reveals a slightly underweight girl with lanugo hair on her face and arms. There are also ambiguous marks on the knuckles of her right hand.

Which one of the following is correct?

A) Coeliac disease

B) Irritable bowel syndrome

C) Laxative abuse

D) Thyrotoxicosis

E) Ulcerative colitis

Answer:C

Explanation:

Laxative abuse is most often seen in association with eating disorders and is a relatively common cause of chronic diarrhoea. It may also lead to the development of electrolyte imbalances, protein-losing enteropathy and intestinal paralysis. The marks on the patient’s knuckles are abrasions indicating repeated trauma on the incisors (acquired during the induction of vomiting with her fingers). Lanugo hair (resembling the fine hair on a newborn baby) is a feature of severe bulimia – it serves to insulate the malnourished patient against heat loss. Other features suggestive of an eating disorder include low mood, weight loss, hair loss, dry skin, ankle oedema, amenorrhoea and signs of iron-deficiency anaemia (e.g. koilonychia, palmar crease pallor, angular stomatitis and tachycardia).

Question:

A 27-year-old woman presents to her GP with a 5-month history of unintentional weight loss and intermittent diarrhoea. She claims that her previously heavy menstrual periods have now become surprisingly light. Examination reveals onycholysis, a resting tachycardia, warm peripheries, and hypopigmented patches over the dorsum of her hands.

Which one of the following is correct?

A) Anorexia nervosa

B) Crohn’s disease

C) Laxative abuse

D) Thyrotoxicosis

E) Vitiligo

Answer:D

Explanation:

This lady has signs and symptoms consistent with thyrotoxicosis. Some of the symptoms include weight loss (despite increased appetite), heat intolerance, sweating, diarrhoea, tremor, irritability, frenetic activity, emotional lability, psychosis, itch, oligomenorrhoea (patients may present with infertility). Signs include resting tachycardia, AF, warm peripheries, fine tremor, palmar erythema, hair thinning, lid lag, and lid retraction. There may be a goitre, thyroid nodules or bruit depending on the cause. It is important to do an autoantibody screen (especially since the commonest causes of hyper- and hypothyroidism in the UK are Graves’ and Hashimoto’s diseases respectively – both autoimmune conditions). The hypopigmentation seen in this case is due to vitiligo (an associated autoimmune condition). The triad of Graves’ is ophthalmopathy, thyroid acropachy and pretibial myxoedema (not to be confused with the ‘myxoedema’ or hypothyroidism). After thyroid function tests confirm the abnormality, treatment options include symptomatic (propranolol for tremor), medical (carbimazole or propylthiouracil via titration or block-and-replace), radioiodine (contraindicated in pregnancy and lactation) and surgery.

Question:

A 25-year-old woman presents to her GP with the feeling of a lump in her throat that occasionally causes discomfort on swallowing. Video fluoroscopic imaging and upper GI endoscopy reveal no obvious abnormalities with oesophageal function or anatomy.

Which one of the following is correct?

A) Chagas’ disease

B) Diffuse oesophageal spasm

C) Globus pharyngeus

D) Myasthenia gravis

E) Pharyngeal web

Answer:C

Explanation:

Globus pharyngeus (previously known as globus hystericus) describes the classic ‘lump in my thoat’ sensation. However, detailed examination and investigations often reveal no organic abnormality. Some patients describe a difficulty in swallowing whereas others claim that swallowing particular food or drinking liquids relieves the discomfort. The symptoms are typically worse when the patient is under stress (possibly due to cricopharyngeal spasm during this time). Treatment may be directed towards addressing underlying problems (i.e. causes of stress) but it is imperative to first rule out other major causes of dysphagia.

Question:

A 52-year-old man presents to his GP with a 5-month history of worsening epigastric pain and dyspepsia. This does not resolve with standard antisecretory medication and so a referral to Gastroenterology is made. Subsequently, upper GI endoscopy reveals multiple gastric as well as duodenal ulcers. The physician orders a serum gastrin level to aid his diagnosis – this comes back as highly elevated.

Which one of the following is correct?

A) Chemical gastroduodenitis

B) Chronic active gastritis

C) Infective gastritis

D) Pyloric stenosis

E) Zollinger-Ellison syndrome

Answer:E

Explanation:

Zollinger-Ellison syndrome (ZES) is the association of peptic ulcers with a gastrin secreting adenoma (i.e. gastrinoma). Gastrin excites excessive gastric acid production, which may produce multiple ulcers in the duodenum and stomach. The adenoma is usually found in the pancreas, although it may arise in the stomach or duodenum. Most cases are sporadic; 20% are associated with Multiple Endocrine Neoplasia type 1 (MEN1). 60% are malignant with metastases found in local lymph nodes and the liver. Symptoms of ZES include abdominal pain and dyspepsia (from the ulcers) and chronic diarrhoea due to inactivation of pancreatic enzymes (also causing steatorrhoea) and damage to intestinal mucosa. About 0.1% of patients have peptic ulcer disease as a part of ZES. It should therefore be suspected in those with multiple peptic ulcers, ulcers distal to the duodenum, or a family history of peptic ulcers (or of islet cell, pituitary, or parathyroid adenomas). Raised fasting serum gastrin levels are usually present; otherwise, the secretin stimulation test may be used. The gastrinoma is often difficult to locate and somatostatin receptor scintigraphy, endoscopic ultrasound and CT are used to localise and stage it. Treatment includes proton-pump inhibitors, octreotide and if possible, tumour resection.

Question:

A 55-year-old man is referred by his GP to the Medical Assessment Unit for a rapidly worsening chest infection. On examination, he appears unwell and is pyrexial, with signs of left lower lobe pneumonia. However, the consultant physician notices icteric sclerae and orders liver function tests together with routine bloods. The results are: haemoglobin 14.2 g/dl, WCC 25.4 x 10109/l, platelets 400 x 10109/l, Na+ 136 mmol/l, K+ 3.7 mmol/l, urea 6.0 mmol/l, creatinine 80 µmol/l, random blood glucose 7.3 mmol/l, total bilirubin 40 µmol/l, AST 19 IU/l, ALT IU/l, alkaline phosphatise 50 IU/l, albumin 45 g/l. Further investigations reveal no apparent cause for his jaundice.

Which one of the following is correct?

A) Carcinoma of the head of the pancreas

B) Gallstones

C) Gilbert’s syndrome

D) Liver metastases from lung cancer

E) Primary liver tumour

Answer:C

Explanation:

Gilbert’s syndrome is a metabolic disorder thought to be inherited in an autosomal dominant manner. It is a common cause of unconjugated hyperbilirubinaemia and is due to decreased bilirubin UDP-glucuronosyltransferase activity. Prevalence is estimated at 1-2%. The onset is shortly after birth, but it may be unnoticed for many years. Jaundice occurs during intercurrent illness, and bilirubin rises on fasting. Liver biopsy is normal, but should rarely be required clinically. It is a benign condition.

Question:

A 49-year-old lady with longstanding but reasonably well-controlled rheumatoid arthritis visits her GP for a routine blood test. She is found to have a haemoglobin of 9.6 g/dL, a MCV of 82 fL and a raised ferritin level. The only medication that she has been taking for her condition is paracetamol and the occasional non-steroidal anti-inflammatory drug.

Which one of the following is correct?

A) Anaemia of chronic disease

B) Autoimmune haemolytic anaemia

C) Iron-deficiency anaemia

D) Pernicious anaemia

E) Sideroblastic anaemia

Answer:A

Explanation:

The blood results in this case demonstrate a normocytic normochromic anaemia. This pattern of anaemia is most commonly associated with chronic inflammatory diseases (e.g. rheumatoid arthritis, inflammatory bowel disease; hence the name ‘anaemia of chronic disease’), malignancy, chronic renal failure, endocrine hypofunction and in some haematological disorders (e.g. aplastic anaemia), as well as in the acute setting after massive blood loss. In anaemia of chronic disease, patients have a normocytic anaemia (although 25% of cases are microcytic) with normal or raised ferritin levels (thereby making iron-deficiency a less likely cause). Consequently, because iron supplementation is not required as body stores are adequate, treatment focuses on addressing the underlying condition. If the anaemia is secondary to chronic renal failure (i.e. via reduced erythropoietin secretion), exogenous erythropoietin may be used to stimulate erythrocyte production. Note that patients with chronic conditions requiring long-term non-steroidal anti-inflammatory drugs (NSAIDs) may also develop microcytic hypochromic anaemia from chronic blood loss secondary to gastritis or other gastrointestinal bleeding.

Question:

A 2-year-old boy is brought to the GP by his parents for a painful, swollen right knee. His parents claim that over the past 6 months, he has had multiple episodes of easy bruising to his skin, as well as similar painful knee swellings. Initial investigations reveal: haemoglobin 10.5 g/dL, MCV 87 fL, WCC 7.4 x 109/L, platelets 270 x 109/L, APTT raised, INR 1.1, factor VIII grossly reduced and factors IX and von Willebrand factors both normal.

Which one of the following is correct?

A) Haemophilia A

B) Haemophilia B

C) Immune thrombocytpaenic purpura

D) Thrombotic thrombocytpaenic purpura

E) Von Willebrand’s disease

Answer:A

Explanation:

This patient has ‘classical haemophilia’ (haemophilia A), an X-linked recessive disorder of coagulation in which the patient cannot synthesize clotting factor VIII due to a genetic mutation. Haemophilia B (Christmas disease) is caused by an inability to synthesize factor IX and is clinically indistinguishable from the much commoner haemophilia A. Although usually familial, a significant proportion of cases are caused by sporadic mutations. Factors VIII and IX are essential in the intrinsic clotting cascade – therefore, haemophilia A and B result in a prolonged APTT, while PT (or INR) and bleeding time remain normal. Symptoms usually begin when patients begin to crawl or walk, and manifest as recurrent painful bleeds into the joints (haemarthroses) and soft tissues (haematomas), which if inappropriately managed, may lead to crippling arthropathy and neuropathy respectively. Treatment of haemophilia A involves factor VIII concentrate given either as a regular infusion or simply during active bleeding. Those receiving regular infusions have higher factor VIII levels and therefore a better quality of life but are at a higher risk of developing antibodies to the extrinsic factor VIII, reducing its efficiency. Those who receive VIII only when bleeding are less likely to form these antibodies but obviously, are at a higher risk of bleeding. Those with mild disease may be treated with desmopressin (DDVAP), which releases factor VIII from internal stores. Factor VIII concentrate should be given prior to invasive procedures such as tooth extraction and surgery. Haemophilia B is treated similarly but with factor IX concentrate. Note that many haemophiliac patients who received blood products prior to the initiation of blood screening programmes, have contracted bloodborne viruses such as HIV and hepatitis C.

Question:

A 9-year-old boy becomes generally unwell whilst receiving chemotherapy on the ward for acute lymphoblastic leukaemia. He describes pins and needles around his lips and cramps in this hands and feet. His urine output has significantly decreased and urgent blood tests reveal raised serum potassium, phosphate and uric acid levels and a low calcium level.

Which one of the following is correct?

A) Disseminated intravascular coagulation

B) Haemolytic uraemic syndrome

C) Neutropenic sepsis

D) Thrombotic thrombocytopenic purpura

E) Tumour lysis syndrome

Answer:E

Explanation:

This acute post-chemotherapy presentation is known as tumour lysis syndrome. It is usually seen after chemotherapy in patients with lymphoproliferative disease. Massive cell death results in the release of potassium, phosphate and uric acid into the circulation. Phosphate binds to calcium, thereby lowering levels of the latter and causing symptoms of hypocalcaemia (e.g. perioral paraesthesia, tetany, Trousseau’s sign – carpal spasm on inflating a blood pressure cuff over the brachial artery, Chvostek’s sign – facial muscle twitching after tapping over the facial nerve at the angle of the jaw, and arrhythmias.) There is a risk of acute renal failure secondary to the release of nephrotoxic uric acid. Treatment involves intravenous fluids, allopurinol, renal support and correction of any electrolyte imbalances. Patients at risk of tumour lysis syndrome should be prescribed intravenous fluids and allopurinol (or rasburicase) prophylactically, to reduce levels of uric acid before commencing their chemotherapy sessions.

Question:

A 70-year-old man presents to his GP with a 5-month history of progressively worsening back pain. Radiographs demonstrate multiple lytic lesions in the lumbar vertebrae and in the iliac crest. Blood tests show hypercalcaemia, a mild degree of anaemia, and low white cell and platelet counts. Serum electrophoresis detects an IgG paraprotein band, and examination of bone marrow aspirate reveals a significant proportion of cytologically abnormal plasma cells.

Which one of the following is correct?

A) Heavy chain disease

B) Monoclonal gammopathy of uncertain significance

C) Multiple myeloma

D) Paraproteinaemia of chronic lymphocytic leukaemia

E) Waldenstrom’s macroglobulinaemia

Answer:C

Explanation:

This patient has multiple myeloma, as indicated by the large number of cytologically abnormal plasma cells in the bone marrow, the monoclonal IgG band on electrophoresis and the lytic bone lesions. In multiple myeloma, there is a malignant proliferation of plasma cells that secrete monoclonal antibodies and light immunoglobulin chains. The multisystem disease presents with lethargy, bone pain, pathological fractures, renal failure, amyloidosis (primary) and pancytopenia (due to marrow infiltration). The diagnosis requires 2 of 3 criteria: marrow plasmacytosis, serum/urine immunoglobulin light chains (Bence Jones protein) and skeletal lesions (osteolytic lesions, ‘pepperpot’ skull and pathological fractures). If serum or urine monoclonal antibodies are present but the other diagnostic criteria are not met, the diagnosis of ‘monoclonal gammopathy of uncertain significance’ is made – this has a 2% annual risk of transforming into multiple myeloma. Treatment aims to improve symptoms and suppress disease activity: bone pain is controlled with analgesia, bisphosphonates and orthopaedic intervention. Renal failure (caused by light chain deposition within the kidney) is managed by increasing fluid intake, although renal replacement therapy made be required. Infection, anaemia and bleeding caused by pancytopenia secondary to marrow infiltration can be managed with broad-spectrum antibiotics, erythropoietin and blood product replacement, respectively. In patients under the age of 55, allogenic stem cell transplantation may offer a chance at curing the disease but it has a treatment-related mortality rate of 30% and is associated with significant morbidity from treatment-related side-effects. Chemotherapy is used to suppress disease activity but is generally viewed as palliative. Prognosis is poor, with survival being less than 4 years; death occurs due to renal failure or infection.

Question:

A 75-year-old resident at a nursing home was found by his carer to be collapsed in the corridor. Upon arrival by ambulance to Casualty, initial blood tests reveal severe anaemia and a raised urea and creatinine. The on-call house officer prescribes him 3 litres of fluid to be infused, followed by 2 units of blood, to be taken over the following 24 hours. Midway through the blood transfusion, that patient complains of shortness of breath. Examination reveals a tachycardia, a raised JVP and basal crepitations in both lungs.

Which one of the following is correct?

A) Acute renal failure

B) Delayed haemolytic transfusion reaction

C) Fluid overload

D) Graft-versus-host disease

E) Transfusion-related acute lung injury

Answer:C

Explanation:

The clinical features mentioned in the question are highly suggestive of fluid overload. Every house officer (and beyond) should realize that the normal daily fluid requirement of a healthy 70 kg man is between 2.5 to 3 litres. However, fluid (and especially blood products) should always be administered more slowly in elderly patients and other individuals with poor renal or cardiac function, due to the tremendous strain that an overloaded intravascular volume may have on these vital organs. As in this case, fluid overload should be managed similarly to acute left ventricular failure (i.e. sit the patient upright, administer high-flow oxygen and intravenous furosemide and diamorphine, together with glyceryl trinitrate spray). In refractory cases, continuous positive airways pressure (CPAP) as well as venesection may be attempted to decrease the degree of pulmonary oedema present, if necessary.

Question:

A 16-year-old girl is obsessed about her weight and her calorie intake. She is extremely thin, with body mass index of 17.0. At dinner time, she prefers to eat in her room, frequently telling her parents that she needs to study and does not have much time to spend eating a meal at the dinner table. She goes running every day, spending at least 1 hour on it. On the contrary, she does enjoy baking and frequently bakes cookies for her family members. Which of the following would not be a typical feature in her disorder?

Which one of the following is correct?

A) Amenorrhoea

B) Low metabolic rate

C) Faster puberty rate

D) Decreased peripheral circulation

E) Bradycardia

Answer:C

Explanation:

This girl suffers from anorexia nervosa. This illness typically involves inability or refusal to eat with a consequence reduction in body weight (BMI<17.5). Due to starvation, features such as amenorrhoea with associated delay in puberty, low metabolic rate, decreased peripheral circulation, and bradycardia develop in the patient. Enjoying cooking for other people is also characteristic of the disorder.

Question:

Which of the non-pharmacological measures below can be recommended for the primary prevention of childhood asthma?

Which one of the following is correct?

A) Allergen avoidance

B) Modified milk formulae

C) Breast-feeding

D) Maternal dietary supplementations

E) Immunotherapy

Answer:C

Explanation:

There’s evidence of protective effect of breast-feeding in relation to early asthma. It should also be recommended for the other benefits. There’s insufficient evidence to recommend the other non-pharmacological measures stated above.

Question:

A 6-month-old baby boy presents with one week history of cough, runny nose and poor feeding. In addition, his parents complained that the baby has been very difficult to settle for the past 2 days. He appeared short of breath with respiratory rate of 50 breaths/min. On examination, there’s moderate intercostal recession and use of abdominal muscles for respiration. You can also hear widespread inspiratory crackles and expiratory wheeze on examination.

Which one of the following is correct?

A) CXR

B) Immunofluorescence on nasopharyngeal aspirate

C) Routine bloods

D) Sputum culture

E) No investigation necessary for diagnosis

Answer:E

Explanation:

Bronchiolitis is a clinical diagnosis and investigations are not needed for confirmation. Typical symptoms& signs include coryza, cough, poor feeding, pyrexia, widespread inspiratory crackles, expiratory wheeze and apnoeas.

Question:

Cerebral palsy is often classified into prenatal, perinatal and postnatal causes. Which of the following is not a prenatal cause of cerebral palsy?

Which one of the following is correct?

A) Intrauterine hypoxic-ischaemic injury

B) Toxins

C) Intrauterine infections

D) Intracranial haemorrhage

E) Chromosomal disorders

Answer:D

Explanation:

Intracranial haemorrhage is a perinatal cause of cerebral palsy.

Causes of cerebral palsy:

Prenatal insults (before birth):

Intrauterine hypoxic-ischaemic injury

Intrauterine infections

Toxins

Chromosomal disorders

Perinatal insults (period immediately before and after birth):

Billirubin encephalopathy Hypoxic ischaemic injury

Postnatal insults (up to 6 weeks after birth):

Trauma

Bacterial meningitis

Viral encephalitis

Question:

A 35-year-old Pakistani immigrant is referred by his GP to the Gastroenterologist for a 3-month history of progressive weight loss and loose, offensive stools. Initial blood tests reveal a macrocytic anaemia and hypoalbuminaemia, although U&Es, LFTs, random blood glucose and thyroid function tests are all within normal limits. A chest radiograph demonstrates some evidence of apical lung calcification with an element of hilar lymphadenopathy. An upper GI endoscopy and small bowel biopsy are normal.

Which one of the following is correct?

A) Crohn’s disease

B) Giardiasis

C) Sarcoidosis

D) Tropical sprue

E) Tuberculous enteritis

Answer:E

Explanation:

Tuberculosis, which should always be considered with immigrants from endemic areas, has affected this gentleman’s terminal ileum, resulting in malabsorption. A similar ‘terminal ileitis’ may develop from Crohn’s disease and ‘backwash ileitis’ of ulcerative colitis. However, one should bear in mind that inflammatory bowel disease is uncommon in Asian and South-East Asian populations, unlike in most Western countries. Tuberculosis should therefore definitely be excluded in this case by sputum culture (for acid-fast bacilli) or biopsy of lung tissue (histologically demonstrating a caseating granuloma); the tuberculin test (e.g. Mantoux test) may also be used. Treatment is with anti-tuberculous therapy for 6-12 months (i.e. 6 months of rifampicin and isoniazid supplemented in the first 2 months with pyrazinamide and ethambutol). Vitamin supplementation (particularly vitamin B12 which is absorbed in the terminal ileum) should also be prescribed.

Question:

A 70-year-old man with known polycythaemia rubra vera presents to his GP with a 2-week history of nausea, vomiting and abdominal pain. Examination reveals a tender hepatomegaly 3 cm below the costal margin and moderate ascites. Liver function tests reveal mildly elevated transaminases and bilirubin but a normal alkaline phosphatase. Liver biopsy demonstrates features consistent with venous outflow obstruction.

Which one of the following is correct?

A) Alcoholic hepatitis

B) Budd-Chiari syndrome

C) Chronic viral hepatitis

D) Hepatocellular carcinoma

E) Metastasis from extra-hepatic tumour

Answer:B

Explanation:

The liver biopsy in this patient demonstrates obstruction to hepatic venous outflow. This is a non-specific finding but from the list of options given, the likeliest cause is Budd-Chiari syndrome. The causes of this syndrome include hypercoagulable states (the Pill, pregnancy, malignancy, paroxysmal nocturnal haemoglobinuria, polycythaemia rubra vera, thrombophilia) or liver, renal or adrenal tumours. In this syndrome, hepatic vein obstruction causes ischaemia and hepatocyte damage, presenting with liver failure, or insidious cirrhosis. Abdominal pain, hepatomegaly, ascites and raised ALT occur, with portal hypertension developing in chronic forms. Useful imaging modalities include ultrasound with hepatic vein Dopplers, CT and MRI. Angioplasty, transjugular intrahepatic portosystemic shunt (TIPS) or a surgical shunts may be needed. Lifelong anticoagulation should be instituted unless there are varices present, and liver transplantation should be considered in cases of fulminant hepatic necrosis or cirrhosis.

Question:

A 45-year-old woman with a long history of gallstones presents to Casualty with a 18-hour history of severe abdominal pain radiating to the back. Examination reveals tachycardia, tachypnoea and low blood pressure. Investigations reveal a mildly elevated bilirubin but a serum amylase that is six times higher than normal. An abdominal ultrasound demonstrates a sone in the common bile duct.

Which one of the following is correct?

A) Acute haemorrhagic pancreatitis

B) Recurrent acute cholecystitis

C) Biliary colic

D) Ruptured abdominal aortic aneurysm

E) Ureteric colic

Answer:A

Explanation:

Acute haemorrhagic pancreatitis classically presents with sudden-onset abdominal pain with signs of shock such as tachycardia, hypotension and tachypnoea. The two commonest causes of acute pancreatitis are gallstones and alcohol (note that alcohol is the commonest cause of chronic pancreatitis). Although a raised serum amylase is seen in other abdominal emergencies (e.g. perforated duodenal ulcer), if the amylase is more than five times greater than normal, acute pancreatitis is the most likely diagnosis. However, do note that amylase is not included in the Glasgow criteria for predicting the severity of pancreatitis. Management involves prompt rehydration (beware of ‘third space sequestration’ in acute pancreatitis) with normal saline, analgesia and close hourly observation. If gallstones are found to be the cause, ERCP (with gallstone removal) may be attempted if jaundice is progressively worsening. Repeated imaging (usually CT) is performed to monitor progress.

Question:

NICE guidelines (May 2009) recommended that certain group of patients should be offered serological testing for coeliac disease. Which of the following group of patients do not belong in this category?

Which one of the following is correct?

A) Autoimmune thyroid disease

B) Dermatitis herpetiformis

C) Irritable bowel syndrome

D) Type 2 diabetes

E) First-degree relatives (parents, siblings or children) with coeliac disease.

Answer:D

Explanation:

NICE guidelines (May 2009) recommended that serological testing for coeliac disease should be offered to children and adults with any of the following conditions:

Autoimmune thyroid disease

Dermatitis herpetiformis

Irritable bowel syndrome

Type 1 diabetes

First-degree relatives (parents, siblings or children) with coeliac disease.

Question:

A 2-year-old boy presents to the general paediatrician with failure to thrive. His parents report that the child was well previously and all this ‘problems’ started after 12 months of age. They further give history of general irritability in the child and offensive smelling stool 2-3 times a day.

On examination, abdominal distension is present and buttock wasting is visible.

Which one of the following is correct?

A) Empirical gluten-free diet

B) Duodenal biopsy

C) Jejunal biopsy

D) Anti-gliadin antibodies

E) Anti-endomysial antibodies

Answer:C

Explanation:

This boy has signs and symptoms typical of coeliac disease. Coeliac disease is believed to be present in up to 1 in 100 of the population although only about 10-15% of people with the condition are clinically diagnosed. Affected child normally presents within the first 2 years of life with failure to thrive following the introduction of gluten in cereals.

Other usual symptoms include:

General irritability

Chronic diarrhea

Steatorrhoea

Abdominal distension

Buttock wasting

The diagnosis requires demonstration of a flat mucosa on jejunal biopsy followed by the resolution of symptoms and catch up growth upon gluten withdrawal. Serological tests (anti-gliadin/anti endomysial antibodies) are not sufficiently sensitive and specific to replace jejunal biopsy for definitive diagnosis but are useful screening tests.

Question:

A 5-year-old child presents to the GP with constipation and involuntary soiling. Her mother reports that she is being frequently teased by other school children due to this problem. The GP looks through his records and noticed that the child has presented before with this problem when all organic causes for the constipation has been ruled out.

On examination, there is an abdominal mass. Rectal examination revealed presence of stool down to the anal margin.

Which one of the following is correct?

A) Improve dietary fluid and fibre

B) 1-2 weeks of stool softeners (lactulose or docusate )

C) Manual evacuation under general anaesthetic

D) Enema

E) Stimulant laxatives

Answer:B

Explanation:

When faeces are palpable per abdomen, the aim of management is to evacuate the overloaded rectum completely. The first line of management is 1-2 weeks of stool softeners (lactulose or docusate) followed by large doses of powerful oral laxatives (sodium picosulphate or senna). If there is no success with these measures, enema or manual evacuation under general anaesthetic can be considered.

Question:

A 1-year-old boy presents with shortness of breath and a temperature of 37.7 degree Celsius. His voice sounds hoarse and a barking cough is audible. His mother reports that his condition has worsened over the past 2 days or so. On examination, you can hear a stridor.

Which one of the following is correct?

A) Respiratory Syncyticial Virus (RSV)

B) Influenza A

C) Parainfluenza virus

D) Staphylococcus Aureus

E) Influenza B

Answer:C

Explanation:

Croup is also termed as viral laryngotracheobronchitis. It is an upper respiratory tract infection occurring most commonly between 6 months to 5 years of age. Croup is the most common paediatrics infection that causes stridor. Other typical clinical features include barking cough and low grade temperature. Parainfluenza viruses (I, II, III) are responsible for about 80% of croup cases, with parainfluenza I accounting for most episodes.

The management of croup includes sitting the child upright, humidification using warm steam, and oral steroids (dexamethasone is the preferred option).

Question:

Neonatal heel prick test is used as a screening test for cystic fibrosis. What is the parameter that this test is measuring in order to establish an early diagnosis of cystic fibrosis?

Which one of the following is correct?

A) Immunoreactive trypsin level in the plasma

B) Chloride concentration in the plasma

C) Sodium concentration in the plasma

D) Genotype testing

E) Liver function tests

Answer:A

Explanation:

Infants with cystic fibrosis 1 to 2 weeks of age show elevated levels of immunoreactive trypsin in the plasma in the neonatal heel-prick test.

The test is positive if immunoreactive trypsin is greater than 80 mcg/litre. It is currently the best screening test for cystic fibrosis but cannot be done after the 8 weeks of life. This is due to the immunoreactive trypsin level falling as pancreatic insufficiency develops.

Question:

Which of the foetal ultrasound findings below are commonly associated with Down’s syndrome and is used in screening of the disorder?

Which one of the following is correct?

A) Short femur

B) Increased nuchal translucency

C) Double stomach bubble

D) Renal pyelectasis

E) Clinodactyly

Answer:B

Explanation:

Although all of the answers above are ultrasound findings in a fetus with Down’s syndrome, increased nuchal translucency is strongly associated with the disorder and is part of the tests used in screening(combined test; nuchal translucency, beta-human chorionic gonadotrophin, pregnancy-associated plasma protein-A-screening for Down’s syndrome between 11 weeks 0 days and 13 weeks 6 days ).

A study has revealed that, at 10-13 weeks gestation, 84% proven trisomy 21 fetuses had a nuchal translucency of greater than 3 mm - this compares with 4.5% of chromosomally normal fetuses.

Question:

A 5-year-old girl presents to the general practitioner with her parents. They were quite concerned as the girl, though usually dry during the night, always wets herself on waking up. She is also consistently wetting herself throughout the day. She has been successfully toilet-trained in the past. On examination, the girl had a temperature of 37 degrees Celsius, respiratory rate of 16 breaths/min and heart rate of 95 beats/min. Other systems examinations were unremarkable. Urine dipstick testing was negative.

Which one of the following is correct?

A) Urethral valves

B) Ectopic ureter

C) Bladder neck weakness

D) Chronic renal failure

E) Inattention to bladder sensation

Answer:B

Explanation:

This girl has daytime enuresis and has been successfully toilet trained in the past. In such instance, a diagnosis of ectopic ureter should be considered and the child should be referred for further radiological investigations of her urinary tract.

Question:

A 10-year-old girl with history of Type 1 diabetes was admitted to the emergency department with seizures. In the department, the girl was unconscious and still having generalised tonic-clonic seizure. Her parents state that this has been going on for the past 45 minutes or so.

The emergency department staff follows the ABC (airway, breathing, circulation) protocol in an attempt to try and stabilise the child.

Given the child’s past medical history, which of the following treatment is indicated to correct the likely cause of the seizures?

Which one of the following is correct?

A) IV Lorazepam

B) PR Diazepam

C) Magnesium infusion

D) IV glucose

E) Phosphate infusion

Answer:D

Explanation:

The child has status epilepticus, a condition with recurrent tonic-clonic seizures lasting more than 30 minutes without regaining consciousness in between. Many factors contribute to status epilepticus, among which are electrolyte imbalance.

Given the Type 1 diabetes history, the child likely has hypoglycaemia, which would be contributing to the seizures. It is very important to check the blood glucose measurement of anybody presenting with seizures, as it is an easily correctable cause of seizures.

Question:

A 2-year-old girl attends the emergency department with her parents. In triage, the nursing staff had documented her temperature as being 39.5 degrees Celsius.Her parents were very concerned as the girl has had a seizure at home. They describe a generalised tonic-clonic seizure lasting about 5 minutes.

On examination, the girl was warm to touch but alert and orientated. Neurological examination at this point was unremarkable. Her throat looked mildly erythematous and cervical lymphadenopathy is palpable. Pink macular rash is visible on her trunk.

What is the likely cause (organism) for this clinical presentation?

Which one of the following is correct?

A) Human herpes virus 6

B) RNA paramoxyvirus

C) Rubivirus

D) Human herpes virus 5

E) Varicella zoster

Answer:A

Explanation:

The clinical presentation of this child fits with simple febrile convulsions. It is described as generalised seizures which lasts <15 minutes in the presence of pyrexia. There should not be any residual abnormality.

Human herpes virus 6 (Sixth disease) is commonly associated with febrile convulsions. This infection may be present in one third of febrile convulsion in children up to 2 years of age.

Question:

A 20-month-old child presents to the general paediatrician with history of developmental delay. He walks on toes on the left side and holds the left arm stiffly and bent. When he sits down to play, he clearly shows preference for the right hand.

Which one of the following is correct?

A) Spina bifida

B) Duchenne’s muscular dystrophy

C) Down’s syndrome

D) Noonan’s syndrome

E) Cerebral palsy

Answer:E

Explanation:

The pattern of abnormal development for the child’s age above is consistent with cerebral palsy. Other features may include excessive tip-toeing when walking and sitting with weight to one side.

Question:

A 5-year-old boy presents to the emergency department with his mother. She reports that her son had swallowed a twenty pence coin today after school while playing with his sister. The boy looks alert and cheerful. There are no significant past medical history and medical examination otherwise is unremarkable. A metal detector locates the coin as being in the stomach.

Which one of the following is correct?

A) Referral to the surgical team

B) Endoscopic removal of the foreign body

C) Watchful waiting

D) Anti-emetics

E) Barium swallow

Answer:C

Explanation:

Provided that there’s no abnormality of the gastro-intestinal tract, the swallowed coin should pass harmlessly through the body. A period of watchful waiting(7-10 days) is therefore a suitable approach in this instance. Advice should be given to the parents to seek immediate medical advice should the child develop symptoms such as severe abdominal pain and vomiting in between. This could indicate further complication from the foreign body such as intestinal obstruction

Question:

A 5-year-old boy was referred to the local emergency department by his general practitioner with the history of rash. He was accompanied by his mother. She gives a history of sore throat in the child earlier this week. Over the course of a day or so, the mother noticed that the boy had developed a rash on his buttocks and legs. On examination, there is a prominent purpuric macular-papular rash on the buttocks and the extensor area of the child’s legs. Urine dipstick was done and this showed mild haematuria and proteinuria.

Which of the following component are likely to be elevated in his serum?

Which one of the following is correct?

A) Immunoglobulin G

B) Immunoglobulin A

C) Immunoglobulin M

D) Immunoglobulin E

E) Immunoglobulin D

Answer:B

Explanation:

Henoch-Schonlein Purpura is the combination of characteristic skin rash, arthralgia, periarticular oedema, abdominal pain and glomerulonephritis. An upper respiratory tract infection often sets of the chain of events. Serum IgA level is elevated, and it is thought to be due to genetic predisposition and antigen exposure. IgG synthesis is distruped. The IgA and IgG interact to produce complexes that activates complement and are deposited in affected organs , precipitating an inflammatory response with vasculitis.

The rash is symmetrically distributed over the buttocks, the extensor surfaces of the arms and legs and the ankles. It may be urticarial to begin with and rapidly becoming maculo-papular and purpuric.

Question:

Crigler-Najjar syndrome is a rare cause of neonatal jaundice. It results in extremely high levels of unconjugated billirubin. There are two forms of the disease, namely Type I and Type II. From the list of statements below, choose one which is true to the above syndrome.

Which one of the following is correct?

A) Type I Crigler-Najjar syndrome is characterised the absence of the enzyme glucuronyl transferase, and hence the more severe form.

B) Type I Crigler-Najjar syndrome is inherited as an autosomal dominant.

C) Type II Crigler-Najjar syndrome is inherited as autosomal recessive.

D) Type I Crigler-Najjar syndrome usually responds to treatment with phenobarbitone.

E) Type II Crigler-Najjar syndrome may be complicated by kernicterus.

Answer:A

Explanation:

Type I Crigler-Najjar syndrome is characterised by a total deficiency of hepatic glucuronyl transferase. It is inherited as an autosomal recessive. There is total lack of conjugated billirubin in the serum. Most infants do not survive beyond first year of life, dying of kernicterus.

Type II Crigler-Najjar syndrome is characterised by a partial deficiency of glucuronyl transferase and inherited as an autosomal dominant. Treatment with phenobarbitone improves survival into adulthood.

Question:

A 15-year-old boy presented to the medical assessment unit with history of acute shortness of breath. His respiratory rate is recorded as 25 breaths/min and his oxygen saturation was 91% on air. He was tachycardic at 120 beats/min. On general inspection, the boy was rather tall and thin with disproportionately long limbs compared to his torso. He was also able to demonstrate positive Steinberg’s sign.

After initial treatment with high flow oxygen, the medical team orders a CXR to aid the diagnosis in this boy.

Which one of the following is correct?

A) Pulmonary embolus

B) Pneumonia

C) Pneumothorax

D) Pleural plaques

E) Haemothorax

Answer:C

Explanation:

This boy most likely has Marfan’s syndrome based on his physical characteristics; disproportionately long limbs compared to his torso, positive Steinberg’s sign.

Pneumothorax is a recognised pulmonary complication of this disorder.

N/B: Steinberg’s sign/positive thumb’s sign -the thumb, when completely opposed within the clenched hand, projects beyond the ulnar border, a feature of Marfan’s syndrome.

Question:

Subacute sclerosing panencephalitis is a rare but serious complication of measles infection. Which of the following is an important factor in determining the susceptibility to this condition?

Which one of the following is correct?

A) Antibiotics use during measles infection

B) Degree of pyrexia during measles infection

C) Length of illness during measles infection

D) Age during measles infection

E) Presence of convulsion during measles infection

Answer:D

Explanation:

Subacute sclerosing panencephalitis develop between 4-10 years after the original infection with measles. It is characterised by progressive, sclerosing demyelination with severe neurological impairment. One case of SSPE occurs for every 25,000 measles infections and in children infected under the age of two, the rate is one in 8000 infections. In children developing measles under one year of age the risk of SSPE is 16 times greater than in those infected over five years of age.

Question:

A 10-year-old boy was brought into the emergency department, severely unwell. He was accompanied by his anxious looking parents. The child looked drowsy in the first instance. On general observation, his temperature was 39.5 degrees Celsius, heart rate = 135 beats/min, respiratory rate = 30 breaths/min, oxygen saturation was 85% on air and blood pressure of 80/60. There was a non-blanching purpuric rash on his abdomen. With the involvement of the paediatric intensive care team, the child’s airway was secured .He was treated with high flow oxygen, fluid resuscitation and intravenous broad spectrum antibiotics.

Blood culture taken subsequently grew gram negative diplococcus.

Which one of the following is correct?

A) Neisseria gonorrhoeae

B) Streptococcus pneumonia

C) Staphylococcus aureus

D) Streptococcus viridans

E) Neisseria meningitidis

Answer:E

Explanation:

This child has meningococcal septicaemia. The gram negative diplococcus from the blood culture is likely to be Neisseria meningitides, which is the most common causative organism of this condition.

Question:

A 6-month-old baby boy was brought into the local emergency department by the ambulance. He was accompanied by his mother. She gives a history of seizure in her child. It was described as being tonic clonic seizure, lasting about 30 seconds. There is no previous history of seizures. On general observation, the infant had a respiratory rate of 25 breaths/min and heart rate of 170 beats/min with normal oxygen saturation. Temperature was normal. He looked rather drowsy. The clever F1 doctor also noted that the child had few blue bruises on his arms. Further examination revealed bilateral retinal haemorrhages.

Which one of the following is correct?

A) Generalised tonic-clonic seizure

B) Thrombocytopenia

C) Meningitis

D) Shaken Baby Syndrome

E) West syndrome

Answer:D

Explanation:

This baby most likely had been subject to child abuse with violent shaking by the parents/carer. It is known as shaken baby syndrome. These affected infants may have history of poor feeding, irritability, lethargy and vomiting occurring over days or weeks. Seizures and altered conscious level may be a late presenting feature. Unilateral or bilateral retinal haemorrhages are present in 75-90% of affected children. The bruising on the arms could also be a clue to the history of child abuse.

Question:

A 6-year-old girl was rushed to the emergency department by her anxious mother 6 hours after the accidental ingestion of paracetamol. Earlier in the morning, the girl had managed to climb up to the medicines cabinet and got hold of 2 paracetamol bottles. The mother found the girl licking paracetamol off the spoon, with some liquid on the floor and on her clothes. Each bottle of paracetamol contained 2.4 g of paracetamol in total. Her mother is unsure of the quantity of the paracetamol the girl could have taken. The child’s weight is 20 kg. On examination, the child looks comfortable at rest. She was apyrexial, had respiratory rate of 16/min, heart rate of 80/min and oxygen saturation of 99% on air. Abdominal examination was unremarkable. Paracetamol level done at 6 hours post ingestion showed 150 mg/litre.

Which one of the following is correct?

A) Administer acetylcysteine

B) Empty the stomach

C) Repeat paracetamol level after 4 hours

D) Discharge with advice to return if worsening symptoms

E) Liver ultrasound

Answer:A

Explanation:

The estimated paracetamol level that the child could have ingested, at worst, is >150mg/kg. This makes measurement of serum paracetamol level necessary. The measured paracetamol level in this child is high and therefore treatment with acetylcysteine should be given.Advice should also be given to parents on the safety measures which should be put in place to prevent this incident from recurring.

Question:

What is the most common causative organism for pneumonia in infancy?

Which one of the following is correct?

A) Adenovirus

B) Respiratory syncytial virus

C) Streptococcus pneumoniae

D) Haemophilus influenzae

E) Pseudomonas

Answer:B

Explanation:

Respiratory viruses are the most common cause of pneumonia in infancy, of which respiratory syncytial virus is the commonest.

Question:

A young mother brings in her 6-week-old child to the general practitioner. She complains of feeding problems in the child. The child vomits with considerable force after feeding. He also remains hungry after feeding. His mother told the GP that her niece used to have the same problem when she was a baby. A test feed was performed and an olive shaped mass was palpable in the right upper quadrant.

Which of the following statement is false with regards to the condition in this child?

Which one of the following is correct?

A) It is characterised by the hypertrophy of the pylorus.

B) Hypokalaemia can be present.

C) The condition is more common in girls (4:1)

D) Ultrasound examination can be used to confirm the diagnosis.

E) Hypochloraemic metabolic alkalosis can be present.

Answer:C

Explanation:

The child above has pyloric stenosis. In this condition, there is hypertrophy of the pylorus which causes gastric outlet obstruction. It is common between 2-7 weeks of age. The condition is also more common in boys (4:1) and there might be family history, especially on the maternal side. Clinical features include projectile vomiting (without bile) and constant hunger even after vomiting. A hypochloraemic alkalosis and hypokalaemia may be present through vomiting acid stomach contents.

During a test feed, gastric peristalsis may be seen as a wave moving from left to right across the abdomen. An olive shaped mass (pyloric mass) can be felt in the right upper quadrant. Ultrasound examination and barium meal can aid diagnosis.

Question:

A 6-month-old child presents to the general practitioner with mild pyrexia. The child was crying and looks quite miserable. He was accompanied by his mother and the family had recently arrived in the UK 2 years ago. On general observation, mild pyrexia of 37.5 degrees Celsius was noted. The boy was scratching his ears and neck. On close observation, the GP could see an erythematous, macular-papular rash behind the ears and on the neck. Posterior cervical lymphadenopathy is palpable.

The GP suspects that the child might have Rubella.

Which one of the following is correct?

A) Viral PCR

B) Rubella virus specific IgM

C) Rubella virus specific IgA

D) Rubella virus specific IgG

E) MC&S from rash swab

Answer:B

Explanation:

The child above most likely has Rubella infection. The diagnosis is made serologically. Commercially available enzyme immunoassays are able to detect rubella specific IgM within 4 days of onset of the rash extending until 4-24 weeks after.

If rubella specific IgM is detected (on its own or in the presence of IgG) serum should be collected again within 7-10 days. Both samples should be tested together and sent to a reference facility to enable differentiation between recent primary infection from re-infection.

Question:

A 6-year-old girl attends the local GP practice due to troublesome urinary symptoms. Her mother, who accompanied her, told the doctor that her daughter has been urinating quite frequently for the past 2 days or so. Furthermore, she complains of stinging sensation every time she passes urine. General examination was unremarkable with the child being apyrexial. Urine dipstick was done and it was positive to nitrates and leukocytes.

Which one of the following is correct?

A) Proteus

B) Pseudomonas

C) E-Coli

D) Klebsiella

E) Shigella

Answer:C

Explanation:

This girl has signs and symptoms typical of urinary tract infection. Urinary tract infection results most often from the bowel flora entering the urinary tract through the urethra. E-coli is the commonest organism involved, followed by Proteus and Pseudomonas.

Question:

A 30-year-old woman presents to A&E with acute, severe right sided abdominal pain. She has brown PV bleeding. She is on no medication but had the Mirena coil inserted 2 years ago. She has not had a period since the coil was inserted. She is apyrexial with a HR110 and BP 90/70. Bloods were all normal (CRP<10 and WCC 5.0). On examination she is tender in the right iliac fossa. Urinary pregnancy test was positive.

Which one of the following is correct?

A) Vaginal ultrasound scan

B) Laparoscopy

C) Midline Laparotomy

D) Abdominal ultrasound scan

E) Serum beta-HCG

Answer:B

Explanation:

This lady most likely has an ectopic pregnancy. Typically people present with abdominal pain and vaginal bleeding in early pregnancy. Factors that increase the risk of ectopic pregnancy are previous ectopic pregnancy, intrauterine contraceptive device, and pelvic inflammatory disease. This woman has got a coil which increases the risk. As this woman is cardiovascularly compromised she needs to be taken to surgery immediately with no delays. In addition she should have venous access with cross-match sent.

The surgeons would undertake a laparoscopy to identify and treat the problem. A laparoscopy is preferred to a laparotomy as healing time is quicker and there is less scarring. If there were any complications the surgeons then may revert to an open procedure (laparotomy). In a less acute situation a transvaginal ultrasound can be done to diagnose the situation. If the diagnosis still remains uncertain the quantitive serum HCG levels can be measured. If an ectopic pregnancy was diagnosed then conservative management (methotrexate) can be considered in certain situations. Otherwise a laparoscopy is performed with removal of the fallopian tube (salpingectomy) if the other tube is normal or conservation of fallopian tubes (salpingostomy) if the other tube is damaged. The recurrence rate of ectopic pregnancy is 15-20%. About 45% of women with previous ectopic pregnancy will go on to have intra-uterine pregnancy in future.

Question:

A 35 week pregnant lady presents to A&E with a feeling of shortness of breath and pleuritic chest pain. She is large for dates and has a very large bump. She also has noticed swelling of both legs L>R. On examination HR80, BP135/85, chest clear, Abdomen measuring 37 weeks, cephalic presentation, head not engaged.

Which one of the following is correct?

A) Preeclampsia

B) DVT

C) Pulmonary embolism

D) Dissecting aneurysm

E) Polyhydramnios

Answer:C

Explanation:

This woman is presenting with symptoms suggestive of a DVT and PE. Of these the one which is most worrying and could kill her is the PE- however treatment for both is the same. In the developed world venous thromboembolic disease is the highest cause of maternal mortality. Over 80% of DVTs are left sided in pregnant women (compared to 55% of non-pregnant). Also more than 70% of DVTs are iliofemoral in pregnant women compared to 9% in non-pregnant women and above knee DVTs are more likely to give rise to PEs. Patients can be asymptomatic but more commonly symptoms include calf tenderness/pain, shortness of breath, cough, chest pain. D-dimers are not useful in pregnant women so investigation of choice is Doppler scanner if suspecting a DVT or VQ scan for PEs (or CTPA if large clot is suspected). Treatment for DVT/PE in pregnancy is IV or SC heparin (not warfarin). Post delivery the woman can stick with heparin or warfarin for 6-12 weeks. Post treatment the woman should be screened for thrombophilias. During pregnancy women should not have warfarin.

Question:

A 26-year-old woman is pregnant with her second child. She visits her midwife at the GP clinic to discuss the labour. She wants to find out what differences there are between labour when it is your first child compared to subsequent labours.

Which one of the following is correct?

A) Incidence of instrumental delivery lower

B) Reduced risk of uterine rupture

C) Labour is longer

D) Cephalopelvic disproportion is more common

E) Serious injury to the child is more common

Answer:B

Explanation:

Difference of normal primigravida (first child) and multigravida labour:

Primigravida labour is longer

Cephalopelvic disproportion is more common in primigravida labour as the functional capacity of the pelvis is not known. If the woman has had a normal vaginal delivery then it would be very rare to come across any disproportion in any subsequent labours.

Serious injury to the baby is more common in primigravida labour. Also instrumental delivery is more common in primigravida labour.

More common for the uterus to rupture in multigravida women particularly if they have had a previous caesarian section.

Question:

A 41-year-old is has had two previous deliveries. With the last delivery she sustained a 4th degree tear. She is therefore under an Obstetrician for this delivery. They discuss the options of delivery. She is very worried about sustaining any more tears.

Which one of the following is correct?

A) Normal vaginal delivery

B) Normal vaginal delivery with episiotomy

C) Forceps delivery

D) Ventouse delivery

E) Caesarian section

Answer:E

Explanation:

Having had a third or fourth degree tear there is weakness it that area and therefore on subsequent deliveries increased risk of tearing again. It is possible to try for a normal vaginal delivery but warning the mother of the risks. If the mother is keen not to get further tearing then it is perfectly reasonable to book an elective caesarian section.

Question:

A 27-year-old is pregnant with her second child. She had shoulder dystocia with her first child and is very concerned that this will happen again. She discusses with the Obstetrician the risk factors for shoulder dystocia.

Which one of the following is correct?

A) Macrosomia

B) Diabetes

C) Obese mother

D) Low parity

E) Male fetus

Answer:D

Explanation:

Risk factors for shoulder dystocia are: multiparity, macrosomia, diabetes, previous history of shoulder dystocia, post dates, obese mother, male fetus, prolonged first stage, second stage arrest, forceps/ventouse delivery.

Question:

A 72-year-old lady goes to the Gynaecology clinic with the feeling of ‘something coming down’ and occasional urinary incontinence. She had 2 children by normal vaginal delivery 50 years ago and is otherwise is fit and well. On examination there is nothing to see externally but on bimanual palpation a mass can be felt in the vagina. She is diagnosed with a cystocele.

Which one of the following is correct?

A) Menopause

B) Nulliparity

C) Obesity

D) Gynaecology surgery

E) Congenital

Answer:B

Explanation:

The cause for genital prolapse is multifactorial. Childbirth can lead to weakening of the pelvic floor muscles which reduces the support for the pelvic organs. Vaginal delivery and multiparity can lead to damage to the fascia and ligament weakening. Post menopausal women are also at increased risk thought to be due to the reduction of oestrogen leading to disruption of collagen formation. Although surgery can treat genital prolapse it can also cause prolapse in a few cases. For example suprapubic surgical procedures for urinary incontinence can alter the anatomy increasing risk of prolapse.

Question:

A 29-year-old lady is referred by her GP to the gynaecology clinic with a history of post coital bleeding. She undergoes colposcopy and cone biopsy. She is diagnosed with cervical cancer. She wants to know what the risk factors are for cervical cancer.

Which one of the following is correct?

A) Smoking

B) Early age of first intercourse.

C) Nulliparity

D) Early age of first pregnancy

E) Combined Oral Contraceptive Pill

Answer:C

Explanation:

The largest risk factor for cervical cancer is non-attendance to cervical screening. Cervical cancer is usually a disease of sexually active women and the risk of acquiring the disease increases with the increased number of sexual partners and also the younger the age of first sexual intercourse. It is also associated with the Human Papilloma Virus (types 16 and 18). Also smoking increases the risk 2 fold. It has also been found that the Combined Oral Contraceptive Pill is found to increase the risk four fold. This is thought to be due to the difference in sexual behaviour rather than the pill itself. Also multiparity increases the risk.

Question:

A 65-year-old smoker with a history of breast cancer comes to GP clinic with some abnormal vaginal discharge. The GP decides to send her for a pelvic ultrasound which shows a slightly thickened endometrium. She is then referred to the gynaecologist for a Pipelle biopsy. Histology shows endometrial hyperplasia. She wants to know the risk factors for endometrial carcinoma.

Which one of the following is correct?

A) Smoking

B) Family history colon cancer

C) Nulliparity

D) History of breast cancer

E) Late menopause

Answer:A

Explanation:

Endometrial cancer is associated with conditions where there are high levels of oestrogen production. Smoking causes an early menopause and therefore have a lower than expected risk of endometrial cancer. Risk factors may be physiological e.g. obesity, nulliparity or late menopause. Also endometrial cancer can be associated with diabetes and hypertension due to their association with obesity. Non physiological causes include non-opposed oestrogen e.g. oestrogen only HRT which increases the risk 4 fold. Also oestrogen secreting tumours can increase the risk. Combined oral contraceptive pill is protective against endometrial cancer thought to be due to it administering progesterone throughout the cycle.

Question:

A 55-year-old lady presents to her GP with a month history of vulval itching. She has looked herself to see if she can see anything but can not. It is becoming increasingly irritating and is not improving. She wants to know what it is and what can be done about it.

Which one of the following is correct?

A) Infections e.g. Candida

B) Lichen sclerosus

C) Vulval carcinoma

D) Vulval haematoma

E) Psychogenic

Answer:D

Explanation:

This lady is describing pruritus vulvae. There are many causes including infections (Candida), eczema, dermatitis, irritation from vaginal discharge, lichen sclerosus, lichen planus, vulval intraepithelial neoplasia, vulval carcinoma, medical conditions e.g. diabetes, uraemia, liver disease. Vulval haematomas cause pain but do not cause itching. They occur most commonly after vaginal delivery. They can also occur after operations or falling astride accidents. In children sexual assault should be considered.

Question:

A 56-year-old lady presents to A+E with abdominal distension. She is otherwise fit and well with no past medical history and is on no medications. On examination her HR90, 140/80. On abdominal examination she is generally tender and the SHO elicits there is shifting dullness. She decides to do a diagnostic tap to release the pressure in the lady’s abdomen and also see if it will provide any more information on the cause. She sends the fluid for MC+S, protein, glucose, LDH, amylase and cytology. In the mean time she decides to send off tumour markers to see if this shows anything. The tumour marker for ovarian cancer comes back raised.

Which one of the following is correct?

A) CEA

B) CA125

C) PSA

D) CA-19-9

E) HCG

Answer:B

Explanation:

Tumour markers are often non-specific but can be used to monitor disease. CA125 is an antigen produced in 80% of non-mucinous ovarian carcinomas. It is often elevated in ovarian cancer and can be used to monitor clinical course during chemotherapy or surgical resection as it correlates to the patient’s response. It can also be found to be elevated in other cancers such as endometrial, pancreatic, lung, breast, and colon cancer. Therefore due to the low prevalence of ovarian cancer it can not be used in a screening.

CEA (carcinoembryonic antigen) was first identified in colon cancer however it is neither specific for colorectal carcinoma nor cancer in general. It can also be found in breast, gastric lung and pancreatic cancer.

CA19-9 is found elevated in both pancreatic and colon carcinoma.

HCG is produced it pregnancy. It can also be elevated in choriocarcinoma and dysgerminoma.

PSA is used to monitor prostate carcinoma

Question:

A 27-year-old woman presents to her GP with lower abdominal pain but no bleeding Her GP refers her to the early pregnancy clinic. She is 10 weeks pregnant having taken a home pregnancy test. She is fit and well and has had no other problems so far in the pregnancy. When the radiographer does the ultrasound scan she finds a gestational sac with no heart beat.

Which one of the following is correct?

A) Missed miscarriage

B) Complete miscarriage

C) Inevitable miscarriage

D) Septic miscarriage

E) Incomplete miscarriage

Answer:A

Explanation:

Missed miscarriage: the fetus is no longer viable but the gestation sac has not been expelled. May be diagnosed on routine dating scan or following vaginal bleeding.

Inevitable miscarriage: the presence of a dilated cervix or open cervical os meaning miscarriage will definitely happen

Complete miscarriage: vaginal bleeding with loss of all the products of conception.

Incomplete miscarriage: vaginal bleeding with partial loss of the products of conception – still some left in uterus

Septic miscarriage: Miscarriage (usually incomplete) associated with genital tract infection.

Question:

A 27-year-old is referred to the gynaecologist from her GP with lower abdominal pain and dysmenorrhoea. This has been going on for years and she has been using anti-inflammatories when she menstruates. Her only past medical history is that she gets migraines. In her family history her mother has had breast cancer but there is nothing else of note. On examination she is tender on abdominal examination. She also finds the speculum very painful when inserted. Swabs are taken. The Gynaecologist decides also to do a laparoscopy to investigate. This shows that she has endometriosis. She is told this in a follow up clinic and they discuss the best treatment options. Currently she is not keen to conceive.

Which one of the following is correct?

A) Antibiotics

B) Mirena coil

C) Copper coil

D) Diathermy destruction of endometriosis

E) Combined oral contraceptive pill

Answer:B

Explanation:

Treatment for endometriosis can be split into medical and surgical treatment. Medical treatment involving ovulation suppression is the best for symptomatic relief. For this lady continuous progesterone is the most appropriate treatment with the least side effects. It works by thinning the endometrial lining. The combined oral contraceptive pill can also be used but does have more side effects (eg. DVT/PEs). It also should be avoided in those with migraines.

Question:

A gynaecologist is preparing to see his next patient who is an 18-year-old lady with secondary amenorrhoea, hirsutism and acne. The GP organised an ultrasound scan which showed enlarged ovaries and also ordered bloods. He looks at the bloods which confirms his suspicions of polycystic ovarian syndrome.

Which one of the following is correct?

A) ?LH :?FSH, ?testosterone

B) ?LH :?FSH, ?testosterone

C) ?LH :?FSH, ?testosterone

D) ?LH: ?FSH, ?testosterone

E) ?LH :?FSH, ?testosterone

Answer:C

Explanation:

Blood tests are suggestive but not diagnostic of polycystic ovarian syndrome. Generally the pattern that is seen is a raised testosterone level with a LH: FSH ratio greater than 1:1.

Question:

A 55-year-old woman has not had a period for the last 4 months and is starting to develop hot flushes. She goes to her GP as she thinks she may be going through the menopause. She wants to discuss with her GP about the risks and benefits of hormone replacement. In order to make an informed decision she would like to know what sort of symptoms she could go through postmenopausally.

Which one of the following is correct?

A) Headaches

B) Night sweats

C) Depression

D) Osteoarthritis

E) Dry skin

Answer:D

Explanation:

There are many consequences of the menopause of which women may get all, some or none. These can be divided into short term problems and long term problems.

Short term

Vasomotor (85% of women) – Headaches, Hot flushes, Palpitations, Night sweats, insomnia.

Psychological – depression, poor concentration, short term memory loss, loss of libido

Intermediate

Urogenital – vaginal dryness, uterine prolapse, stress/urge incontinence, dyspareunia

Cutaneous – dry skin, dry hair, brittle nail

Long term

Arterial – cardiovascular disease, cerebrovascular disease

Skeletal – osteoporosis

Osteoarthritis is a condition caused by wear and tear. It is not specifically caused by the menopause.

Question:

A 24-year-old girl has come to her GP to discuss contraception. She is fit and well and has never used hormonal contraception before. She is keen to start on the combined oral contraceptive pill but wants to know the risk factors of this pill.

Which one of the following is correct?

A) Venous thromboembolism

B) Endometrial cancer

C) Breast cancer

D) Cervical cancer

E) Ischaemic stroke

Answer:B

Explanation:

Potential risks of the pill include very small increase in coronary artery disease, increase in venous thromboembolic disease (risk varies with different pills), small increase in breast cancer, small increase in cervical cancer after 5 years and 2 fold increase after 10 years. There is reduced risk in developing ovarian, endometrial and colorectal cancer.

Question:

A 38-year-old female was on holiday in the Canary Islands when she developed worsening earache after swimming in the resort pool. She became feverish and decided to see a doctor in A&E. On examination she was pyrexial at 38.6 degrees. Further examination revealed better hearing on the right side and a negative Rinne’s test.

Which one of the following is correct?

A) Acoustic Neuroma

B) Acute Otitis Media

C) Otitis Externa

D) Labyrinthitis

E) Mastoiditis

Answer:B

Explanation:

Acute otitis media is usually self-limiting and viral in origin. In acute bacterial otitis media pus and pressure can build up within the middle ear. Symptoms of bacterial otitis media are gradually worsening earache, loss of hearing and pyrexia. A Rinne’s test negative suggests conductive hearing loss. Viral infection can sometimes prelude a bacterial infection. If left untreated it may result in perforation of the tympanic membrane, mastoiditis and in rare cases may lead to meningitis.

Question:

On an evening shift in the emergency department, you are the casualty officer whom is ask to see a 4-year-old boy brought in by his mom with ongoing nosebleed. On history taking, mom informs you that the patient had only recently undergone an open-heart surgery with placement of a prosthetic heart valve.

Which one of the following is correct?

A) Drug induced

B) Foreign body

C) Thalassemia minor

D) Thrombocytopaenic purpura

E) Trauma

Answer:A

Explanation:

Epistaxis very common most people have had epistaxis on at least several occasions, usually as a result of trauma. Usually the highest incidence is at the age of 2-10 and 50-80 years old. There is no gender predisposition. This young boy has been started on warfarin as anticoagulant therapy for recent placement of prosthetic heart valve. Therefore this is the most likely cause for epistaxis for this patient.

Question:

A 68-year-old man presents to his GP with left sided facial droop for two days. He also has ongoing earaches with occasional discharge on the same side for 2 months. On examination of the affected ear, granulation tissue is seen on a retracted tympanic membrane.

Which one of the following is correct?

A) Ramsay Hunt syndrome type I

B) Chronic suppurative otitis media

C) Cholesteatoma

D) Melkersson-Rosenthal syndrome

E) Bell’s palsy

Answer:C

Explanation:

Cholesteatoma is an erosive and expansive growth of keratinizing squamous epithelium within the mastoid cavity. Although the pathophysiology maybe less known, it is often associated with secondary chronic negative middle ear pressure. The chronic suppurative otitis media in this patient is the contributing factor. Surgery in form of mastoidectomy or tympanoplasty is the definitive treatment. Without intervention, erosion and destruction can occur to the surrounding structures, which include the facial nerve, labyrinthine and temporal bone. The disease process in this patient has facial nerve involvement, hence the clinical presentation.

Question:

A 58-year-old distressed woman presents to the casualty department with a piece of chicken lodged in her throat after having a meal in a nearby restaurant. A soft-tissue neck x-ray showed a calcified bolus at the level of the cricopharyngeus.

Which one of the following is correct?

A) Obtain a sialogram

B) List for bronchoscopy

C) Buscopam intramuscularly

D) Obtain a barium swallow

E) List for rigid oesophagoscopy

Answer:E

Explanation:

There is a high risk of oesophageal perforation when food bolus containing bone is involved. Hence, prompt referral to ENT specialist in view to list for rigid oesophagoscopy is recommended.

Question:

A 75-year-old female was seen in Accident and Emergency complaining of worsening low, central back pain without radiation back pain. She denies any history of trauma or injury. She normally takes co-codamol 30/500 for her back pain, but said “it didn’t relieve the pain this time”. She has no significant past medical history except for hypertension. On examination, her BP is 95/60 mmHg, pulse was 115 bpm, respiratory rate 16 and temperature 37.8oC. Her abdomen is slightly tender and distended on examination. Her spine is tender in the L3 and L4 region. Neurological examination was unremarkable.

Which one of the following is correct?

A) Abdominal aortic aneurysm

B) Multiple Myeloma

C) Osteoporosis

D) Osteoarthritis

E) Spinal stenosis

Answer:A

Explanation:

Unruptured abdominal aortic aneurysms (AAA) though often symptomless, may present as abdominal or back pain. Actual rupture of an abdominal aneurysm can cause sudden onset of back and abdominal pain, sometimes associated with abdominal distension, a pulsating abdominal mass, and even shock (severe low blood pressure due to massive blood loss).

Question:

A 30-year-old computer technician comes to his GP complaining of back pain. He has needed to take time off work because of the pain. He says the pain is relieved when he plays tennis. What is the most likely cause of his pain?

Which one of the following is correct?

A) Ankylosing spondylitis

B) Discitis

C) Perthe’s disease

D) Slipped disc

E) Spondylolisthesis

Answer:A

Explanation:

The diagnosis of ankylosing spondylitis is clinical. The patient describes back pain classically worsened by inactivity (note his occupation as a computer technician) and stiffness of his back upon waking up. The main treatment for the backache is exercise, which is why the patient describes that his pain is improved by sports.

Question:

A concerned mother brought her 8-year-old son to the GP. She noticed that the child started limping recently. On examination, the GP noticed that right leg looks shorter and is in lateral rotation. The child is tender over the right hip joint and abduction of the hip joint is limited. He orders a hip radiograph which revealed flattening of the right femoral epiphysis.

Which one of the following is correct?

A) Acetabular disease

B) Acquired dislocation of the hip

C) Coxa Vara

D) Coxa Pana (Perthe’s disease)

E) Slipped upper femoral epiphysis

Answer:D

Explanation:

Perthe’s disease is a disorder of childhood characterized by avascular necrosis of the femoral head due to the decline of the metaphyseal blood supply. The femoral head depends entirely on the lateral epiphyseal vessels and and scanty vessels in the ligamentum teres. Part of the bony femoral head dies following ischaemia and subsequent growth at the head may be distorted. Hence, the appearance of coxa plana (flattened femoral head). The cause of the disease is unknown, but it is predominantly a disease of boys (4:1 ratio). Typically the disease is only seen in one hip, but bilateral Perthe’s is seen in about 8-10% of children diagnosed.

Question:

A 70-year-old female was admitted to the hospital following a fall. She landed on her right hip and is now unable to weight bear on her right side. On examination, her right leg looks short and is in lateral rotation. Her right hip X-ray reveals an intracapsular fracture neck of femur.

Which one of the following is correct?

A) Dynamic Hip Screw

B) Manipulation

C) Plaster of Paris cast

D) Total hip replacement

E) Traction

Answer:D

Explanation:

There is a high incidence of avascular necrosis in intracapsular fractures as the femoral head derives its blood supply from: the nutrient artery, the retinacular arteries and vessels in the ligamentum teres. Fracture of the femoral neck interrupts at least one source of supply and may seriously compromise others, which may lead to ischaemia of the femoral head. The bone dies and collapses, with distortion of the femoral head and irreversible damage to the joint. Therefore, the treatment is total joint replacement.

Question:

A 28-year-old female just returned from Gambia to the United Kingdom. She presented to casualty with a swollen and painful left knee. She also complained of a burning sensation on micturition and gritty eyes. On examination, her temperature was 38.4oC. Her left knee looked red and swollen. Both active and passive range of movement was decreased.

Which one of the following is correct?

A) gonococcal arthritis

B) non- gonococcal arthritis

C) Osgood-schlatter’s disease

D) synovitis

E) tuberculosis

Answer:A

Explanation:

A unilaterally swollen knee is likely to be septic arthritis. Diagnosis is made on the basis of joint aspiration. The commonest pathogen in the UK is Staph Aureus (70%). N. gonorrhoea is a common cause in the young sexually active population. The clues pointing to gonococcal arthritis in this history are: age, dysuria and likely gonococcal conjunctivitis.

Question:

A 40-year-old man is seen in Accident and Emergency after falling onto an outstretched hand. On examination, there is fullness in the anatomical snuffbox and localized tenderness in the same area. What injury might have caused the pain?

Which one of the following is correct?

A) Capitate

B) Hamate

C) Lunate

D) Radius

E) Scaphoid

Answer:E

Explanation:

A fall on the dorsiflexed hand may fracture the scaphoid. This injury is rare in children and the elderly. Clinical signs of a scaphoid fracture include: pain on dorsiflexion, localized tenderness in the anatomical snuffbox area and pain on gripping. The fracture may not be seen on radiographs in the first few days of injury, but is often much clearer after two to three weeks.

Question:

A 30-year-old surgical registrar presents with sleeping difficulties. Her husband says that when she is about to sleep, she wakes up suddenly, sits upright and is wide-awake. The patient doesn’t have any recollection of this but recalls vivid nightmares.

Which one of the following is correct?

A) Night terror

B) Nocturnal fit

C) Cataplexy

D) Hypnopompic hallucination

E) Hypnagolgic hallucination

Answer:A

Explanation:

Night terror commonly occurs in children who may also experience enuresis. In adulthood, it is more likely to be a psychological symptom arising from stress. In other words, it can be a manifestation of generalised anxiety disorder. Anxiety disorders generally have their onset in early adulthood or, less commonly, in middle age. Although very common, their prevalence is difficult to estimate because many cases do not present to medical attention. Females are more affected than males (ratio of 2:1)

Hypnagogic and hypnopompic hallucinations are hallucinations on falling asleep and waking up, respectively. They may be normal phenomenon or seen in narcoleptics.

Narcolepsy is a chronic sleep disorder characterized by excessive daytime sleepiness in which a person experiences extreme fatigue and possibly falls asleep at inappropriate times. Some narcoleptics experience cataplexy, a sudden muscular weakness typically brought on by strong emotions.

Question:

A homeless 27-year-old man was admitted to the general medical ward with left medial thigh pain and several infected left leg ulcers. He has no significant past medical history except for Deep Vein Thrombosis (DVTs) on both legs. On examination, he was thin, smelled of alcohol and agitated. His left thigh was slightly swollen and tender to touch. His lower limb pulses were all palpable except for bilateral popliteal pulses. His temperature was 38oC. You are the junior doctor on the ward, the patient tells you that he is withdrawing and needs something to help him sleep at night.

Which one of the following is correct?

A) Chlordiazepoxide

B) Methadone

C) Zopiclone

D) Diazepem

E) Lorazepem

Answer:B

Explanation:

The clues of previous DVTs and infected leg ulcers are suggestive of an intravenous drug user (IVDU). As well as opioid dependence, the patient also has dependence on other substances, including alcohol, benzodiazepines and stimulants. Opioid withdrawal includes a variety of symptoms: anxiety, tremors, nightmares, insomnia, weight loss, nausea, vomiting, seizures and delirium. The most straightforward pharmacological approach to detoxify a dependent opioid user is by reducing over a period the dose of an opioid substitute medication, Methadone or buprenorphine. (NICE: first-line treatment in opioid detoxification)

Question:

You are the FY2 doctor on call. A 45 year-old patient who is suicidal and known to be suffering from paranoid schizophrenia threatens to leave the hospital. Under what section of the Mental Health Act can you detain this patient?

Which one of the following is correct?

A) Section 4

B) Section 2

C) Section 3

D) Section 5(2)

E) Section 136

Answer:D

Explanation:

Section 4: Emergency admission for assessment

Lasts 72 hours

Requires one medical practitioner and AMHP to enact

Section 2: Admission for assessment

Max duration 28 days

Requires two medical practitioners and AMHP to enact

Section 3: Admission for treatment

Maximum duration 6 months, can be renewed

Requires two medical practitioners and AMHP

Nearest relative must consent.

Section 5(2): Allows detention of an informal patient for up to 72 hours

Designed as an emergency order in order for a mental health act assessment to take place

Doctor does not have to be approved under section 12

Section 136: Allows a police officer to remove someone who appears to be suffering form a mental health disorder to a place of safety

Should not exceed 72 hours and allows patient to be assessed by medical practitioner.

Question:

A 20-year-old slightly withdrawn man states he experiences auditory hallucinations. He is noted to have poverty of speech and a flat affect. His family noticed that he has been ‘odd’ and locking himself in the room for few weeks.

Which one of the following is correct?

A) schizophrenia

B) manic-depressive disorder

C) depression

D) delirium

E) opioid abuse

Answer:A

Explanation:

Group 1: at least one of the following Group 2: at least two of the following

thought echo, thought insertion or withdrawal, or thought broadcasting persistent hallucinations in any modality

delusions of control, influence or passivity incoherence or irrelevant speech

hallucinatory voices catatonic behaviour

persistent delusions of other kinds that are culturally inappropriate and completely impossible ‘negative’ symptoms, such as marked apathy, paucity of speech and blunting or incongruity of emotional response

Question:

A 63-year-old carpenter with a history of emphysema was admitted to Accident and Emergency with difficulty in breathing and sputum producing cough. When taking a smoking history, he claims to have quit smoking 3 years ago, but has previously smoked on average 15 cigarettes a day since he was 16 years old. Calculate his pack years?

Which one of the following is correct?

A) 2.93

B) 3.13

C) 33

D) 35.25

E) 660

Answer:C

Explanation:

A pack year is a quantification of cigarette smoking. It is calculated by multiplying the number of packs of cigarettes smoked per day by the number of years the person has smoked. For example, 1 pack year is equal to smoking 20 cigarettes per day for 1 year, or 40 cigarettes per day for half a year. The patient above has smoked for 44 years. Therefore 44 multiplied 15 cigarettes smoked per day and then divided by 20.

Question:

A 58-year-old plumber who smokes 35 cigarettes a day for 42 years presented to his GP with recent onset of shortness of breath associated with cough and haemoptysis. He also complained of weight loss of 3 kilograms in the last month. The GP also noticed clubbing on his fingers and toes. Which type of lung carcinoma is he most likely to have?

Which one of the following is correct?

A) Sarcoma

B) Carcinoid

C) Small cell lung carcinoma

D) Malignant mesothelioma

E) Non-small cell carcinoma

Answer:E

Explanation:

Non-small cell carcinoma is the most common histological type of lung carcinoma found in smokers. It has a frequency of 80.4 percent. The next most common form is small cell lung carcinoma, which has a frequency of 16.8 percent.

Question:

A 45-year-old Asian man presents to Casualty with shortness of breath and left sided chest pain over the past 2 days. The chest pain is worse on inspiration and cough. He is productive of green sputum, which has flecks of blood. His exercise tolerance is normally about 200 metres but he finds that he is now breathless after climbing up one flight of stairs at home. He is a current smoker (smokes 15 cigarettes per day). On examination, his temperature is 37.8oC, blood pressure 110/80mmHg, respiratory rate 32 breaths/min, oxygen saturation was 90% on air. Auscultation reveals bronchial breathing and crepitations over left base. He is orientated. Bloods are mostly within normal limits except for a raised WCC and CRP; Urea 14 mmol/L (normal range: 2.5-8.0mmol/L). Chest x-ray show homogenous opacity in the left lower lung zone.

Which one of the following is correct?

A) Bronchial carcinoma

B) Myocardial Infarction

C) Pneumonia

D) Pulmonary Embolus

E) Tuberculosis

Answer:C

Explanation:

This patient has Community Acquired Pneumonia. His chest pain is pleuritic in nature. Pneumothorax and Pulmonary Embolus can give rise to pleuritic chest pain as well. However, in this patient, the clues that suggest pneumonia are: low grade fever, purulent sputum (haemoptysis can happen in pneumonia), raised inflammatory markers, chest findings and consolidation confirmed on radiology. The CURB-65 score (One point each for: New Confusion, Urea >7mmol/L, RR >30 breaths/min, Blood Pressure <90mmHg systolic or <60 mmHg diastolic, Age >65 ) is used to grade the severity of pneumonia. This patient scores 2, which means he is at increased risk of death and probably need at least a short hospital stay.

Question:

A 65-year-old man was referred by his GP to the Respiratory Clinic to investigate the cause of his worsening shortness of breath over a period of 2 years. He was started on inhaled Salbutamol last year by his GP, which helped initially, but still remains breathless. The patient says his breathlessness is worse following a cold or humid weather. He sleeps on one pillow at night and is a current smoker who smokes 25-30 cigarettes per day for the past 40 years. His father died of emphysema. On examination, he has nicotine-stained fingers, pulse 84 beats/minute, jugular venous pressure (JVP) not elevated, blood pressure 110/70mmHg, oxygen saturation was 96% on air, normal heart sounds with no pitting odema, vesicular breath sounds with bilateral expiratory wheeze. His chest x-ray shows hyperinflated lungs. He has never had pulmonary function testing. His spirometry result shows: FEV1 1.3L (43% predicted), FVC 3.4L (70% predicted), FEV1/FVC ratio 43%.

Which one of the following is correct?

A) Asthma

B) Chronic Obstructive Pulmonary Disease

C) Congestive Cardiac Failure

D) Cor Pulmonale

E) Pulmonary fibrosis

Answer:B

Explanation:

The patient’s history and clinical findings point towards a degenerative respiratory disease such as COPD or pulmonary fibrosis. COPD is characterized by airflow obstruction that is usually caused by tobacco smoking, not fully reversible and is progressive. The diagnosis of COPD is confirmed with spirometry. FEV1 should be 80-120% of predicted values. Predicted values are based on an individual’s age, height and gender form tables of normal values of healthy people. This patient has moderate airflow obstruction (30-49%). FEV1 is also expressed as a percentage of FVC. Normal FEV1 /FVC ratio should be equal or more than 70% of FVC. In obstructive lung disease, the proportion of air in the lungs that can leave in 1 second is reduced hence, the FEV1 /FVC ratio is significantly lower.

Question:

A 68-year-old man’s chest x-ray is discussed at the weekly Lung Multidisciplinary meeting. The chest x-ray shows pleural plaques and a left-sided pleural effusion. CT scan shows irregular pleural thickening around the left lung and invasion of the chest wall. Pleural fluid was aspirated under CT guidance. Pleural fluid results show: pH 7.4, Protein 40g/L, Glucose 4 mmol/L, cytology negative. Pleural biopsy showed malignant mesothelioma.

Which one of the following is correct?

A) Asbestos exposure

B) Previous renal cell carcinoma

C) Exposure to Mycobacterium Tuberculosis

D) Strong family history

E) Tobacco smoking

Answer:A

Explanation:

Malignant mesothelioma is a condition caused by asbestos exposure, which occurs in a wide range of occupational environments (such as mining, roofing, flooring, building/demolition, shipping etc). It is important both medically and legally to take a detailed occupational history to establish asbestos-related lung disease as the patient might be eligible for compensation.

Question:

You are the FY1 Doctor on the respiratory ward and have been looking after a 53-year-old man with a restrictive respiratory problem. You know that he was used to work on the shipyard in the 1960s and 1970s, and there is a clear history of asbestos exposure. The patient deteriorates and dies. Who should you report the death to?

Which one of the following is correct?

A) Consultant in communicable disease control

B) Coroner

C) General medical council

D) Health and safety executive

E) Strategic health authority

Answer:B

Explanation:

A death should be referred to the Coroner if the death may be due to an industrial disease or may be related to the deceased’s employment. Shipyard workers represent one of the largest groups at risk for developing asbestos-related diseases. Infectious diseases such as tuberculosis, Brucellosis, Anthrax and Legionnaires' disease are reported to the Consultant in communicable disease control.

A death should be referred to the coroner if:

The cause of death is unknown

The deceased was not seen by the certifying doctor either after death or within 14 days of death

The death was violent, unnatural or suspicious

The death may be due to an accident (whenever it occurred)

The death may be due to self-neglect or neglect by others

The death may be due to an industrial disease or related to the deceased employment

The death may be due to an abortion

The death occurred during an operation or before recovery from the effects of an anaesthetic

The death may be due to suicide

The death occurred during or shortly after detention in police or prison custody

Question:

A 60-year-old woman presents with morning stiffness in both knees and pain worse at the end of the day. On examination, the knees are swollen and warm to touch. She has a fixed flexion deformity and limitation of movement. X-ray of the knees shows narrowing of the joint spaces, osteophytes at the margin of the joints and sclerosis of the underlying bone.

Which one of the following is correct?

A) rheumatoid arthritis

B) osteoarthritis

C) gout

D) infective arthritis

E) polymyalgia rheumatica

Answer:B

Explanation:

The main feature in osteoarthritis (OA) is stiffness. There is background pain at rest. Pain is worsened by movement and is worse at the end of a day. The most commonly affected joints are distal interphalangeal joints (DIP), thumb metacarpophalangeal joints, cervical and lumbar spine, and knee. Radiographic features that are diagnostic of osteoarthritis are: 1. narrowing/loss of joint space 2. subchondral sclerosis 3. Subchondral cysts and 4. ‘lipping’ at joint margins (from osteophytes). This patient will probably need a knee replacement for end-stage OA.

Question:

A 55-year-old female has a history of aggressive, erosive rheumatoid arthritis over three years. It remains poorly controlled, despite good compliance with therapy. She is now complaining of severe fatigue. Investigations show her haemoglobin concentration to be 7.2g/dl, the white cell count is 1.4 x 109/l, and the platelet count is 44 x 109/l. What is the most likely cause of her pancytopaenia?

Which one of the following is correct?

A) Acute lymphatic leukaemia

B) Acute overwhelming infection

C) Hypersplenism

D) Pernicious anaemia

E) Side effect of drugs

Answer:E

Explanation:

This is because she is not acutely unwell and has no signs of infection. She is too young for pernicious anaemia and it would be rare to have both rheumatoid arthritis and acute lymphatic leukaemia. Hypersplenism (Felty syndrome) is also rare. She is likely to be on disease modifying anti-rheumatic drugs (such as azathioprine) many of which can cause a pancytopaenia.

Question:

A 69-year-old man presented to his general practitioner with a one-month history of pain and stiffness in both thighs and upper arms. The stiffness was most marked in the morning and he had difficulty dressing. He also complained of difficulty swallowing. Investigations showed raised ESR of 18mm/hr, normal aspartate transaminase, and creatine kinase raised at 230 IU/1.

Which one of the following is correct?

A) Dermatomyositis

B) Polymyositis

C) Polymyalgia rheumatica

D) Fibromyalgia

E) Systemic Sclerosis

Answer:B

Explanation:

Polymyositis is a condition which causes symmetrical, proximal muscle weakness. It is also associated with dysphagia, dysphonia, facial oedema and respiratory weakness. As a result of muscle inflammation, muscle enzymes (ALT and CK) are raised. Other tests to help diagnose the condition are electromyography (which shows fibrillation potentials) and a positive muscle biopsy. Up to 20% of cases are associated with malignancy. Therefore, it is important to investigate extensively for malignancy.

Question:

A 45-year-old woman presents with swellings and stiffness of her fingers. On examination, she has sausage-like fingers with flexion deformities. She is noted to have a beaked nose. She takes Losec. X-ray of her hands reveals deposits of calcium around the fingers and erosion of the tufts of the distal phalanges.

Which one of the following is correct?

A) Anticentromere antinuclear antibody

B) Rheumatoid factor

C) FBC

D) Chest x-ray

E) Barium swalllow

Answer:A

Explanation:

This patient has features of the CREST (calcinosis, Raynaud’s, oesophageal and gut dysmotility, sclerodactyly, telangiectasia) syndrome. Note that she takes Omeprazole (Losec is the trade name of the drug) for dyspepsia. Anti-centromere antibodies are specific for the disease, which is also known as, limited cutaneous form of systemic sclerosis scleroderma.

Question:

A 76-year-old woman, who lives in a nursing home, presents with general deterioration, weakness in her lower legs and muscle pain. The family expressed concern that she has not been eating and drinking. On examination, she has loose teeth and is noted to have ecchymoses of the lower limbs. She suffers from rheumatoid arthritis, which greatly limits her mobility.

Which one of the following is correct?

A) polymyalgia rheumatica

B) scuvy

C) anaemia of chronic disease

D) polymyositis

E) myasthenia gravis

Answer:B

Explanation:

This patient has features of vitamin C deficiency- loose teeth and ecchymoses. This case serves as a reminder to take note of other pathology in patients presenting to rheumatology.

Question:

A 54-year-old Asian man, was admitted to accident and emergency with intense colicky abdominal and flank pain within the last 5 hours. On examination, pulse was 132, blood pressure 150/100 and temperature 37.5 Celsius. Urine dipstick showed glucose -, blood +++, ketones -, and protein -.

Which one of the following is correct?

A) Renal biopsy

B) Renal ultrasound

C) Intravenous urogram

D) MRI scan

E) Plain abdominal x-ray

Answer:E

Explanation:

This patient is likely to be passing a renal calculus. Usually radio-opaque in nature, it may appear on plain x-ray along the ureter. Subsequently, an ultrasound or intravenous urogram may be needed.

Question:

A 57-year-old woman with metastatic carcinoma of the breast presents to Accident and Emergency with urinary incontinence, constipation and weakness in her lower limbs. On examination, she has a palpable bladder and a sensory level defined at T10.

Which one of the following is correct?

A) Radiation cystitis

B) Brain metatastases

C) Tumour lysis syndrome

D) Spinal cord compression

E) Detrusor instability

Answer:D

Explanation:

This patient has signs and symptoms consistent with spinal cord compression secondary to her metastatic carcinoma. This patient has specific signs of cauda equina syndrome (CES) which include weakness of the muscles innervated by the compressed roots (often paraplegia or bilateral leg weakness), overflow urinary incontinence secondary to a ‘neurogenic’ bladder, decreased anal tone, sexual dysfunction, saddle anaesthesia; and bilateral absence of ankle reflexes. Low back pain with unusual characteristics (such as brought on by head turning) and pain in the legs (or radiating to the legs) are characteristic of CES.

Diagnosis is confirmed by MRI or CT scan. This patient will need urgent neurosurgical consult for urgent decompression of the cord.

Question:

A 43-year-old woman comes to her general practitioner because she had urgency of micturition for the past few weeks. Dipstick testing of urine shows a trace of protein. She has also had episodes of visual disturbance.

Which one of the following is correct?

A) Nephrotic Syndrome

B) Pyelonephritis

C) Diabetic mellitus

D) Urinary Tract Infection

E) Multiple Sclerosis

Answer:E

Explanation:

Multiple sclerosis (MS) is an immune-mediated inflammatory disease that attacks myelinated axons in the CNS, destroying the myelin and the axon in variable degrees. The disease is characterized initially by episodes of reversible neurologic deficits, which, in most patients, are followed by progressive neurologic deterioration over time. In this question, “episodes of visual disturbance” is a clue that this patient has MS. Patients can present with bladder hyperreflexia (in this case) or neurogenic lower urinary tract dysfunction (urinary retention).

Question:

A 7-year-old boy is presented to accident and emergency with sudden onset of pain in the right testis for 2 hours. There is no history of trauma. He is systemically well, apyrexial. On examination, his right testis is hard, just under the inguinal ring.

Which one of the following is correct?

A) Antibiotics

B) Reassurance

C) Simple Analgesia

D) Surgical Exploration

E) Urgent outpatient referral

Answer:D

Explanation:

Torsion of the testis is a surgical emergency. On examination, the testis is usually swollen and lying high in the scrotum. The scrotum is not always necessarily tender. The differential diagnosis is from acute epididymitis, torsion of a testicular appendage and strangulated inguinal hernia. However, the sudden onset is very characteristic of testicular torsion. Moreover, the diagnosis of testicular torsion would fit in the age group of children and adolescents. It is important to carry out surgical exploration as soon as possible, because ischemia can occur as soon as four hours after torsion and cause irreversible damage to the testis.

Question:

A 35-year-old woman with presents to her GP with an 18-month history of increased frequency, urgency, urge incontinence and nocturia 2-3 times per night. She denies dysuria. She has no problems with her periods. She has 2 children, aged 5 and 2.

Which one of the following is correct?

A) Cystometry

B) Intravenous pyelogram

C) Mid Stream Urine sample

D) Micturating cystogram

E) Urodynamic studies

Answer:E

Explanation:

Urgency and Urge incontinence are symptoms of an overactive bladder or overactive detrusor muscle. This is different from stress incontinence, which is attributed to weakness in the pelvic floor muscle.

Urodynamic studies evaluate the function of the bladder. Studies can consist of: pad test, flow rates, residual volume by ultrasound, cystometry, flow-pressure study and videocystourethography, depending on the individual’s symptoms.

Urodynamic assessment helps to differentiate between the two types of incontinence by demonstrating spontaneous or overactive detrusor muscle contraction. It is important to differentiate between the two types of incontinence as their management differs.

Question:

A 60-year-old man presents to the Surgical Assessment Unit. He said he woke up with painful erection 2 hours ago. He took some over-the-counter analgesia, but he was still in a lot of pain and the erection is persistent. He is normally fit and well except for high blood pressure. On examination, the penile shaft is firm and glans penis is soft.

Which one of the following is correct?

A) High-flow priapism

B) Low-flow priapism

C) Paraphimosis

D) Peyronie's disease

E) Phimosis

Answer:B

Explanation:

Priapism is a pathological condition of persistent penile erection that is unrelated to sexual stimulation. Pathologically and clinically, two subtypes are seen—high flow (non-ischaemic) and low flow (ischaemic) priapism.

There are 3 key points to differentiate between the two subtypes: history of trauma, painful/painless erection and arterial/venous blood on aspiration. Low-flow priapism, the more common subtype, is typically accompanied by pain. High-flow priapism is often painless and there is invariably a clear history of trauma.

It is important to differentiate between the two subtypes, as the low flow type is more dangerous. Ischemic priapism is a surgical emergency. The initial management of choice is corporal aspiration with injection of sympathomimetic agents. Delayed treatment results in corporal anoxia and loss of erectile function.

Question:

A 13-year-old girl presents with acute, severe central abdominal pain that migrates to her right iliac fossa after an hour. She completely lost her appetite 12 hours ago and has been feeling nauseous since. She is pyrexial (38oC) and is very tender in the right iliac fossa.

Which one of the following is correct?

A) Paramedian incision

B) Lanz incision

C) McBurney’s incision

D) Rutherford Morrison incision

E) Midline laparotomy

Answer:B

Explanation:

This young girl presents with the typical picture of appendicitis. There are two abdominal incisions commonly used for an open cholecystectomy: the gridiron and Lanz. The gridiron is made one-third of the way along, and at right angles to, the line connecting the anterior superior iliac spine (ASIS) to the umbilicus in the right iliac fossa (i.e. McBurney’s point) – it is generally the incision of choice for an open appendicectomy. The Lanz incision is more transverse in orientation and closer to the ASIS when compared to the gridiron incision and is made in the skin crease. A Lanz is therefore preferred in younger females to provide a better cosmetic result. Unfortunately, these incisions risk dividing the iliohypogastric and ilioinguinal nerves, potentially resulting in denervation of the inguinal canal musculature, increasing the risk of inguinal hernia.

Question:

A 13-year-old boy presents with sudden-onset, severe pain in his left testicle radiating to the lower abdomen, and vomiting. On examination, the left testicle is swollen, erythematous and lying in a transverse plane, slightly higher than the right testicle. It is exquisitely tender to palpation.

Which one of the following is correct?

A) Epididymo-orchitis

B) Testicular torsion

C) Strangulated inguinoscrotal hernia

D) Varicocoele

E) Testicular haematoma

Answer:B

Explanation:

Sudden-onset and swelling in the testicle is strongly suggestive of testicular torsion in a patient of this age – it is a surgical emergency not to be missed. Pain may be referred to the groin and lower abdomen (due to involvement of the T10 nerve, which supplies the lower abdomen as well as the testes), along with nausea and vomiting. The torsion occurs around the spermatic cord when there is an anatomically abnormal and may follow a history of mild trauma. An example of such anatomical anomaly is the ‘bell-clapper’ testis, where the testicle is not anchored to the scrotum posteriorly by the gubernaculums ligament (as it normally is), leaving it to swing freely like the clapper of a bell. In torsion, the testis may be high-riding and lying transversely within the scrotum, although this may not always be apparent. Irreversible infarction of a twisted testicle occurs within 6-12 hours so affected patients should be taken to theatre for surgical exploration without further investigation. Surgery involves untwisting of the testicle and bilateral fixation (orchidopexy) of the testes to the tunica vaginalis to prevent further torsion. Bilateral fixation is advocated as anatomical anomalies of the testes that predispose to torsion usually occur bilaterally.

Question:

A 45-year-old gentleman is brought into the Emergency Department with severe abdominal pain. He reports going to a stag party and consuming in excess of 45 units of alcohol. The pain is epigastric and excruciating (10/10 in severity when questioned). It is associated with nausea and vomiting.

Which one of the following is correct?

A) Amylase

B) Serum calcium

C) Blood glucose

D) Age

E) White cell count

Answer:A

Explanation:

This patient presents with acute pancreatitis secondary to alcohol intoxication. Although amylase is useful in the diagnosis of pancreatitis, it is not useful for assessment of its severity. A useful mnemonic for markers of severity in pancreatitis is : PANCREAS (P – PaO2 < 8kPa, A – Age > 55 years, N – Neutrophils > 15 x 10^9/L, C – Corrected calcium < 2 mmol/L, R – Raised urea > 15 mmol/L, E – Elevated LDH > 600 iu/L, A – Albumin < 30 g/L, S – Sugar(BM) < 10 mmol/L). If 3 of more of the criteria are satisfied, the episode of pancreatitis is labelled as severe. The above features make up the Glasgow criteria which are valid only after 24-48 hours after onset of symptoms. Alternatively, severity scores such as APACHE II can be used prior to 24 hours.

Question:

A 15-year-old female student presents with central abdominal pain that begins around the umbilicus but later localizes to the right lower quadrant. This is accompanied by decreased appetite, nausea, and pyrexia of 37.6oC.

Which one of the following is correct?

A) Mortality is highest for patients aged between 10 and 20 years of age

B) Pain on palpation of the right iliac fossa but not on the left iliac fossa is known as Rovsing’s sign

C) Diabetic ketoacidosis is an important differential diagnosis

D) Lymphcytosis is present between 80 and 90% of patients.

E) The above condition is not compatible with a positive urinary beta-HCG test.

Answer:C

Explanation:

This patient presents with the common surgical presentation of appendicitis. Mortality is highest in the elderly, especially those over the age of 70 because of atypical and delayed presentationsl Rovsing’s sign is pain in the right iliac fossa on palpation of the left iliac fossa. Leukocytosis and not lymphocytosis is present in between 80 and 90% of patients with appendicitis. Appendicitis is also the commonest non-obstetric surgical emergency in pregnancy. Abdominal pain therefore has numerous differentials (both surgical and medical) with diabetic ketoacidosis being an important one (especially in a patient of this age) that is often forgotten – preliminary investigations including finger-prick blood glucose should be performed to easily rule this out. The diagnosis of appendicitis is clinical (ref. Alvarado score) but abdominal ultrasound and CT scans may be used to confirm the diagnosis prior to appendicectomy.

Question:

A 24-year-old man presents with a lump in the right groin. It appears on standing and disappears on lying down. On examination whilst standing, the lump is seen clearly over the inguinal ligament. It is reducible and displays a cough impulse.

Which one of the following is correct?

A) Femoral hernia

B) Hiatus hernia

C) Inguinal hernia

D) Obturator hernia

E) Paraumbilical hernia

Answer:C

Explanation:

This is the commonest hernia of the groin and occurs mostly in males. There are two main types – direct and indirect. Indirect hernias enter the deep inguinal ring, which is at the midpoint of the inguinal ligament (i.e. midway between the anterior superior iliac spine (ASIS) and pubic tubercle). This is not to be confused with the mid-inguinal point (i.e. midway between the ASIS and public symphysis) which marks the point of the femoral pulse. Indirect hernias then pass through the inguinal canal. Direct inguinal hernias, however, protrude through a weakness in the transversalis fascia and out of the superficial inguinal ring (located just above the pubic tubercle). Longstanding inguinal hernias, especially indirect ones, may become irreducible and strangulate. In contrast to inguinal hernias which occur above and medial to the pubic tubercle, femoral hernias occur below and lateral to it. They consist of a protrusion of peritoneum (which may contain omentum or small bowel) through the narrow femoral canal, causing pain and discomfort.

Question:

A 32-year-old woman has had multiple visits to her GP over the last 2 months complaining of early morning headaches unresponsive to analgesia. Her last period was 6 weeks ago. On this occasion, she also admits to having a milky discharge from both nipples. A beta-HCG urine test is negative and she has never had children before.

Which one of the following is correct?

A) Breast carcinoma

B) Intraductal papilloma

C) Lactating breast

D) Mammary duct ectasia

E) Prolactinoma

Answer:E

Explanation:

The negative beta-HCG test in this question confirms that the patient is not pregnant. As she has no children, we know that she is not breast-feeding. This is therefore an example of galactorrhoea – defined as lactation in the absence of pregnancy of breast-feeding. The history of early-morning headaches is typical of an intracranial space-occupying lesion. The most fitting diagnosis is therefore a prolactinoma. Prolactin is a hormone secreted by the anterior pituitary gland. It stimulates the mammary glands to secrete milk. High levels of prolactin interfere with menstruation. A prolactinoma is a benign tumour (adenoma) of the pituitary that secretes large amounts of prolactin. This results in galactorrhoea, irregular menses, subfertility and a decreased libido, as well as the symptoms of a space-occupying intracranial lesion (e.g. early morning headaches that are worse on coughing, straining and lying down).

Question:

A 50-year-old woman presents to a general surgical clinic with a lump in the region of her thyroid gland. Systemic systems make thyroid malignancy a likely differential diagnosis. The surgeon requests for a fine-needle aspiration to be performed to determine the pathology behind the lump.

Which one of the following is correct?

A) Follicular carcinoma of the thyroid

B) Papillary carcinoma of the thyroid

C) Medullary carcinoma of the thyroid

D) Anaplastic carcinoma of the thyroid

E) Lymphoma of the thyroid

Answer:A

Explanation:

Due to the high level of heterogenecity in a pathological specimen of follicular thyroid carcinoma, it is advised to perform a wide local excision and full pathological analysis of the sample. Note that follicular thyroid neoplasms are the only thyroid neoplasms that cannot be diagnosed by FNAC because of capsular invasion (i.e. so frozen section needs to be taken at hemithyroidectomy). It spreads early via blood (to bones / lung) and is well-differentiated. Papillary carcinomas, however, often occur in younger age groups and usually spread to lymph nodes and the lung. Medullay carcinomas may be sporadic (80%) or part of multiple endocrine neoplasia syndrome (therefore a pre-operative sceening for phaeochromocytoma should be done). They may produce calcitonin. Thryoid lymphomas may present with stridor of dysphagia and are treated with chemoradiotherapy. Anaplastic carcinomas occur in the elderly and have a very poor prognosis to any treatment.

Question:

A 79-year-old man attends Casualty after vomiting small amounts of fresh blood. He complains of a 3-month aching pain in his epigastrium and a poor appetite, saying that he lost over 2 stone in weight over this period. He denies any difficulty in swallowing. Examination reveals enlarged supraclavicular lymph nodes.

Which one of the following is correct?

A) Carcinoma of the oesophagus

B) Carcinoma of the stomach

C) Chronic peptic ulceration

D) Gastric lymphoma

E) Gastrinoma

Answer:B

Explanation:

The features of this presentation are of gastric cancer, which is a leading cause of cancer death worldwide. It is commonest in the Japanese populations, with a peak age range of 50-70 years. Major risk factors include chronic gastric ulceration, H. pylori infection, gastric polyps, pernicious anaemia and Ménétrier’s disease; other risk factors include blood group A, a family history of gastric or related cancers, eating pickled foods, smoking and alcohol consumption. Spread of gastric cancer (usually adenocarcinoma) is via lymphatics, resulting in Virchow’s node (left supraclavicular lymphadenopathy; also ‘Troisier’s sign’) – a sign of intra-abdominal malignancy. Gastric cancer can also spread to the ovaries via the peritoneum (a Krukenburg tumour); or to the umbilicus (‘Sister Mary Joseph’s nodule’). As the features of gastric cancer are often vague, such tumours often present late. Epigastric pain radiating to the back, vomiting from pyloric obstruction, anorexia and weight loss, or jaundice (from liver metastases) may also feature. Diagnosis is by endoscopy and biopsy. Management is by gastrectomy and lymph node clearance.

Question:

A 25-year old woman presents with a 6-week history of right iliac fossa pain that has acutely worsened over the last 3 days. She admits to the passage of some blood but no mucus in this time. Examination reveals a firm sausage-shaped mass palpable in the right iliac fossa.

Which one of the following is correct?

A) Appendicitis

B) Crohn’s disease

C) Infective colitis

D) Ischaemic colitis

E) Ulcerative colitis

Answer:B

Explanation:

The prolonged history of right iliac fossa pain, right iliac fossa mass and per rectal bleeding in a relatively young patient should raise the suspicion of inflammatory bowel disease – in this case, Crohn’s disease. This is a non-specific inflammatory disorder of the GI tract characterized by full-thickness (‘transmural’) inflammation and non-caseating granulomas (remember that in ulcerative colitis, inflammation is limited to the mucosa and submucosa). Crohn’s can also occur anywhere along the GI tract (commonest site – terminal ileum, 40%). Mucosal ulceration with intermittent oedema results in the ‘cobblestone’ appearance with skip lesions usually visualized on endoscopy. Presentation is commonest in young adults with abdominal pain and diarrhoea. A ‘Crohn’s mass’ (inflamed terminal ileum) may be palpable in the right iliac fossa. Active disease may also feature fevers, anorexia, weight loss and mouth ulcers. Perianal manifestations include anal fissures, fistulae, skin tags and abscesses. Extra-intestinal manifestations include oxalate renal stones, polyarthritis (seronegative), erythema nodosum, pyoderma gangrenosum, amongst others. Diagnosis is by endoscopy and biopsy (revealing transmural granulomatous

Question:

A 29-year-old woman presents to her GP with bilateral arm on exertion. The pain has progressively worsened over the past month and is associated with transient visual disturbances. She also admits to feeling generally unwell, with intermittent fevers and occasional night sweats. Examination reveals no central or peripheral neurological abnormalities but neither the upper nor lower limb pulses are palpable.

Which one of the following is correct?

A) Giant cell arteritis

B) Kawasaki’s disease

C) Polyarteritis nodosa

D) Superficial thrombophlebitis

E) Takayasu’s arteritis

Answer:E

Explanation:

Takayasu’s disease (‘pulseless disease’ or ‘aortic arch syndrome’) is a rare vasculitis affecting large arteries (i.e. the aorta and its major branches), characterized by granulomatous inflammation of the vessels involved. Features include hypertension, arm claudication, absent pulses, bruits and visual disturbances (e.g. transient amblyopia, blindness, etc.) Patients are usually younger Oriental women, and also commonly present with systemic symptoms (e.g. malaise, fever, night sweats, weight loss, etc.) Diagnosis is made by angiography showing narrowing of the aorta and its major branches. Management is with steroids but the condition is progressive and death usually ensues within a few years of onset. In contrast, Kawasaki’s disease is a febrile systemic vasculitis predominantly affecting children under the age of 5, the most serious complications of which include coronary arteritis and aneurysm formation (in 1/3 of untreated patients). Diagnosis of Kawasaki’s is clinical and must include a fever for more than 5 days, with at least 4 of the following: bilateral conjunctival injection, change in mucous membranes, change in the extremities, polymorphous rash, and cervical lymphadenopathy. Treatment is with intravenous immunoglobulin and high-dose aspirin (for cardio-protection).

Question:

A 12-year-old boy is visited at home by his GP. His mother states that he has become increasingly drowsy over the course of the day. On examination, he has marked neck stiffness, photophobia and a non-blanching rash on his abdomen and chest.

Which one of the following is correct?

A) Intramuscular benzyl-penicillin

B) Oral ceftriaxone

C) Immediate transfer to hospital without delay

D) Oral rifampicin to close contacts

E) Lumbar puncture

Answer:A

Explanation:

This patient has presumed meningococcal septicaemia until proven otherwise. Prompt diagnosis is the key to preventable mortality. In the community, a dose of benzyl-penicillin (IM or ideally IV) and urgent transfer to hospital is the appropriate management. Ceftriaxone is not available in oral preparation.

Question:

You are called by nursing staff on a busy medical ward because an 80-year-old gentleman is refusing to take his regular medication. The patient is now well and ready for discharge. After a long discussion he explains that although he understand that the tablets are designed to lower his blood pressure and that without them he is at higher risk of heart attacks and strokes, he is tired of taking tablets and does not want to take them any more. His blood pressure is 145/90.

Which one of the following is correct?

A) Force the patient to take his tablets

B) Change the route to intravenous and administer the medication

C) Document the discussion and take no further immediate action

D) Change to an alternative antihypertensive agent

E) Prescribe a salt restriction diet

Answer:C

Explanation:

The ethical principle outlined here are autonomy and capacity. Autonomy refers to ‘the respect and protection of an individual’s right to make decisions with regard to their own health and future’. In this case there is no evidence that this patient does not understand the information regarding the purpose of antihypertensive therapy and the potential risks of non-adherence to treatment. He may be making what you deem to be an unwise decision but this does not mean he lacks capacity. Remember that consent is time-specific and decision-specific so reassessing the decision (e.g., discussion with the GP after discharge) would be appropriate.

Question:

A 65-year-old obese woman presents with yellowing of the skin and eyes. She has no abdominal pain but takes regular paracetamol for knee pain. She drinks 60 units of alcohol per week. On examination, there is evidence of extensive pruritis and a palpable smooth oval mass in the right upper quadrant. Liver function tests are as follows: bilirubin 90 umol/L (3-17), alkaline phosphatase 502 IU/L (50-100), aspatate transaminase 85 IU/L (5-35), gamma-glutamyl transferase 400 IU/L (0-50) albumin 30 g/L (35-50), INR 1.2 (0.9-1.1).

Which one of the following is correct?

A) Paracetamol overdose

B) Hepatocellular carcinoma

C) Pancreatic cancer

D) Primary biliary cirrhosis

E) Alcoholic liver disease

Answer:C

Explanation:

This patient has a clinical history of painless jaundice in the presence of a palpable gallbladder. Even though this patient has a history of alcohol and paracetamol intake and has risk factors for gallstones and primary biliary cirrhosis, none of these explain the clinical findings of a palpable gallbladder (Note: Courvoisier’s law). Her LFTs demonstrate a predominantly cholestatic picture (elevated ALP, gGT) with evidence of impaired liver function (elevated bilirubin (i.e. hepatic excretion) and low albumin and raised INR (i.e. impaired synthetic function).

Question:

An 80-year-old woman experiences three episodes of watery diarrhoea following a prolonged hospital admission, during which she has received a ten-day course of clindamycin for an infected diabetic foot ulcer. She is severely dehydrated. A stool sample is sent and confirms the presence of C. difficile toxin.

Which one of the following is correct?

A) Oral metronidazole

B) Intravenous metronidazole

C) Increased-dose clindamycin

D) Intravenous vancomycin

E) Oral rehydration therapy

Answer:A

Explanation:

This patient has developed pudomembranous colitis due to infection with Clostridium difficile. C. difficile is a gram positive (purple) bacillus (rod). Treatment of C. difficile infection includes: (i) Stopping the causative antibiotic (or changing therapy if this is not possible); (ii) Fluid resuscitation – IV fluids as well as encourage increased oral intake; (iii) Oral metronidazole and oral vancomycin are equally efficacious. Oral metronidazole is first-line as it is cheaper. If oral treatment is not possible (e.g. due to recent abdominal surgery) then intravenous metronidazole may be used.

Question:

A 75-year-old woman presents to her GP with worsening breathlessness and fatigue. On examination, she is noted to have a pink flushing of the cheeks, an irregularly irregular pulse, an undisplaced tapping apex-beat, and a rumbling diastolic murmur heard at the apex.

Which one of the following is correct?

A) Streptococcus pyogenes

B) Streptococcus viridans

C) Staphylococcus aureus

D) Streptococcus pneumoniae

E) Escherichia coli

Answer:A

Explanation:

This patient has clinical features of mitral stenosis which include: (i) Malar facial flush; (ii) Atrial fibrillation; (iii) Undisplaced tapping apex beat (due to a palpable first heart sound). Rheumatic heart disease occurs as a complication of rheumatic fever. Rheumatic fever is caused by infection with Lancefield group A beta-haemolytic streptococci (‘group A strep’, GAS or Streptococcus pyogenes.)

Question:

A 65-year-old farmer attends his GP because his wife is worried about a lump on his head. He is unsure how long the lump has been there for. On examination, there is a 5 mm-diameter nodule, with a central ulceration surrounded by a rolled-out, slightly shiny edge with small overlying blood vessels visible.

Which one of the following is correct?

A) Cowpox

B) Basal cell carcinoma

C) Squamous cell carcinoma

D) Malignant melanoma

E) Melanocytic naevus

Answer:B

Explanation:

The lesion described has many of the classical features of a nodular basal cell carcinoma (BCC) - slow growing nodule, with a rolled, pearly edge and telangiectasis, which periodically ulcerates, bleeds and the re-heals.

Question:

A 15-year-old girl is admitted with headache, fever, neck stiffness and photophobia. There is no visible rash or reduction of consciousness. Lumbar puncture reveals straw-coloured CSF; protein 1.4 g/L (reference <1.2 g/L), glucose 4 mmol/L (simultaneous plasma glucose 6 mmol/L), WBC 150/mm3 - predominantly mononuclear cells (reference 0-3/mm3), RBC 0/mm3 (reference 0-3/mm3), gram stain ‘no visible organisms’.

Which one of the following is correct?

A) Coxsackie virus

B) Neisseria meningitidis

C) Streptococcus pneumoniae

D) Listeria monocytogenes

E) Herpes simplex virus

Answer:A

Explanation:

This patient has clinical features of meningism – headache, neck stiffness, photophobia. The CSF findings are suggestive of viral meningitis. In the UK, the most common cause of viral meningitis is coxsackie virus (along with another echovirus and increasingly mumps). Treatment of viral meningitis is chiefly supportive as the condition is self-limited in most cases.

Question:

A 60-year-old woman receives morphine for pain following a total knee replacement, after which she begins to feel nauseated and vomits. The doctor decides to prescribe ondansetron.

Which one of the following is correct?

A) Seratonin receptor antagonism

B) Opioid receptor antagonism

C) C fibre blockade

D) GABA receptor agonist

E) Voltage-gated sodium channel blockade

Answer:A

Explanation:

Ondansetron is an antiemetic that functions as a serotonin (5-HT3) receptor antagonist. 5-HT3 antagonists act to inhibit vagal stimulation of the vomiting centre in the medulla oblongata as well as inhibiting serotonin mediated stimulation of the chemoreceptor trigger zone at the base of the fourth ventricle.

Question:

A 75-year-old man presents to his GP with worsening muscle tenderness and weakness over the course of a month. He describes feeling feverish with general malaise and particular difficulty getting up stairs and lifting items from high shelves. In addition, he has noticed a purple discolouration and swelling of the skin around his eyes and scaly, red areas over his knuckles. His past medical history includes chronic obstructive pulmonary disease for which he receives regular courses of antibiotics and steroids. He smokes 20 cigarettes per day.

Which one of the following is correct?

A) Steroid-induced myopathy

B) Bronchogenic carcinoma

C) Wegener’s granulomatosis

D) Polymyalgia rheumatica

E) Systemic lupus erythematosus

Answer:B

Explanation:

This patient has features suggestive of dermatomyositis, a systemic connective tissues disease characterised by inflammatory of striated muscle. The clinical features are those of proximal, symmetrical muscle tenderness and weakness; in severe cases it can lead to dyphonia, dysphagia and respiratory failure. In addition, dermatomyositis results in a characteristic periorbital ‘heliotropic’ rash, Gottron’s papules (areas of thickened, erythematous skin over the knuckles and extensor surfaces of the fingers), and nail changes (such as pitting and cuticular hypertrophy) Dermatomyositis is associated with malignancies that lead to paraneoplastic syndromes. These include small-cell lung, gastric, breast, ovarian and renal cell carcinoma and lymphoma.

Question:

A 55-year-old man has a long history of acid reflux and indigestion. He undergoes endoscopy which shows patches of erythematous mucosa. The pathology report states ‘areas of usual oesophageal stratified squamous epithelium are seen adjacent to islands of columnar-lined glandular mucosa’.

Which one of the following is correct?

A) Hypertrophy

B) Hyperplasia

C) Dysplasia

D) Metaplasia

E) Mitosis

Answer:D

Explanation:

Barrett’s oesophagus usually occurs as a complication of chronic gastro-oesophageal reflux, which results in metaplasia of the stratified squamous epithelium to gastric or intestinal columnar epithelium (frequently a combination of both are seen in a single histological sample).

Question:

A 35-year-old woman attends A&E with breathlessness. She reports that she was well before today when she became suddenly anxious and breathless at work. There was no history of chest pain, productive cough or wheeze, although she now complains of sharp, left-sided chest pain on inspiration. She states that she recently returned from a stressful business trip abroad. She has a history of anxiety attacks and mild depression.

Which one of the following is correct?

A) Panic attack

B) Asthma attack

C) Pulmonary embolus

D) Hyperthyroidism

E) Depression

Answer:C

Explanation:

It is important to distinguish between features of an anxiety attack and those of a pulmonary embolus. The distinguishing feature here is ‘pleuritic’ pain (sharp, well-localised pain which is worse on inspiration). This type of pain is indicative of either PE or pneumonia, but is not a feature of anxiety attack. This patient has a history of recent travel which is a clue to a potential underlying DVT.

Question:

A 2-year-old boy is brought to A&E with his mother because he isn’t walking properly. When asked, his mother states that the injury happened when he slipped and fell in the bath a week ago. On examination the child refuses to weight-bear on the left leg and you notice bruises on both legs as well as lesions which look like cigarette burns on the child’s arm.

Which one of the following is correct?

A) Admit the child and contact the duty social worker

B) Admit the child and discharge once a fracture has been ruled out with radiographs

C) Admit the child and contact the police

D) Discuss with mother and come to a joint decision if admission to hospital is necessary

E) Admit for investigation of potential osteogenesis imperfecta

Answer:A

Explanation:

Non-accidental injury includes neglect, as well as physical, sexual and psychological abuse. In cases of suspected NAI it is the responsibility of the admitting medical team to ensure the child’s safety. The child should be admitted and the named doctor and nurse for child safety should be informed along with the duty social worker.

Question:

A 40-year-old woman is brought to the A&E department following a collapse. The episode occurred when she was queuing in a busy supermarket. She describes experiencing a ringing in her ears accompanied by a metallic taste in her mouth before falling to the ground. Her sister, who was present at the time of incident, reports that she began to twitch and looked pale, but appeared to be fine after a few seconds. She had a history of febrile convulsions as a child.

Which one of the following is correct?

A) Temporal lobe epileptic seizure

B) Tonic-clonic seizure

C) Vertigo

D) Vasovagal syncope

E) Hypoglycaemic episode

Answer:D

Explanation:

This scenario describes a syncopal episode, which refers to a brief loss of consciousness due to transient inadequacy of cerebral bloodflow. When asking questions relating to a ‘funny turn’ you can use a ‘before, during, after’ approach. Vasovagal episodes often occur after a prolonged period of standing upright. They are preceded by a feeling of dizziness, metallic taste, nausea, or ringing in the ears. There is a brief period of loss of consciousness, which can be accompanied by twitching, after will regain consciousness immediately, unless sat upright (thus leading to prolonged hypoxia). Unlike generalised seizures tongue biting and incontinence are uncommon.

Question:

A 65-year-old man is admitted after vomiting a large amount of fresh blood. The bleeding has been controlled with endoscopy and banding of oesophageal varices, and the patient has been transfused a total of 6 units of blood. You are asked to come and assess the patient as he is now restless. On examination, the patient has abnormal eye movements and is very agitated and uncooperative when you attempt a neurological examination.

Which one of the following is correct?

A) Thiamine deficiency

B) Hypoglycaemia

C) Subdural haematoma

D) Hyponatraemia

E) Acute alcohol withdrawal

Answer:A

Explanation:

This patient has developed oesophageal varices secondary to alcoholic cirrhotic liver disease. Patients with excess alcohol intake are at risk of a number of conditions including thiamine deficiency, subdural haematoma and acute alcohol withdrawal. The presence of abnormal eye movements is an indicator of Wernicke’s encephalopathy due to thiamine (Vit B1) deficiency. It is important to know that replacement of folate (e.g., as occurs with a large blood transfusion) without B1 vitamin replacement can precipitate Wernicke’s encephalopathy.

Question:

A 30-year-old woman with oculocutaneous albinism attends a genetic clinic with her 5-year-old son. Her son and husband both have normal pigmentation, but her husband is a known carrier of the condition. She wishes to know ‘what is the chance of her son being a carrier’.

Which one of the following is correct?

A) 1/2

B) 2/3

C) 1/3

D) 1

E) 0

Answer:D

Explanation:

Oculocutaneous albinism is inherited as an autosomal recessive trait (as indicated by the carrier status of the father in this case.) Therefore all children borne from an affected parent will be carriers of the condition. In this case, the child does not have the phenotype of the condition and therefore must be a carrier. Further children have a ½ chance of being affected (because the father is a carrier) and a ½ chance of being a carrier themselves.

Question:

A 60-year-old man appears agitated and confused following an operation to improve his urinary flow. He has vomited twice and continues to complain of nausea. On examination, his blood pressure is 85/55 and his ECG shows sinus rhythm with a rate of 50 bpm.

Which one of the following is correct?

A) Hyponatraemia

B) Hypokalaemia

C) Hypoglycaemia

D) Hypernatraemia

E) Hyperkalaemia

Answer: A

Explanation:

This patient has developed ‘TURP syndrome’ following transurethral resection of prostate. This condition occurs as a result of absorption of the glycine-containing fluid used to irrigate the bladder and allow visualisation during the operation. The condition is characterized by confusion, hypotension, bradycardia, nausea and vomiting and pulmonary oedema resulting from hyponatraemia. Treatment is through sodium replacement with IV normal saline.

Question:

An 88-year-old previously fit and healthy man suffers an ischaemic stroke following a total hip replacement. His GCS was initially 6, but 48 hours later he is demonstrating signs of recovery and is now alert and oriented with a GCS of 15. He has a hemiparesis with left-sided facial weakness and dysarthria. He is awaiting assessment from the speech and language therapist.

Which one of the following is correct?

A) Total parenteral nutrition

B) Thickened fluids

C) Intravenous 5% dextrose

D) Naso-gastric tube (NGT) feeding

E) Percutaneous endoscopic gastrostomy (PEG) feeding

Answer: D

Explanation:

Decisions of nutrition in patients who have experienced a stroke are difficult. The risk of aspiration has to be balanced against those of malnutrition. Total parenteral nutrition (TPN) requires central venous access and is associated with a number of complications including electrolyte abnormalities, fatty liver deposition and increased risk of gastric ulceration. In general, therefore, enteral feeding is favoured where possible. In this case the patient will hopefully be deemed capable to tolerate a normal diet but requires speech and language therapy (SALT) assessment. Thickened fluids are often recommended by for patients who are unable to swallow fluids safely. Nasogastric tube (NGT) feeding with a fine-bore tube is suitable for up to 4 weeks. Where nutritional support is likely to be required for longer, alternatives such as percutaneous endoscopic gastrostomy (PEG) feeding can be considered

Question:

A 70-year-old woman is brought to A&E acutely confused. She complains of diffuse abdominal pain and is passing large volumes of dilute urine. There is a history of worsening back pain. There are no clinical findings on examination of the back, but you do identify a large ulcerating mass in the right breast incidentally on general examination.

Which one of the following is correct?

A) Hypercalcaemia

B) Hypocalcaemia

C) Hypernatraemia

D) Hyperkalaemia

E) Hypokalaemia

Answer:A

Explanation:

This patient has clinical features suggestive of acute hypercalcaemia secondary to bony metastases. The symptoms of hypercalcaemia are often recalled with the mneumonic "stones, bones, abdominal groans and psychiatric moans".

Question:

A 45-year-old woman is admitted to a psychiatric ward following a suspected overdose. On examination, she is drowsy, with dilated but bilateral reactive pupils, a dry mouth, urinary retention and brisk tendon reflexes. ECG demonstrates sinus tachycardia with widening of the QRS complexes in all leads.

Which one of the following is correct?

A) Diazepam

B) Imipramine

C) Nifedipine

D) Ramipril

E) Lithium

Answer:B

Explanation:

This patient is demonstrating features of tricyclic antidepressant overdose. These patients develop features of anticholinergic effect (dry mouth and eyes, dilated pupils, urinary retention and constipation). With severe poisoning cardiac and CNS involvement occurs with sinus tachycardia, broadening of QRS complex, PR or QT prolongation, brisk reflexes, reduced consciousness, and tonic-clonic seizures.

Question:

A 75-year-old man attends his GP with memory problems. His wife states that he is increasingly becoming lost around the house and having difficulty with everyday tasks such as dressing and washing. She reports that his condition can appear relatively stable for weeks or months but then worsen suddenly for no clear reason. On examination, there is no focal neurological deficit but some difficulty with gait with a stooped posture and small rapid steps. His past medical history includes hypertension and hypercholesterolaemia.

Which one of the following is correct?

A) Alzheimer’s Disease

B) Vascular Dementia

C) Fronto-temporal Dementia

D) Lewy-body Dementia

E) Creutzfeldt-Jacob Disease

Answer:B

Explanation:

This patient has got vascular dementia occurs due to multiple lacunar infarcts, and is characterized by step-wise deterioration in association with cardiovascular risk factors such as hypertension and hypercholesterolaemia. There may be focal neurological signs and a characteristic rapid small stepping gait ‘marche a petit pas’ which may lead to confusion with parkinson’s disease.

Question:

A 13-year-old boy presents with sudden-onset, severe pain in his left testicle radiating to the lower abdomen, and vomiting. On examination, the left testicle is swollen, erythematous and lying in a transverse plane, slightly higher than the right testicle. It is exquisitely tender to palpation.

Which one of the following is correct?

A) Epididymo-orchitis

B) Testicular torsion

C) Strangulated inguinoscrotal hernia

D) Varicocoele

E) Testicular haematoma

Answer:B

Explanation:

Sudden-onset and swelling in the testicle is strongly suggestive of testicular torsion in a patient of this age – it is a surgical emergency not to be missed. Pain may be referred to the groin and lower abdomen (due to involvement of the T10 nerve, which supplies the lower abdomen as well as the testes), along with nausea and vomiting. The torsion occurs around the spermatic cord when there is an anatomically abnormal and may follow a history of mild trauma. An example of such anatomical anomaly is the ‘bell-clapper’ testis, where the testicle is not anchored to the scrotum posteriorly by the gubernaculums ligament (as it normally is), leaving it to swing freely like the ‘clapper of a bell’. In torsion, the testis may be high-riding and lying transversely within the scrotum, although this may not always be apparent. Irreversible infarction of a twisted testicle occurs within 6-12 hours; so affected patients should be taken to theatre for surgical exploration without further investigation. Surgery involves untwisting of the testicle and bilateral fixation (orchidopexy) of the testes to the tunica vaginalis to prevent further torsion. Bilateral fixation is advocated as anatomical anomalies of the testes that predispose to torsion usually occur bilaterally.

Question:

A 45-year-old gentleman is brought into the Emergency Department with severe abdominal pain. He reports going to a stag party and consuming in excess of 45 units of alcohol. The pain is epigastric and excruciating (10/10 in severity when questioned). It is associated with nausea and vomiting.

Which one of the following is correct?

A) Serum amylase

B) Serum calcium

C) Blood glucose

D) Age

E) White cell count

Answer:A

Explanation:

This patient presents with acute pancreatitis secondary to alcohol intoxication. Although amylase is useful in the diagnosis of pancreatitis, it is not useful for assessment of its severity. A useful mnemonic for markers of severity in pancreatitis is : PANCREAS (P – PaO2 < 8kPa, A – Age > 55 years, N – Neutrophils > 15 x 10^9/L, C – Corrected calcium < 2 mmol/L, R – Raised urea > 15 mmol/L, E – Elevated LDH > 600 iu/L, A – Albumin < 30 g/L, S – Sugar(BM) < 10 mmol/L). If 3 or more of the criteria are satisfied, the episode of pancreatitis is labelled as severe. The above features make up the Glasgow criteria which are valid only after 24-48 hours after onset of symptoms. Alternatively, severity scores such as APACHE II can be used prior to 24 hours.

Question:

A 15-year-old female presents with central abdominal pain that began around the umbilicus but later localized to the right lower quadrant. This is accompanied by decreased appetite, nausea, and pyrexia of 37.6oC.

Which one of the following is correct?

A) Mortality is highest for patients aged between 10 and 20 years of age

B) Pain elicited in the left iliac fossa on palpation of the right iliac fossa is known as Rovsing’s sign

C) Diabetic ketoacidosis is an important differential diagnosis

D) Lymphcytosis is present between 80 and 90% of patients

E) The above condition is not compatible with a positive urinary beta-HCG test

Answer:C

Explanation:

This patient presents with the common surgical presentation of appendicitis. Mortality is highest in the elderly, especially those over the age of 70 because of atypical and delayed presentations. Rovsing’s sign is pain in the right iliac fossa on palpation of the left iliac fossa. Leukocytosis (and not lymphocytosis) is present in between 80 and 90% of patients with appendicitis. Appendicitis is also the commonest non-obstetric surgical emergency in pregnancy. Abdominal pain therefore has numerous differentials (both surgical and medical) with diabetic ketoacidosis being an important one (especially in a patient of this age) that is often forgotten – preliminary investigations including finger-prick blood glucose should be performed to easily rule this out. The diagnosis of appendicitis is clinical (ref. Alvarado score) but abdominal ultrasound and CT scans may be used to confirm the diagnosis prior to appendicectomy.

Question:

A 24-year-old man presents with a lump in the right groin. It appears on standing and disappears on lying down. On examination whilst standing, the lump is seen clearly over the inguinal ligament. It is reducible and displays a cough impulse.

Which one of the following is correct?

A) Femoral hernia

B) Hiatus hernia

C) Inguinal hernia

D) Obturator hernia

E) Paraumbilical hernia

Answer:C

Explanation:

This is the commonest hernia of the groin and occurs mostly in males. There are two main types – direct and indirect. Indirect hernias enter the deep inguinal ring, which is at the midpoint of the inguinal ligament (i.e.,, midway between the anterior superior iliac spine (ASIS) and pubic tubercle). This is not to be confused with the mid-inguinal point (i.e., midway between the ASIS and public symphysis), which marks the point of the femoral pulse. Indirect hernias then pass through the inguinal canal and may or maynot enter the scrotum in males. Direct inguinal hernias, however, protrude through a weakness in the transversalis fascia and out of the superficial inguinal ring (located just above and medial to the pubic tubercle). Long standing inguinal hernias, especially indirect ones, may become irreducible and strangulate. In contrast to direct inguinal hernias, which occur above and medial to the pubic tubercle, femoral hernias occur below and lateral to it. They consist of a protrusion of peritoneum (which may contain omentum or small bowel) through the narrow femoral canal, causing pain and discomfort.

Question:

A 32-year-old woman has had multiple visits to her GP over the last 2 months complaining of early morning headaches unresponsive to analgesia. Her last period was 6 weeks ago. On this occasion, she also admits to having a milky discharge from both nipples. A beta-HCG urine test is negative and she has never had children before.

Which one of the following is correct?

A) Breast carcinoma

B) Intraductal papilloma

C) Lactating breast

D) Mammary duct ectasia

E) Prolactinoma

Answer:E

Explanation:

The negative beta-HCG test in this question confirms that the patient is not pregnant. As she has no children, it is safe to assume that she is not breast-feeding. This is therefore an example of galactorrhoea – defined as lactation in the absence of pregnancy of breast-feeding. The history of early-morning headaches is typical of an intracranial space-occupying lesion. The most fitting diagnosis is therefore a prolactinoma. Prolactin is a hormone secreted by the anterior pituitary gland. It stimulates the mammary glands to secrete milk. High levels of prolactin interfere with menstruation. A prolactinoma is a benign tumour (adenoma) of the pituitary that secretes large amounts of prolactin. This results in galactorrhoea, irregular menstrual cycles, subfertility and a decreased libido, as well as the symptoms of a space-occupying intracranial lesion (e.g.,, early morning headaches that are worse on coughing, straining and lying down).

Question:

A 79-year-old man attends the A&E department after vomiting small amounts of fresh blood. He complains of a 3-month aching pain in his epigastrium and a poor appetite, saying that he lost over 2 stone in weight over this period. He denies any difficulty in swallowing. Examination reveals enlarged supraclavicular lymph nodes.

Which one of the following is correct?

A) Carcinoma of the oesophagus

B) Carcinoma of the stomach

C) Chronic peptic ulceration

D) Gastric lymphoma

E) Gastrinoma

Answer:B

Explanation:

The features of this presentation are of gastric cancer, which is a leading cause of cancer death worldwide. It is commonest in Japan, with a peak age range of 50-70 years. Major risk factors include chronic gastric ulceration, H. pylori infection, gastric polyps, pernicious anaemia and Ménétrier’s disease; other risk factors include blood group A, a family history of gastric or related cancers, eating pickled foods, smoking and alcohol consumption. Spread of gastric cancer (usually adenocarcinoma) is via lymphatics, resulting in Virchow’s node (left supraclavicular lymphadenopathy; also ‘Troisier’s sign’) – a sign of intra-abdominal malignancy. Gastric cancer can also spread to the ovaries via the peritoneum (a Krukenburg tumour); or to the umbilicus (‘Sister Mary Joseph’s nodule’). As the features of gastric cancer are often vague, such tumours often present late. Epigastric pain radiating to the back, vomiting from pyloric obstruction, anorexia and weight loss, or jaundice (from liver metastases) may also feature. Diagnosis is by endoscopy and biopsy. Management is by gastrectomy and lymph node clearance.

Question:

A 29-year-old woman of Oriental origin presents to her GP with pain in both arms on exertion. The pain has progressively worsened over the past month and is associated with transient visual disturbances. She also admits to feeling generally unwell, with intermittent fevers and occasional night sweats. Examination reveals no central or peripheral neurological abnormalities but neither the upper nor lower limb pulses are palpable.

Which one of the following is correct?

A) Giant cell arteritis

B) Kawasaki’s disease

C) Polyarteritis nodosa

D) Superficial thrombophlebitis

E) Takayasu’s arteritis

Answer:E

Explanation:

Takayasu’s disease (‘pulseless disease’ or ‘aortic arch syndrome’) is a rare vasculitis affecting large arteries (i.e., the aorta and its major branches), characterized by granulomatous inflammation of the vessels involved. Features include hypertension, arm claudication, absent pulses, bruits and visual disturbances (e.g., transient amblyopia, blindness, etc.) Patients are usually younger Oriental women, and also commonly present with systemic symptoms (e.g., malaise, fever, night sweats, weight loss, etc.). Diagnosis is made by angiography showing narrowing of the aorta and its major branches. Management is with steroids but the condition is progressive and death usually ensues within a few years of onset. In contrast, Kawasaki’s disease is a febrile systemic vasculitis predominantly affecting children under the age of 5, the most serious complications of which include coronary arteritis and aneurysm formation (in 1/3 of untreated patients). Diagnosis of Kawasaki’s is clinical and must include a fever for more than 5 days, with at least 4 of the following: bilateral conjunctival injection, change in mucous membranes, change in the extremities, polymorphous rash, and cervical lymphadenopathy. Treatment is with intravenous immunoglobulin and high-dose aspirin (for cardio-protection).

Question:

A 25-year old woman presents with a 6-week history of right iliac fossa pain that has acutely worsened in the last 3 days. She admits to the passage of some blood per rectum but no mucus. Examination reveals a firm sausage-shaped mass palpable in the right iliac fossa.

Which one of the following is correct?

A) Appendicitis

B) Crohn’s disease

C) Infective colitis

D) Ischaemic colitis

E) Ulcerative colitis

Answer:B

Explanation:

The prolonged history of right iliac fossa pain, right iliac fossa mass and per rectal bleeding in a relatively young patient should raise the suspicion of inflammatory bowel disease – in this case, Crohn’s disease. This is a non-specific inflammatory disorder of the GI tract characterized by full-thickness (‘transmural’) inflammation and non-caseating granulomas (remember that in ulcerative colitis, inflammation is limited to the mucosa and submucosa). Crohn’s can also occur anywhere along the GI tract (commonest site – terminal ileum, 40%). Mucosal ulceration with intermittent oedema results in the ‘cobblestone’ appearance with skip lesions usually visualized on endoscopy. Presentation is commonest in young adults with abdominal pain and diarrhoea. A ‘Crohn’s mass’ (inflamed terminal ileum) may be palpable in the right iliac fossa. Active disease may also feature fevers, anorexia, weight loss and mouth ulcers. Perianal manifestations include anal fissures, fistulae, skin tags and abscesses. Extra-intestinal manifestations include oxalate renal stones, polyarthritis (seronegative), erythema nodosum, pyoderma gangrenosum, amongst others. Diagnosis is by endoscopy and biopsy (revealing transmural granulomatous lesions).

Question:

Mr Trump is a 40-year-old man who presents to the GP with a 3 month history of worsening frontal headaches exacerbated by coughing. His wife has noticed changes to the appearance of his facial hair over the past year and he says that his wedding ring is now too small for him. He denies any change in his weight or bowel habit. Mr Trump is a chronic asthmatic and has psoriasis. His medication includes beclametasone and salmeterol inhalers, ramipril and some topical steroid with antifungal / antibiotic preparation for his psoriasis. He lives alone with his wife, drinks alcohol occasionally and is a non-smoker. On examination his blood pressure is 166 / 94. Results from the blood test taken on the day are as follows: Haemoglobin 12.2 (11.5-16.5) White cell count 6.7 (4-11) platelets 248 (150-400) Na 137 (135-146) K 3.8 (3.5-5) urea 5.2 (2.5-6.7) Creatinine 98 (79-118) Fasting glucose 8.2 (4.5-5.6).

Which one of the following is correct?

A) Phaechromocytoma

B) ACTH secreting pituitary adenoma

C) Iatrogenic Cushings syndrome

D) Acromegaly

E) Small cell carcinoma

Answer:D

Explanation:

Hyperglycaemia and hypertension are well recognised complications of steroid, ACTH and GH excess. However, growth of soft tissue, i.e, the hands in this example, is a distinguishing feature suggestive of a diagnosis of acromegaly. Furthermore, with excess ACTH one might expect a picture of hypernatraemia with hypokalemia due to increased levels of mineralocorticoids. Cushing’s syndrome classically presents with weight gain, which has not been described here alongside easy bruising, abdominal straie, ‘buffalo hump’ and proximal weakness etc. Also, topical and inhaled steroids rarely reach high enough systemic levels to cause Iatrogenic Cushing’s syndrome. Phaechromocytomas present with an episodical history of symptoms such as tremors, hot flushes and vomiting. Small cell carcinomas (usually of the lung) are known to secrete ADH and ACTH and are associated with Lambert-Eaton-Myathenic syndrome, none of which would account for the symptoms described in the stem. One might also expect some respiratory symptoms in the stem such as a significant smoking history, cough or hoarseness of the voice in a lung cancer patient.

Question:

Miss Lees is a 36-year-old lady who presents to her GP with a 12 week history of a 6kg weight gain despite dieting ‘causing purple stretch marks’ on her abdomen. She reports having missed her last period and excess hair growth on her face . Her past medical history include migraines, asthma, Wegners granulomatosis and some ‘kidney infections’ as a child. Her regular medications include: Prednisolone, salbutamol inhaler and paracetamol. She lives alone, smokes 10 cigarettes a day but does not take any alcohol. Her blood pressure is 164 / 94. Results from the routine blood test taken are as follows: Haemoglobin 11.8 (11.5-16.5) White cell count 7.0 (4-11) platelets 256 (150-400) Na 142 (135-146) K 4.2 (3.5-5) urea 5.0 (2.5-6.7) creatinine 95 (79-118) and glucose (fasting) 8.9 (4.5-5.6).

Which one of the following is correct?

A) Bilateral adrenalectomy

B) Reduce steriod dose

C) Transphenoidal adenectomy

D) Commence on Ketconazole

E) Commence oral contraceptives

Answer:B

Explanation:

Weight gain, easy bruising, irregular menstruation and abdominal straie are common symptoms in Cushing’s syndrome. Patients with Wegners Granulomatosis are treated primarily with high-dose steroids. Given this patient’s past medical history the most likely cause of her Cushing’s syndrome is iatrogenic- excess steroids and so the most suitable treatment would be to reduce her steroid dose by as much as the symptoms with Wegner’s would allow. There are no symptoms described such as frontal headaches or tunnel vision (bitemporal hemianopia) suggestive of an ACTH secreting pituitary adenoma requiring adenectomy and furthermore there is no evidence of mineralocorticoid excess such as hypokalemia or hypernatraemia which accompanies ACTH excess from either a pituitary or adrenal origin requiring adenectomy / adrenelctomy respectively. Ketaconazole is an anti fungal drug and used in patients with Cushing's disease to suppress glucorticoid synthesis and thus is not a useful treatment for iatrogenic Cushing’s syndrome. Oral contraceptives is useful to regulate periods in patients diagnosed with PCOS but not in this case.

Question:

Mrs Lawson is a 47-year-old women who presents to her GP with an one month history of unpredictable acute onset hot flushes that occur episodically. She states that it was particularly severe prior to attending the practice this morning. With recent episodes, she felt nauseous, sweaty, and had palpitations associated with a tight chest. Her bowel habits are normal, she has not lost weight loss and her periods are regular. Her past medical history includes childhood eczema and well-controlled asthma. She is not on any medication, a non-smoker and drinks alcohol occasionally. She looks very anxious and has a fine tremor. Her blood pressure on a previous visit 2 months earlier was 130/74 but today it is 190/ 102.

Which one of the following is correct?

A) Electrocardiogram

B) Toxicology screen

C) Serum FSH, LH and estradiol

D) Thyroid function tests

E) Urine metanephrines

Answer:E

Explanation:

Episodic hot flushes, hypertension, palpitations with chest tightness and nausea are classical symptoms of phaechromocytoma. The first line investigation in diagnosing this patient is a 24-hour urine collection for metanephrines. Acute episodes of cardiac ischaemic do not usually present episodically without warning but are induced by stress / exercise and in patients with cardiac risk factors. Chronic rather than episodic hypertension is a risk factor for an ischaemic event. A toxicology screen may be useful in diagnosing opiate / alcohol or illicit drug misuse but neither are indicated from the history. Peri-menopausal symptoms include hot flushes, sweats and palpitations but usually in the presence of an irregular menstrual cycle. LH, FSH and estradiol may be used to diagnose menopause, however hypertension and chest tightness are not common features of menopause. Hyperthyroidism can present in this manner but usually associated with weight loss, an irregular menstrual cycle and often diarrhoea.

Question:

Mr. Kline is a 72-year-old man who presents to his General Practitioner with history of intermittent episodes of abdominal pain for the past eight months that has been increasing in severity. He has lost his appetite and a stone and a half in weight since. Blood results from the day are as follows: WCC 6.8 (4-11), Hb 9.2 (13-18), MCV 72 (76-96), Na 138 (135-145), K+ 3.8 (3.5-5), Urea 2.7 (2.5-6.7), Creatinine 118 (70-150), Bilirubin 10 (3-17), ALT 25 (3-35), AST 27 (3-35) and ALP 42 (40-120). Mr. Kline was booked for a outpatient colonoscopy that revealed a 6cm polypoidal mass in the ascending colon. Histology of the biopsy obtained from the specimen reported this to be a moderately differentiated adenocarcinoma, which had invaded into the muscle and through the wall. A staging CT scan identified two enlarged regional lymph nodes; however the liver, lungs and bone were reported to be normal with no evidence of metastases.

Which one of the following is correct?

A) Modified Dukes B1

B) Modified Dukes B2

C) Modified Dukes C1

D) Modified Dukes C2

E) Modified Dukes D

Answer:D

Explanation:

Modified Dukes C2 is when the tumour invades into and through the muscularis propria (bowel wall) with regional lymph node involvement. When the tumour has invaded into but not through the bowel wall but associated with lymph node involvement, then it is modified Dukes C1 . Modified Dukes D refers to metastatic tumour deposits in distal organs such as the liver. Modified Dukes B1 refers to when the tumour invades into but not through the bowel wall with no lymph node involvement and Modified Dukes B2 is when tumour invades into and through the muscularis propria (bowel wall) with no lymph node involvement.

Question:

A 34-year-old woman visits her GP having attended a prior appointment for a routine smear. She is very anxious at the smear report which reads ‘moderate dyskaryosis’. Her previous smear results have all been normal up until now. She explains that her mother was diagnosed with cervical cancer three years ago following a positive smear result and would like to know what needs to be done next.

Which one of the following is correct?

A) Repeat smear in 3 years

B) Repeat smear in 6 months

C) Take triple swabs

D) Refer for routine colposcopy

E) Refer for urgent colposcopy

Answer:D

Explanation:

Moderate and severe dyskaryosis requires referral for a routinecolposcopy with biopsy of any abnormal areas in order to identify and stage CIN. A result with ‘invasion suspected’ or ‘abnormal glandular cells’ requires an urgent colposcopy. A smear showing mild dyskaryosis may be followed up with a further smear in 6 months as many cases regress, though recent guidance suggests that even mild changes may be an indication for colposcopy.

Question:

A 27-year-old individual with intractable epilepsy, resistant to multiple anti-convulsant medications in combination has a surgical procedure to separate his right and left cerebral hemispheres. As a result, he cannot name objects he holds in his non-dominant left hand, or objects in his left visual field, but can do this if they are held or viewed on the opposite side. His epilepsy has now far less impact on his quality of life.

Which one of the following is correct?

A) Anterior commissure

B) Corpus callosum

C) Interventricular foramen

D) Optic chiasm

E) Septum pellucidum

Answer:B

Explanation:

All of the above named structures lie in the midline on saggital sections of the brain, but it is the corpus callosum that was divided surgically in this patient. The corpus callosum is a huge white matter tract connecting the right and left hemispheres of the brain, containing over 200 million myelinated axons. This procedure is still occasionally used in severe, intractable epilepsy as a treatment of last resort, but leads to a split-brain disconnection syndrome in which objects on the same side as the language centres cannot be named if held or seen in that visual field, since they their names are recognized and processed on the contralateral side of the brain, in the other dominant hemisphere.

Question:

A 32-year-old local gang leader is involved in a shooting and is brought to casualty against his will although now is in too much pain to resist admission. Although he is not forthcoming with details of the history, he complains that he has been shot in his back and in his shoulder, that he cannot move his leg. On examination he is haemodynamically stable. The consultant examines him soon after and finds he has left leg spastic weakness with hyperreflexia and equivocal plantars with absent joint position sense, vibration and fine touch. His right leg is normal on motor examination but has reduced sensation to pain and temperature sensation from the level of T11 with intact joint position and proprioception.

Which one of the following is correct?

A) Cauda equina traction

B) Complete transection of the spinal cord

C) Damage to conus medullaris

D) Hemisection of the left side of the spinal cord

E) Hemisection of the right side of the spinal cord

Answer:D

Explanation:

This patient has complete hemisection of the left side of his spinal cord, known as the Brown-Sequard syndrome. This causes a characteristic pattern of neurological signs owing to the organisation and decussation of motor and sensory nerve tracts within the spinal cord. Damage to half of the spinal cord causes upper motor neurone signs in the ipsilateral lower limb (since these fibres decussate in the medulla oblongata), loss of fine touch, vibration and proprioception in the ipsilateral limb, but loss of pain and temperature sensation in the contralateral limb (since the spinothalmic tract decussates close to the entry point of the spinal nerve). The contralateral limb also demonstrates normal motor function without any weakness in a pure lesion.

Brown-Sequard hemisection can be complete or partial and can result from trauma, tumours or demyelinating plaques.

Question:

A 39-year-old retail manager with rheumatoid arthritis presents to her GP with a one month history of pain radiating up her forearm at night, associated with tingling in her thumb, index and middle fingers. She has also noticed that her hands have become a little weaker. On examination, there is wasting of the thenar eminence with loss of sensation over most of the palm lateral to the ring finger, and at the tips of the index and middle finger on the dorsal side. Tapping over the flexor aspect of the wrist seems to reproduce the tingling sensation in her hands and forearm, as does flexion of the wrist for a prolonged period in the examination room.

Which one of the following is correct?

A) Anterior interosseous nerve

B) Median nerve

C) Posterior interosseous nerve

D) Radial nerve

E) Ulnar nerve

Answer:B

Explanation:

This patient has carpal syndrome, a very common mononeuropathy that results from compression of the median nerve at the wrist in the carpal tunnel. Females are most at risk because their tendons are a similar size to those in men, although their carpal tunnels are smaller. Patients with rheumatoid arthritis, diabetes, acromegaly, hypothyroidism, amyloidosis or who are pregnant are predisposed to carpal tunnel syndrome. The disease is often bilateral and presentation with pain, typically at night where the hand may be held in a hyperextended position, which compresses the carpal tunnel, increasing pressure on the median nerve. There is weakness in the hand of the pronator teres (pronation), flexor digitorum profundus and superficialis (flexion of the fingers), flexor pollicis longus (flexion of the thumb) abductor pollicis brevis (abduction of the thumb) opponens pollicis (apposition of the thumb and base of little finger. There is sensory loss in the distribution of the nerve, over the lateral aspects of the hand, particularly on the palmar side.

Tinel’s test is often positive where tapping over the carpal tunnel on the flexor aspect of the wrist reproduces paraesthesia in the distribution of the median nerve. Phalen’s test is where there is reproduction of the pain or paraesthesia is produced on flexion of the wrist in less than 60 seconds.

Treatment is with splints that keeps the wrist extended at night, steroid injections or decompressive surgery where the flexor retinaculum is divided, thereby increasing the space in the carpal tunnel.

Question:

During a neuroanatomy teaching session, prosections are used to teach medical students about the anatomy of the cranial nerves. One particular nerve is described as unique as it is the only one to emerge from the dorsal aspect of the brainstem, it has the longest intracranial course of any of the cranial nerves, it decussates before its motor target and is the smallest nerve in that it contains the least number of axons.

Which one of the following is correct?

A) Abducens nerve

B) Hypoglossal nerve

C) Olfactory nerve

D) Spinal accessory nerve

E) Trochlear nerve

Answer:E

Explanation:

The trochlear nerve provides motor innervation to a single skeletal muscle, the superior oblique and for this reason, contains the smallest number of axons. It exits the brainstem from the dorsal (posterior) rather than the ventral (anterior) aspect and decussates before reaching its target organ, the only cranial nerve to do so. The superior oblique muscle is responsible for depression of the adducted eye (therefore looking down and in, like when descending stairs or reading), and its secondary action is intorsion (inward rotation). Its complex action results from the fact that the muscle is not a rectus muscle (straight muscle) which only has a single action – the superior oblique in contrast attaches eccentrically to the posterior surface of the globe. Damage to the trochlear nucleus affects the contralateral eye (since this nerve decussates before its target muscle), but since the contribution of this nerve is small, other clinical manifestations due to damage to adjacent structures will dominate the clinical picture. Damage to the peripheral nerve in isolation is rare, and usually only happens in the context of trauma, although mononeuritis (inflammation of the vasa nevorum) can affect any peripheral nerve.

Question:

A 64-year-old lady fractures her femoral neck after falling down the stairs at home. This is repaired under spinal anaesthetic and sedation with a hemi-arthroplasty. Eight hours later she is sitting up in bed complaining of a severe headache that she says is 8/10 on a severity scale and unresponsive to paracetamol that the nurses gave 1 hour earlier. She is afebrile, her respiratory rate is 22 and pulse rate 110/min. She was given 1.2g of co-amoxiclav during her operation intravenously. There is no neck stiffness or photophobia.

Which one of the following is correct?

A) Analgesia misuse headache

B) Idiopathic intracranial hypertension

C) Meningitis

D) Post dural puncture headache

E) Tension headache

Answer:D

Explanation:

This patient has had a spinal anaesthetic which involves inserting a needle into the subarachnoid space in sterile conditions and injecting small amounts of local anaesthetic bupivacaine and often an opiate such as diamorphine. This provides adequate analgesia below the level of infiltration and sedation is used to relax the patient, who often is not fit for a general anaesthetic.

Much like lumbar punctures, patients who have spinal anaesthetics can suffer from leakage of CSF from the puncture site which leads to intrathecal hypotension, causing a postural headache that is worse in an upright position (and can be severe), and is alleviated by lying recumbent. This can happen after neurosurgical procedures, trauma or lumbar puncture. The treatment of choice is a blood patch in which blood is collected under sterile conditions and injected over the meninges at the site of puncture, which then clots and seals the dural defect.

Meningitis is clearly a worry in any patient with a severe headache, particularly those who have had instrumentation of the CSF space. However, the patient is apyrexial with no neck stiffness or photophobia, and the headache of meningitis should not be orthostatic as in this case. Eight hours post-operative is perhaps too short a period of time for bacteria to have multiplied to cause clinical pyogenic meningitis without underlying immunosuppression.

Question:

A 35-year-old male suffers from periods of excruciating headaches that start behind his left eye and feel as if it is boring into his head. This always starts at around 2am and lasts around three hours during which he cannot sleep and finds himself pacing up and down the corridor to get some relief but unsuccessfully. During these episodes his left eye turns red and left sided ptosis and lacrimation. These occur every night for several weeks before an intermission of months without them followed by recurrence.

Which one of the following is correct?

A) Acute angle closure glaucoma

B) Acute iritis

C) Cavernous sinus thrombosis

D) Cluster headache

E) Scleritis

Answer:D

Explanation:

This patient is suffering from cluster headaches, which are severe as to be characterised as the worse pain ever felt by most patients who experience them. They occur with remarkable regularity, waking patients up from sleep, but in contrast to migraines do not cause nausea or a desire to lie still in a quiet, dark environment but restlessness. They are however, unilateral and last for weeks before remitting and then return to affect the patient in the same pattern. They are much more common in men and more common in smokers. Standard analgesics have no effect on cluster headaches, and high flow oxygen therapy with sumatriptan can be attempted. Prophylactic treatments include verapamil and steroids, although others such as lithium may be tried. Cluster headaches in a minority of patients can be chronic and therefore suffered by patients every day for years. It is considered to be due to vascular dilatation that impinges on the trigeminal nerve.

Question:

A 15-year-old girl is a newly diagnosed type 1 diabetic schoolgirl and complains to her mother at 11am of having a headache and feeling lethargic, and is given 1 gram of paracetamol and encouraged to sleep it off. Thirty minutes later, she looks sweaty, is shaking and complains of pins and needles in her arms and appears particularly irritable. When she attempts to walk, she appears ataxic as if she were acutely intoxicated with alcohol. Her mother takes her straight to casualty where upon waiting for triage, she loses consciousness and falls to the floor, shaking all limbs and unresponsive to central pain.

Which one of the following is correct?

A) Acute alcohol intoxication

B) Drug withdrawal

C) Epilepsy

D) Hypoglycaemia

E) Multiple sclerosis

Answer:D

Explanation:

This patient, a known diabetic, has had a life-threatening episode of hypoglycaemia – a medical emergency. Most hypoglycaemic episodes occur in known diabetics who take hypoglycaemic drugs, either insulin or the sulphonylureas and may be accidental or purposeful self-harm, and not uncommonly taken for the purposes of self-harm by those who have access to the medications such as family members. Symptoms relate to the autonomic reaction to hypoglycaemia (shaking, sweating, palpitations, tachycardia), the neuroglycopenia (fatigue, change in mood or personality, focal neurological signs, paraesthesia, ataxia). If left untreated, this will eventually result in unconsciousness, seizure, permanent brain damage or death. The human brain is dependent on a constant supply of glucose for function (around 70g/day) and therefore resulting in progressive neurological dysfunction as the blood glucose drops. Every patient, particularly a known diabetic, should have their glucose checked when presenting with such symptoms, and patients experiencing seizures should have a capillary glucose estimation and rapid replacement (intravenous) of glucose to correct it before irreversible damage ensues. Multiple sclerosis, although can cause ataxia and paraesthesias would not have an onset this quick. Acute alcohol intoxication would not result in progressive loss of consciousness without continuing consumption of alcohol and often clinically this would be suspected from the alcoholic foetor. Drug withdrawal is unlikely given her age, but sweating, shaking, and mood change could occur in withdrawal from depressants such as heroin “cold turkey withdrawal”. However, the seizure is not characteristic. Epilepsy is defined as continuing predisposition to suffering unprovoked seizures, and therefore a single seizure cannot be diagnosed as epilepsy on this basis alone.

Question:

A 43-year-old woman with known anti-phospholipid syndrome with previous pulmonary emboli and cerebrovascular events presents with a six hour history of weakness in her legs. On examination, her cranial nerves and upper limbs are normal but there is spastic paraparesis of her legs with 3/5 power symmetrically below the hip, hyperreflexia and extensor plantars. There is reduced perception of pain and temperature sensation in the same distribution but intact perception of joint position sense and proprioception.

Which one of the following is correct?

A) Anterior spinal artery thrombosis

B) Cauda equina syndrome

C) Motor neurone disease

D) Spinal cord compression

E) Syringomyelia

Answer:A

Explanation:

This woman has anti-phospholipid syndrome and is at risk of recurrent arterial and venous thromboses, often despite being on anti-coagulant therapy. This is a case of anterior spinal artery thrombosis which perfuses the anterior two-thirds of the spinal cord, and therefore the corticospinal tracts and spinothalamic tracts which run anteriorly in the spinal cord are damaged, and posterior columns which carry fine touch and proprioception are preserved. This is similar to syringomyelia in that it demonstrates a dissociated sensory loss, although a syrinx would cause lower motor neurone signs in the upper arms. Cauda equina syndrome often causes saddle anaesthesia as it affects sensory innervation around the anus and perineum and also affects lower motor neurones, thereby causing a flaccid rather than spastic paraparesis with hyporeflexia. Motor neurone disease does not cause sensory loss as evidenced here.

Question:

A 69-year-old male presents to casualty with dizziness, nausea and vomiting and double vision. He says he is unable to swallow water properly and that the room feels like it is spinning. On examination he has left sided ataxia, left sided miosis and ptosis with loss of pain and temperature sensation on the right hand side below the neck, and on the left side of his face. His uvula deviates to the right and he has some dysarthria with his voice sounding nasal in quality.

Which one of the following is correct?

A) Anterior cerebral artery

B) Internal carotid artery

C) Posterior cerebral artery

D) Posterior communicating artery

E) Posterior inferior cerebellar artery

Answer:E

Explanation:

This is a patient has suffered occlusion of his posterior inferior cerebellar artery (PICA) causing the lateral medullary syndrome in which there is ischaemia or infarction of the lateral portion of the medulla oblongata. This causes lower motor neurone palsies of the bulbar (or brainstem) cranial nerves (such as the vagus – causing difficulties in swallowing and speaking), the sympathetic outflow to the eye resulting in ipsilateral Horner’s syndrome. Involvement of the descending spinothalamic tracts causes a crossed sensory loss contralaterally below the lesion and ipsilaterally at the level of the lesion. Cerebellar signs such as vertigo (sensation of the room spinning), nystagmus are common as are nausea and vomiting. An MRI of the brainstem is more discerning than a CT scan, and may show ischaemic necrosis. Treatment will depend on the cause.

This questions tests the distinction between anterior circulation strokes (those which affect the internal carotid artery and its branches) and posterior circulation strokes affecting the vertebrobasilar arteries and its branches, as the in this case a carotid Doppler would be an unnecessary investigation since the disease is not related to the carotid artery.

Question:

A 61-year-old with a four year history of chronic diarrhoea and malabsorption, who is also under treatment by the rheumatologists for uncharacterised but recurrent joint disease presents to the general neurology clinic with a history of recent and progressive cognitive decline reported to him by established colleagues at work and double vision. On examination, his MMSE score is 25/30, he has nystagmus and ophthalmoplegia, and is noted to contract his jaw muscles when he looks at a target moving from side to side in front of him. He is noted to have generalised lymphadenopathy and has lost 10kg of weight since his last review nine months ago.

Which one of the following is correct?

A) Creutzfeld-Jakob disease

B) Korsakoff’s psychosis

C) Normal pressure hydrocephalus

D) Pellagra

E) Whipple’s disease

Answer:E

Explanation:

Whipple’s disease is a multisystemic infectious disease caused by the organism Tropheryma whippelli. It is a cause of chronic diarrhoea and malabsorption typically affecting Caucasian males. Jejunal biopsy in such cases reveals PAS positive macrophages. The disease can also cause chronic arthritis and if disseminated, can affect the heart (endocarditis) or the central nervous system (dementia, ophthalmoplegia). The finding of contraction of the jaw muscles with ocular movements (oculomasticatory myorhythmia) is pathognomonic. Although this is rare, it is an important responsibility of the clinician to understand that there are many treatable causes of dementia such as syphilis, vitamin B12 deficiency, hypothyroidism etc that if identified and treated can dramatically improve cognitive function and independence from a clinical course that would result otherwise in progressive decline and death.

Creuztfeld-Jakob disease is a prion disease in which prion proteins (non-degradable proteins) accumulate in the brain and may be genetic, sporadic or linked to environmental agents. It has no known cure. Korsakoff’s psychosis occurs most often in the setting of chronic alcoholism, not treated by thiamine replacement characterised clinically by confabulation and anterograde amnesia. Normal pressure hydrocephalus should be suspected in individuals with confusion, ataxia and urinary incontinence. Pellagra is nicotinic acid deficiency that presents with dermatitis, diarrhoea and dementia. It is treatable with nicotinic acid replacement.

Question:

A 29-year-old male is an unrestrained passenger a road traffic accident and suffers a head injury that causes him to lose consciousness at the scene, the paramedics report that he was still drowsy when they arrived. He is brought to casualty where he is orientated, asking continuously after the driver of the car. He is haemodynamically stable, and he has no focal neurological signs with pupils equal and reactive to light. Overlying his temporo-parietal region on the left side near his temple, there is a boggy swelling at the site of trauma which is tender to palpation. Two hours later, he becomes more confused screaming that is “all his fault” and has an awful headache. Shortly after, he is found seizing in his examination room.

Which one of the following is correct?

A) Extradural haematoma

B) Pseudoseizure

C) Subarachnoid haemorrhage

D) Subdural haematoma

E) Transient ischaemic attack

Answer:A

Explanation:

This history is typical of a extradural (or epidural) haematoma, a collection of blood that accumulates rapidly between the dura and the cranium, and causes an acute increase in intracranial pressure typically in the setting of significant trauma. The vessels most commonly involved are the middle meningeal vessels which run along the inside of the cranium behind the temporoparietal bones on the lateral sides of the head. Trauma to these areas, particularly if producing a fracture or severe enough to cause loss of consciousness should alert a clinician to the possibility of this diagnosis. Typical of these cases is a “lucid interval” that occurs between the initial trauma and the acute bleed and deterioration and this is evident in this case. Confirmation is with CT head and will demonstrate a lens (biconvex) shaped haematoma between the dura and the skull. Treatment is with urgent neurosurgical decompression and evacuation.

Question:

A 28-year-old female who takes the oral contraceptive presents to her GP with headaches that are worse in the morning, some nausea and vomiting. Her headache is made worse be sneezing, coughing or bending forwards. She has no significant past medical history. She is admitted to hospital and bilateral papilloedema is noted on fundoscopy, although a CT head scan are normal. She then develops a sudden onset severe headache and sudden onset of hemiplegia with hemisensory involvement but no visual field loss or dysphasia. A repeat CT head shows a haemorrhage in the frontoparietal region and a delta sign in the posterior saggital sinus.

Which one of the following is correct?

A) Intracranial venous thrombosis

B) Meningitis

C) Middle cerebral artery haemorrhage

D) Pituitary apoplexy

E) Subarachnoid haemorrhage

Answer:A

Explanation:

This is a case in intracranial venous sinus thrombosis, in this case affecting the saggital sinus. Just as thromboses can develop in peripheral veins, such as in deep venous thrombosis, Virchow’s triad can apply similarly to cerebral venous sinuses. In this case, the oral contraceptive pill has contributed to cause abnormalities in blood constituents, which together with venous stasis (which may occur due to dehydration) may result in venous sinus thrombosis. This can present subacutely with a gradually rising intracranial pressure (which acts to compress sinuses further) before complete occlusion and the development of a venous infarct (often haemorrhagic due to extravasation of blood in venules) corresponding to onset of focal neurological signs. The neurological signs may not correspond to an arterial vascular bed and seem irregular in their pattern. The diagnosis can be clinched on contrast enhanced CT head where the venous phase of the scan can show filling defects in the affected sinuses, but the investigation of choice is magnetic resonance venography. Treatment is with rehydration, cessation of prothrombotic drugs and anticoagulation with heparin.

Question:

A 32-year-old alcoholic is admitted to casualty after he presents with some upper gastrointestinal bleeding which is thought to be a Mallory-Weiss tear due to forceful vomiting. He is resuscitated with copious intravenous normal saline although his haemoglobin hadn’t dropped sufficiently to warrant a blood transfusion. His blood results were notable for a raised MCV, raised GGT and serum sodium of 115mmol/L. Two days after admission he experiences quadriparesis, unable to move arms or legs, he has slurring of his speech, is unable to swallow water properly and complains of some double vision. A repeat set of blood tests shows serum sodium of 149mmol/L.

Which one of the following is correct?

A) Bilateral stroke

B) Central pontine myelinolysis

C) Delerium tremens

D) Multiple sclerosis

E) Myasthenia gravis

Answer:B

Explanation:

This patient has suffered central pontine myelinolysis due to rapid correction of his stable, chronic hyponatraemia – a condition characterised by demyelination of the pons in the brainstem through which descending corticospinal and corticobulbar tracts traverse. It can present with para- or quadriparesis with evidence of bulbar skeletal muscle weakness such as dysarthria or dysphagia and double vision. A T2 weighted MRI of the brainstem is the investigation of choice and shows an area of high signal in the pons. A serum sodium estimation compared with admission sodium may gather evidence for CPM over other diseases.

Central pontine myelinolysis is one of the reasons why hyponatraemia must be corrected slowly, and junior clinicians who are often responsible for fluid management (particularly out of hours) should consider this when prescribing fluids. CPM is most often seen in alcoholics, but can occur in anorexia, hyperemesis gravidarum, malnutrition, burns and non-alcoholic liver disease.

Question:

A 21-year-old female presents to her GP with right sided visual loss associated with pain on eye movements, red desaturations, a central scotoma, and a relative afferent pupillary defect. Fundoscopy showed no abnormalities at the time. Four months later, she experiences paraesthesias affecting the right side of her body which get worse on taking a hot bath. An MRI scan demonstrates white matter lesions affecting her parietal cortex on the left side with optic nerve disease on the right, and peri-ventricular white matter. A lumbar puncture demonstrates oligoclonal bands on CSF electrophoresis not present in the blood and visual evoked potentials from the right eye are delayed. Repeat fundoscopy of the right eye demonstrates optic disc pallor, although her left optic disc appears normal.

Which one of the following is correct?

A) Cerebral lymphoma

B) Glaucoma

C) Multiple sclerosis

D) Neuromyelitis optica

E) Progressive multifocal leucoencephalopathy

Answer:C

Explanation:

This patient has evidence of demyelinating lesions in the central nervous system white matter separated in space and time, highly suggestive of multiple sclerosis. MS is an inflammatory neurodegenerative disease characterised by episodes of demyelination, which can follow a relapsing-remitting cycle or become progressive with little neurological recovery between flares and accumulating disability. MS is much more common in extremes of latitude, and complex genetic and environmental influences are thought to contribute to disease development. Diagnosis is by MRI scanning demonstrating evidence of demyelinating white matter lesions, paired CSF and serum electrophoresis demonstrating oligoclonal bands localised to the CSF (and therefore the CNS) often supported by visual or somatosensory evoked potentials demonstrating delayed conduction.

Neuromyelitis optica (Devic’s disease) is a variant of MS that as the name suggests, only affects the optic nerve and spinal cord (myelitis), and not the brain itself. Progressive multifocal leucoencephalopahy is caused by the JC virus and occurs most often in the setting of advanced HIV infection heralding the onset of AIDS. Glaucoma can cause visual loss that is non-reversible as opposed to optic neuritis (the presenting feature here) which often resolves over a period of weeks with steroid therapy. Glaucoma does not cause MRI white matter lesions of CSF abnormalities. Cerebral lymphoma would demonstrate malignant cells in the CNS associated with raised intracranial pressure and seizures which are not typical features of MS although focal neurological signs may exist. Fundoscopy would demonstrated papilloedema in this setting, rather than a unilateral disc pallor indicative of optic atrophy (typical in multiple sclerosis after an episode of optic neuritis).

Question:

A 54-year-old male presents to his GP with a four month history of difficulty walking, particularly in the mornings. He also feels dizzy when he gets up, which in itself is more difficult than it was six months ago. On examination there is proximal muscle weakness in the arms and legs which improves in strength with each contraction. There is global hyporeflexia but no sensory loss with mild ptosis evident. He has smoked 20 cigarettes per day since the age of 24 years. After the examination he asks if he can have something to treat his erectile dysfunction.

Which one of the following is correct?

A) Dermatomyositis

B) Lambert-Eaton myasthenic syndrome

C) Myasthenia gravis

D) Polymyalgia rheumatica

E) Polymyositis

Answer:B

Explanation:

This patient has Lambert-Eaton myasthenic syndrome (LEMS), a disease characterised by antibodies generated against the presynaptic calcium channels at the motor-end plates. It is therefore a disease of the neuromuscular junction. It is associated strongly with small-cell lung cancer in around 50% of patients which may predate the radiological appearance of the cancer by many years. It also occurs in patients with a history of autoimmune disease and therefore the aetiology of LEMS is not clear. Most affected individuals are male (5:1).

It is characterised clinically by proximal muscle weakness which improves with repetitive activity in the affected muscle groups (in contrast to MG which strength decreases with repetition), autonomic disturbance (postural hypotension, erectile dysfunction, constipation etc), less severe involvement of ocular and respiratory muscles when compared with myasthenia gravis, hyporeflexia (reflexes are normal in MG). Individuals diagnosed with LEMS may have a screening chest x-ray serially to detect malignancy and anti-bodies to voltage gated calcium channels. Treatment is with 3,4-dihydropyridine or IV immunoglobulins.

Question:

A 49-year-old female presents to her GP with weakness that she feels is worse towards the end of the day over the past month. On examination, her voice becomes softer as she is speaking although recovers after a period of silence. She has bilateral ptosis worse on the right and diplopia looking that is variable in nature initially worse on left lateral gaze, then on looking up although her pupils are equal and reactive to light. She says she sometimes finds swallowing her dinner difficult towards the end of a meal, particularly chewy foods like steak. When asked to get up from a seated position repeatedly, she quickly tires, equal in both shoulder and hip girdles symmetrically. When the GP applies a block of ice to her eyelid on the right, there is resolution of her ptosis temporarily in that eye of around 4mm.

Which one of the following is correct?

A) Antibodies against pre-synaptic voltage-gated calcium channels

B) CT scan of chest

C) Edrophonium test

D) MRI scan brain

E) Muscle biopsy

Answer:C

Explanation:

This patient has myasthenia gravis, an autoimmune disorder of the neuromuscular junction caused by antibodies generated against the nicotinic acetylcholine receptors at the motor end plate. This causes a reduction in available receptors for acetylcholine to activate, causing a fatigable muscle weakness in numerous muscle groups, particularly limb girdles, extraocular muscles (diplopia), levator palpebrae superioris (ptosis), bulbar muscles (difficulty in swallowing or chewing), and laryngeal muscles (difficulty vocalising). It may eventually affect respiratory muscles at which point it represents a threat to life and may require intensive care admission with ventilatory support. The diagnosis is made on the basis of the edrophonium test (Tensilon test) in which a short acting acetylcholine-esterase inhibitor is injected, causing a temporary reversal of muscular fatigue by increasing the availability of acetylcholine at the motor end plate (by preventing its degradation) and competitive agonism of available receptors. This should only be done with full resuscitation to hand as it may cause parasympathomimetic effects such as bradycardia, and in extreme cases may result in cardiac arrest.

Myasthenia gravis is associated with thymic hyperplasia in patients under 50, and thymic tumours in predominantly male patients over 50, and therefore often a CT scan of the chest is done in confirmed cases to identify thymic tumors that may be amenable to surgery (particularly in refractory cases). Antibodies against the nicotinic acetylcholine receptors are positive in 90%, and those negative may test positive for anti-MUSK antibodies. Neurophysiology may reveal reduced amplitude signals with repetitive nerve stimulation and can be used to gather evidence for the diagnosis. Antibodies against pre-synpatic voltage gated calcium channels are used to diagnose Lambert-Eaton myasthenic syndrome. MG is not a muscular disease, it is a disorder of the neuromuscular junction, and therefore muscle biopsy will be negative. MRI scans of the brain have no role in diagnosing myasthenia gravis.

Treatment is with acetylcholine-esterase inhibitors such as neostigmine, which in a more protracted action than edrophonium, reduce muscular fatiguability but predictably can cause cholinergic side effects (miosis, sweating, difficulty in micturition, constipation etc). Immunosuppressant such as steroids, or cytotoxic agents can improve symptoms. In patients more acutely unwell, treatment with plasmapheresis or plasma exchange can deplete the patient’s plasma of antibodies and result in some degree of clinical resolution. Intravenous immunoglobulins can also be used in the acute setting, and vital capacity measurements to screen for respiratory compromise.

Question:

A 73-year-old man presents to the general neurology clinic with recurrent falls, recently escalating in frequency. On examination he has difficulty initiating walking with a stooped posture, shuffling his feet as he walks. His facial expressions are blunted, he has a reduced blink rate, and has cogwheel rigidity in his right wrist. Flexion of both elbows demonstrates rigidity that appears constant throughout the range of movement, equivalently present on extension. He has a resting tremor between his thumb and forefinger.

Which one of the following is correct?

A) Benzatropine

B) Deep brain stimulation

C) Levodopa and benserazide

D) Oral desferrioxamine

E) Subcutaneous apomorphine

Answer:C

Explanation:

This patient has idiopathic Parkinson’s disease, a neurodegenerative disease resulting from degeneration of the dopaminergic neurons that connect to the substantia nigra in the basal ganglia. It presents as a triad of bradykinesia, tremor and ridigity. Bradykinesia is demonstrated by eliciting difficulty in initiating and termination motor actions such as walking and the gait of a patient with Parkinson’s disease is characteristic shuffling with difficulty turning, resulting from a loss of postural reflexes (resulting in recurrent falls). Tremor results in cogwheeling, most demonstrable at the wrist, and may be unilateral accentuated by distraction. The rigidity in contrast to spasticity is present equally in flexors and extensors (and is therefore not pyramidal), and is equal throughout the range of movement (“lead pipe” in contrast to spasticity which is described as “clasp knife” as resistance decreases throughout the range of movement).

Treatment of Parkinson’s disease is started when symptoms start to interfere with function. Levodopa is the precursor of dopamine which is deficient in Parkinson’s disease, but peripherally causes nausea and vomiting (it is a dopamine agonist). It is therefore given concurrently with a peripheral (it does not cross the blood brain barrier) dopa decarboxylase inhibitor. Levodopa becomes less effective with time, resulting in “on-off” effects in which rigidity and excessive involuntary movements occur close together and can be helped with modified release preparations. It is becoming more common to use dopamine agonist drugs before levodopa to delay the onset of this phenomenon, especially in younger patients. Subcutaneous apomorphine can be given as an infusion to control severe on-off effects as an inpatient. Muscarinic antagonists are often given to reduce the tremor and movement disorder seen in PD. Desferrioxamine is given in patients with Wilson’s disease who can manifest parkinsonian clinical features due to deposition of copper in the basal ganglia. Deep brain stimulation can be given to patient’s refractory to medical therapy with intractable symptoms as a treatment of last resort.

Question:

An 86-year-old lady is making a cup of tea in her residential home one morning when she experiences weakness of her right arm and face. She reports that it came on quite suddenly, that she managed to walk several paced to a chair and called for help. Her fellow resident noted that she was talking in sentences that seemed words spoken at random with no meaning. Her face was also sagging on the right side, and an ambulance was called immediately. In casualty two hours later she has 5/5 strength in both arms and legs, with no evidence of facial weakness. Her sensory examination and gait are normal, mobilising with a stick.

Which one of the following is correct?

A) Aspirin and clopidogrel

B) Aspirin and dipyridamole

C) Carotid Doppler

D) MRI scan of brain

E) Thrombolysis

Answer:B

Explanation:

This patient has suffered a transient ischaemic attack, a sudden onset focal neurological deficit that reverses completely within 24 hours of onset. It is often described to patients as a “mini stroke” as it heralds the increased risk of a stroke in the near future, unless measures are taken to reduce this risk. Evidence suggests the most effective immediate medical treatment of transient ischaemic attacks is with aspirin and dipyridamole, which are anti-platelet agents that act through two different mechanisms. This reduces the likelihood of thromboembolism from a carotid atherosclerotic plaque, the most common source of a TIA. Aspirin and clopidogrel are used to treat unstable angina. Carotid Doppler and echocardiogram can be useful in identifying the source of a clot and to determine whether the patient fulfils the clinical criteria for carotid endarterectomy (70-99% stenosis of the ipsilateral carotid artery). However, in this case the patient is likely to be too frail to survive this operation and therefore preventative treatment must take priority, in this case with dual anti-platelet therapies. The history is typical of TIA, and the absence of neurological signs on examination would make an MRI scan difficult to justify. However, if these signs persisted, an MRI scan is the most sensitive imaging modality to detect ischaemia or infarction, and a CT scan may remain negative for three days before demonstrating an infarct. Thrombolysis is not indicated to treat TIAs, but has a role to play in MRI/CT confirmed ischaemic strokes that present acutely to hospital, provided no contraindications exist.

Question:

A 3-month-old boy is diagnosed with congenital hydrocephalus at birth, suspected on initial neonatal examination from a large cranial circumference which has grown progressively, now is at the 98th centile. The paediatric neurosurgeons inform the parents that this is due to an obstructive hydrocephalus at the base of the fourth ventricle and that the spinal fluid would need to be kept drained continuously to prevent the pressure in the child’s head from escalating and causing symptoms, which could eventually be life threatening.

Which one of the following is correct?

A) Decompressive craniectomy

B) Dural patch

C) Repeated aspiration through a lumbar puncture

D) Temporal lobectomy

E) Ventriculoperitoneal shunt

Answer:E

Explanation:

The Monroe-Kelly doctrine models an understanding of intracranial pressure by viewing the cranium as a fixed volume structure containing the brain, CSF and blood. If the amount of any of these substances increases the intracranial pressure will elevate (hence, a haematoma or a CSF blockage, or cerebral oedema). This child has hydrocephalus and requires chronic drainage of CSF to prevent increased intracranial pressure which would compress vascular structures and the brain parenchyma. Rather than repeatedly perform lumbar punctures which would not be practical as a long term solution, a CSF shunt can be placed that drains CSF from the ventricles in the brain to the peritoneal cavity most commonly (ventriculoperitoneal shunt), but also to the right atrium or the pleural space. Care must be taken that the flow of CSF is regulated: too slow and the intracranial pressure will increase, and too fast and cerebral hypotension will occur causing postural headaches. The VP shunt is made of plastic and does not grow as the patient does. Therefore it will need to be replaced once the excess of tubing left in the peritoneal cavity shortens. The shunt can be seen and monitored on plain radiography.

Question:

The visiting registrar in plastic surgery is teaching medical students in a tutorial. He mentions that the 5-year survival for patients with Stage 1 malignant melanoma is 100% when, histologically, the deepest malignant cell identified has not penetrated this structure.

Which one of the following is correct?

A) Basement membrane

B) Stratum basale

C) Stratum corneum

D) Stratum granulosum

E) Stratum spinosum

Answer:A

Explanation:

Malignant melanoma that has not penetrated the basement membrane is referred to as malignant melanoma in situ. The basement membrane is located at the dermo-epidermal junction, and since the vascular and lymphatic vessels lie in the dermis, there is a much lower likelihood of metastatic spread when the malignancy is confined to the epidermis – an avascular structure. The other strata mentioned in this question are located in the epidermis, superficial to the basement membrace and have no prognostic significance.

Melanocytes are located predominantly in the stratum basale and on malignant transformation can penetrate deeper structures through the basement membrane and into the dermis. The prognosis of malignant melanoma is most closely related to the depth of tumour invasion, Breslow’s thickness. This is measured histologically following excision biopsy of a suspicious lesion. Ulceration, perineural invasion, regional lymphadenopathy, distant metastases are other indicators of a worse prognosis. The location of the lesion has prognostic significance – facial lesions have a poorer prognosis than lesions on the trunk or limbs.

Question:

A 62-year-old receptionist has been suffering from polymylagia rheumatica for a number of years and is maintained on 30mg of prednisolone, the minimum dose of steroids required to contain symptoms of morning stiffness and pain. As a consequence of long-term steroids she has developed multiple vertically orientated, atrophic purple linear marks symmetrically on her abdomen that have never been painful, but are a cosmetic problem.

Which one of the following is correct?

A) Burrow

B) Excoriation

C) Fissure

D) Keloid

E) Striae

Answer:E

Explanation:

Long term use of glucocorticosteroids are discouraged due to the length and severity of their adverse side effect profile which increase the risk of dangerous diseases such as hypertension, diabetes and osteoporosis. Steroids also have a number of effects on the skin such as easy bruising, poor wound healing, increased susceptibility to infections and often a rebound flare of inflammatory skin disease, such as psoriasis, on cessation. Some individuals develop acne when started on high dose steroids. The lesions described here are abdominal striae which are a result of abnormalities of cutaneous connective tissues in the skin induced by corticosteroids.

Burrow is classically seen in the finger webs of patients with Scabies caused by the parasite Sarcoptes Scabeii, and can be teased out by skilful hands to clinch the diagnosis. Excoriations are objective evidence of pruritus and may be seen around vesicles, bullae or overlying any skin lesions. Chronic scratching of eczema for example may cause lichenification, where the skin becomes thickened and plaque-like with exaggeration of skin creases – an example of a secondary lesion.

A fissure is a break in the skin, often linear that can result from trauma, infection or inflammation and can be painful. A keloid is a form of scarring caused by an exaggerated response to wound healing with granulation tissue forming beyond the original wound. It is often seen in the context of surgery or piercings, but can also affect inflammatory skin disease such as acne vulgaris. They are more common in certain ethnic groups such as those of African and Asian descent. Keloids are firm, rubbery lesions and are non-tender.

Question:

A 31-year-old swimwear model presents to the general dermatology clinic with a two month history of a flesh colour papule on her face. It does not cause any symptoms of itching or bleeding but she feels it is unsightly at photo shoots. On examination there is a 4mm firm flesh coloured papule at her left nasolabial fold. There is no pigmentation.

Which one of the following is correct?

A) Compound naevus

B) Dermatofibroma

C) Intradermal naevus

D) Junctional naevus

E) Viral wart

Answer:C

Explanation:

A naevus is a benign proliferation of a cellular component of the skin. Junctional naevi, intradermal naevi and compound naevi are proliferations of melanocytes and are therefore examples of melanocytic naevi. Junctional naevi appear as flat macular pigmented lesions with collections of melanocytes at the dermo-epidermal junction, intradermal naevi are collections of melanocytes in the dermis and appear as flesh coloured, non pigmented papules, and compound naevi are collections of melanocytes at both the dermo-epidermal junction and the dermis, and are therefore pigmented and raised lesions.

Dermatofibromas are flesh coloured, nodular lesions that commonly grow as a solitary lesion on the legs after an insect bite typically in young adult females. It can cause pain and itching and classically feels like a frozen pea on the skin surface and demonstrates a dimple sign due to tethering to the epidermis. Rarely, malignant transformation within the lesion can occur called dermatofibrosarcomaprotuberans (DFSP).

Question:

A 49-year-old male is gardening when he pricks himself with a rose thorn. It bleeds minimally and he returns to gardening soon after applying a plaster. Two days later there has grown a deep red pedunculated nodule around 1cm in length from the site of the original trauma. It bleeds substantially on minor trauma and is irritating the patient because he is not able to use his hand properly owing to the bulk and friability of this lesion.

Which one of the following is correct?

A) Basal cell carcinoma

B) Keratoacanthoma

C) Nodular malignant melanoma

D) Pyogenic granuloma

E) Strawberry naevus

Answer:D

Explanation:

This is a classical description of a pyogenic granuloma, a misnomer since it is an acquired capillary haemangioma demonstrating no granulomatous features at all. It commonly follows trauma, and therefore occurs on areas that are prone to it, particularly the hands. It grows quickly as a red nodule that bleeds easily on contact, enlarging over several weeks. Treatment is to remove it surgically, either with a curette, cryotherapy or excision. The major differential is nodular malignant melanoma and the biopsy specimen requires histological analysis to exclude this diagnosis.

A keratoacanthoma is a rapidly growing squamoproliferative nodule that has a keratin plug at its apex, often growing on the face or arms. It is very similar histologically to a squamous cell carcinoma differentiated most accurately on the history of rapid onset from previously healthy skin. Treatment is excision biopsy and exclusion of SCC, although the lesion will resolve spontaneously in most cases.

Question:

A 38-year-old bricklayer of Irish descent presents to out-patient clinic with a four week history of a change in a mole on his upper back that was noticed by his girlfriend. He states that it has become larger, with an irregular border, bleeds spontaneously and it has become darker in its central area. He mentions that he frequently suffered from sunburn on his back as a teenager and during his working life.

Which one of the following is correct?

A) Excisional biopsy

B) Incisional biopsy

C) Observation with clinical photographs

D) Punch biopsy

E) Shave biopsy

Answer:A

Explanation:

This patient has a lesion that is very suspicious of a malignant melanoma. Public health campaigns have sought to inform the public to be vigilant for change in moles, to look for the ABCD of change: Asymmetry, Border changes, Colour changes, Diameter. In addition, elevation, enlargement, itch or irritation could indicate malignant transformation. Examination with a dermatoscope by experienced clinicians can identify microscopic features of malignant melanoma. Treatment of suspicious lesions (and clinical examination, even in experienced hands is not 100% sensitive, or 100% specific) is excision biopsy which serves to confirm the histological diagnosis. The primary excision is performed 2mm from the margin of the lesion, since histological depth and grade of lesion will dictate the surgical margins for excision of the scar, to the depth of fascia. Prognosis is closely related to the depth of invasion (Breslow’s thickness, or Clarke’s level) with the thickness of the lesion inversely proportional to the 5 year survival rate, and the presence of nodal or distant metastases. Lesions are poorly responsive to radiotherapy and chemotherapy, contributing to the poor prognosis of advanced malignant melanoma. A clinician should always examine for regional and general lymphadenopathy and abdominal organomegaly in the setting of any suspicious mole.

A punch biopsy is often reserved for medical dermatoses whose diagnoses is uncertain and for removing circular lesions easily with a margin. Incisional biopsies can be useful for looking for malignant change within an existing lesion, or for microbiological analysis. Clinical photographs are useful in patients with multiple atypical moles, or at high risk of malignant transformation and can be used to monitor lesions for change at serial follow-up.

Question:

A 57-year-old Japanese male presents to his family doctor with a two week history of dyspepsia, poor appetite and difficulty swallowing. He mentions that he has lost 8kg in weight in the previous month. On examination, he is obviously cachectic, has an epigastric mass, a lymph node palpable in the left supraclavicular fossa. When the physician is palpating for axillary lymph nodes, he notices that there is a purple, velvety lesion affecting both the patient’s axillae.

Which one of the following is correct?

A) Acanthosis nigricans

B) Congenital naevus

C) Metastases

D) Necrolytic migratory erythema

E) Tylosis

Answer:A

Explanation:

Acanthosis nigricans is a paraneoplastic phenomenon, in that it is caused by the humoural effects of a tumour on distant organs rather than a result of direct metastasis. It is associated particularly with adenocarcinoma of the stomach and oesophagus, with insulin resistant states such as type II diabetes, polycystic ovarian syndrome, the metabolic syndrome and obesity. This man has adenocarcinoma of the stomach as evidenced by clinical findings and the nationality – Japan has an epidemic incidence of gastric cancer owing to the frequent consumption of pickled foods and meats.

Tylosis is paraneoplastic thickening of the epidermis of the hands, and necrolytic migratory erythema is associated with a glucagonoma.

Question:

A 12-year-old boy presents to the dermatology tumour clinic wearing long sleeved clothing, gloves and a wide-brimmed hat. He is accompanied by his mother who relates a history of severe burning on the child’s first exposure to sunlight, and that despite sun avoidance and sunblocks ever since, he repeatedly burned on minimal exposure. She is concerned about new growths on her son’s skin, particularly around his face and arms. On examination, he has multiple freckles and telangiectasia around his nose and cheeks with scaly skin with palpable actinic keratoses. Of particular concern, he has a nodular, pearly telangiectatic growth on his left ear and a squamoproliferative growth on the back of his hand near several other actinic keratoses. This lesion is 2 by 3 cm with a heavily crusted surface and a palpable dermal component. There is ipsilateral axillary lymphadenopathy. His parents are well, with no comparable history.

Which one of the following is correct?

A) Ehlers-Danlos syndrome

B) Gorlin’s syndrome

C) Pseudoxanthoma elasticum

D) Von-Hippel Lindau syndrome

E) Xeroderma pigmentosum

Answer:E

Explanation:

This patient has xeroderma pigmentosum, an autosomal recessive disorder of DNA repair in which there is defective cellular repair mechanisms for UV induced damage to cellular components of the skin. The phenotype can vary depending on the specific mutations but commonly patients burn on first and repeated exposure to sunlight, and suffer from cutaneous malignancies at a very young age, commonly dying of metastatic squamous cell and malignant melanomas. Patients develop freckles at an early stage, telangiectasia with areas of hyper- or hypo-pigmenation with the development of scaly skin and actinic keratoses. Soon after this, the development of basal cell carcinomas (such as on this patient’s ear) and squamous cell carcinomas (on this patient’s hand) develop in addition to malignant melanoma.

Treatment is by very strict avoidance of any sunlight but severe forms of the disease are fatal in the second or third decades. Genetic counselling is advised for parents of patients who can be treated for skin cancers as they arrive, although the fight against malignancy will prove ultimately futile.

Question:

A 10-year-old boy is brought to the GP by his mother by a rash on his legs and buttocks which does not blanch under a glass tumbler. He also complains of pain in his large joints and his abdomen. His mother mentions that he has been otherwise well apart from a sore throat two weeks ago that has now cleared. The GP carries out a urine dipstick which demonstrates microscopic haematuria.

Which one of the following is correct?

A) Henoch-Scholein purpura

B) Idiopathic thrombocytopenic purpura

C) Meningitis

D) Meningoccoal septicaemia

E) Non-accidental injury

Answer:A

Explanation:

This is a typical case of Henoch-Schonlein purpura, a rash that presents in young individuals in dependent extensor regions, associated with immune complex deposition of IgA complexes in the glomeruli (microscopic haematuria), the joints (arthralgia), the GI tract (GI involvement; haemorrhage). It is often associated with an upper respiratory tract infection thought to trigger the immunological reaction which forms the basis of the disease. The rash is purpuric, caused by bleeding into the skin – as in other causes of purpura such as meningococcal sepsis. Whilst this diagnosis should always be considered, it will usually occur in an unwell child who is febrile. Non-accidental injury should always be similarly considered as it can be fatal if missed, however the findings here suggest primary organic disease rather than child abuse which must be correlated with the individual’s physical abilities, medical history and current social circumstances. Meningtitis is unlikely without a fever, headache or neck stiffness.

Treatment of HSP is often with steroids if there is severe systemic involvement, and around 5% of patients will go on to develop end stage renal failure requiring renal transplantation or dialysis.

Question:

A 42-year-old male presents to his GP complaining of itching and flaking of his scalp and skin on various parts of his face that are also red. On examination, there is erythematous, greasy scaling of his forehead, eyebrows, hairline, chin, the nasolabial fold, chest and upper back. He has evidence of scaling of his scalp and says he uses a medicated shampoo with some improvement in the scaling.

Which one of the following is correct?

A) Lichen simplex chronicus

B) Pityriasis rosea

C) Seborrhoeic dermatitis

D) Systemic lupus erythematosus

E) Tinea capitis

Answer:C

Explanation:

This is a typical description of seborrhoeic dermatitis, an inflammatory papulo-squamous skin disease characterized by erythema, flaking, scaling and itchiness association with the yeast Malassezia furfur although with a complex aetiology. Dandruff or scaling of the scalp and crusting and scaling of the nasolabial fold is particularly classic of seborrheoic dermatitis. Flares of disease can be triggered by intercurrent illness and it is more common in patients with HIV.

Treatment is with medicated shampoos (such as ketoconazole) to reduce scaling of the scalp, topical therapies to reduce the itch, scaling and flaking symptoms, and consideration is given to a course of oral anti-fungal agents targeted at the yeast may help. Topical corticosteroids can be used for short courses but can lead to a rebound flare effect if used for long periods.

Question:

A 3-year-old boy develops warm, red lesions on his left cheek which develop blisters containing cloudy fluid and then rupture leaving golden crusts on an erythematous base. The GP prescribes antibiotics for this infection and wishes the drug to be active against the most common causative organism of this disorder.

Which one of the following is correct?

A) Group A streptococcus

B) Group B streptococcus

C) Mycobacterium tuberculosis

D) Staphylococcus aureus

E) Staphylococcus epidermidis

Answer:D

Explanation:

This is a case of impetigo, a highly contagious infection in young children most often occurring on the face. It starts as a warm erythematous rash that develops vesicles or bullae which eventually rupture leaving golden crusts (crusts are exudates). The most common bacteria implicated in impetigo is Staphylococcus aureus, although group A streptococcus, or Streptococcus pyogenes, can less commonly cause impetigo infection or co-exist with Staphylococcus aureus. Because of this, topical fusidic acid or oral flucloxacillin if the infection is widespread (both anti-staphyloccocal agents) are given in its treatment.

Impetigo can occur within a primary skin disease such as eczema, psoriasis, herpes or scabies. Staphylococcus aureus (a specific subtype of the bacteria – type71) in the very young can cause staphylococcal scalded skin syndrome (SSSS), an acute toxic illness characterised by widespread, generalised blistering and desquamation as a toxin produced by the bacteria acts against desmoglein-1 which attaches the stratum granulosum and spinosum, resulting in a sheeting off of epidermis, resembling scalding.

Staphylococcus aureus can infect the hair follicle causing folliculitis (multiple follicles), carbuncles (group of follicles) and furuncles (adjacent to follicles).

Mycobacterium tuberculosis can cause lupus vulgaris in the skin, staphylococcus epidermidis is a skin commensal that rarely causes disease, often a contaminant in microbiological samples and group B streptococcus causes sepsis in newborns.

Question:

A 46-year-old woman who is regularly under the care of a consultant dermatologist with chronic skin disease is referred back to the dermatology unit as an emergency referral with generalised erythema involving >90% of her body. She is unwell with a fever of 37.9° C, a blood pressure of 100/70 and a pulse rate of 110/min. She is admitted to the ward, although there is no evidence of desquamation of epidermis.

Which one of the following is correct?

A) Erythrasma

B) Erythroderma

C) Sepsis

D) Staphylococcal scalded skin syndrome

E) Toxic epidermal necrolysis

Answer:B

Explanation:

Erythroderma is a state in which more than 90% of a patient’s skin is inflamed. It is a dermatological emergency as inflamed skin cannot provide effective barrier function, resulting in a marked increase in fluid loss across the skin, loss of albumin, difficulties in thermoregulation and susceptibility to infection – a state of skin failure. Causes of erythroderma are eczema, psoriasis, pityriasis rubra pilaris, drugs and cutaneous T-cell lymphoma (Sezary syndrome).

Treatment is as an inpatient for intravenous fluid resuscitation, anti-pyretics, and treatment of the underlying cause with topical or systemic treatment as appropriate to that disease. This condition does not require antibiotics as the fever is not a septic phenomenon but a response to thermodysregulation.

Question:

A 26-year-old male presents with lower abdominal pain that is found secondary to urinary retention. He says that he cannot bring himself to pass urine as it is too painful. When he eventually agrees to catheterization, the house officer finds two genital ulcers that the patient did not mention. He states that they have been present for two weeks and are tender. He also has bilateral tender inguinal lymphadenopathy.

Which one of the following is correct?

A) Chancroid

B) Granuloma inguinale

C) Herpes simplex

D) Lymphogranuloma venerum

E) Syphillis

Answer:C

Explanation:

This patient has genital ulcers secondary to the herpes simplex virus. There are two main forms of the virus, with HSV-1 most often causing disease in the peri-oral regions and HSV-2 causing genital disease although genital ulceration caused by HSV-1 is increasing. Genital herpes is transmitted sexually in most cases and causes vesicles which rupture and ulcerate. It can affect the urinary epithelium causing dysuria and occasionally, urinary retention. Painful inguinal lymphadenopathy is characteristic. The diagnosis is made on clinical features supported with PCR testing of fresh fluid from the ulcer base. Treatment is with painkillers and oral acyclovir which can reduce the pain and number of lesions but is not curative. Testing for other sexually transmitted infections, contact tracing and contraceptive advice often provided.

Urinary retention can occur because of involvement of the sacral roots of the spinal nerves or because of dysuria. In such cases, catheterisation may need to be considered to prevent hydronephrosis and renal impairment.

Syphillis and granuloma inguinale cause painless genital ulceration whereas herpes simplex and chancroid cause painful ulceration.

Granuloma inguinale is a sexually transmitted disease common in Australia, India, the Carribean and Africa and is characterised by a painless indurated nodule that ulcerates. It is in the differential diagnosis of a painless genital ulcer with syphilis. It is characterised by Donovan bodies which are intracellular inclusions caused by the responsible organism Calymmatobacterium granulomatis.

Question:

A 28-year-old lady presents with blistering eruptions that affect her hands, forearms, upper back and chest most often when she is on holidays. She admits she drinks more alcohol than she should and enjoys all-inclusive holidays in sunny resorts. On examination, there are a few active blisters that have ruptured and are in the process of healing, and multiple scars are evident on the sites she reports as being affected by these blisters.

Which one of the following is correct?

A) Bullous pemphigoid

B) Herpes simplex

C) Pemphigus vulgaris

D) Porphyria cutanea tarda

E) Systemic lupus erythematosus

Answer:D

Explanation:

The porphyrias are a group of disorders in which there is abnormal metabolism of haem molecule that is a breakdown product of haemoglobin. Porphyria cutanea tarda is the most common form of porphyria and is genetic with environmental influences such as alcohol, oestrogen and iron. Patients present with recurrent sub-epidermal blistering on sun exposed sites such as face and hands, healing with scarring. There is an association with chronic hepatitis C, and commonly of excessive alcohol. Treatment is with avoidance of exacerbating factors, such as sensible sun behaviours and sun block, reduction of alcohol intake and in resistant cases cholorquine can increase the excretion of uroporphyrin which is increased in the urine in this disease. If excess iron is contributory, venesection can reduce total body iron and help in the management of this patient group.

Systemic lupus erythematosus causes a photosensitive rash in which blistering is not a prominent feature.

Question:

A 29-year-old hotel administrator presents to the dermatology outpatients clinic where he is a regular attendee. The dermatology registrar asks the house officer to inspect the patient’s nails before full examination to determine what signs are present and what the likely diagnosis is. The house officer inspects the patient’s hands and notices prominent nail pitting, splitting off of the distal nail plate from the nail bed, thickening of the nails with brown discoloration and subungal hyperkeratosis in some fingers.

Which one of the following is correct?

A) Alopecia areata

B) Darier’s disease

C) Eczema

D) Lichen planus

E) Psoriasis

Answer:E

Explanation:

All of the listed options are dermatological diseases which are known to affect nail growth. However, the specific abnormalities described here are typical of psoriatic nail dystrophy with nail pitting the most sensitive clinical sign, which in severe cases can cause onycholysis (splitting of nail from nail bed), nail thickening and discoloration and subungal hyperkeratosis. Darier’s disease (keratosis follicularis) affects young females, made worse by the sunshine, and is characterised by longitudinal ridges in the nails. Eczema and alopecia can cause nail pitting and lichen planus can cause the distal nail plate to become tethered to the nail bed. Nail pitting, trachyonychia (roughness of the nail) and loss of nails occur in alopecia areata and lichen planus.

Dilated nail fold capillaries can be seen with a dermatoscope in connective tissues diseases such as dermatomyositis, scleroderma and systemic lupus erythematosus. Hyperthyroidism can cause clubbing (thyroid acropachy) and distal onycholysis. Periungal fibromas are typical of tuberous sclerosis. Trauma to nails is common and often there is a difficulty clinically separating subungal haematomas from subungal/acral melanomas when no clear history of trauma exists. Nail infection (paronychia) can be acute in which setting the responsible organism is staphylococcus aureus, or chronic in which it is often candida albicans in patients who work with their hands in moist conditions. Fungal nail infection is known as onychomycosis and presents as a thickened, discoloured, dystrophic nail often affecting the toes and beginning distally. It is rare for all the toenails to be involved, differentiating it from psoriatic nail changes. Treatment is with a long course of anti-fungal drugs.

Question:

A 3-year-old pre-school infant is brought to the GP by his mother as she is worried about a rash on the child’s, face, neck and trunk. On examination, the child appears well but there are numerous scattered flesh coloured, pearly papules with an umbilicated centre that measures about 2-3mm in diameter. Some have been excoriated to reveal a cheesy white material that can be expressed from the lesions when they are squeezed.

Which one of the following is correct?

A) Molluscum contagiosum

B) Orf

C) Skin tags

D) Tinea corporis

E) Warts

Answer:A

Explanation:

This child has the typical lesions of molluscum contagiosum, a cutaneous disease caused by a poxvirus which has now been named the molluscum contagiosum virus. It often affects children less than 10 years of age, but can also occur through sexual transmission and in patients with HIV/AIDS spectrum disease where immunosuppression can increase the risk of infection.

Lesions are pearly or flesh coloured, classically with a dimpled or umbilicated top. It is a self-limiting infection although is very contagious and can infect broken skin in the same patient. Most lesions disappear within 12 months, but can take longer, and treatment is symptomatic to control itching and to treat secondary infections. Sometimes cryotherapy, curettage, and even excision may be attempted in older individuals, but these are poorly tolerated in children.

Question:

A 23-year-old medical student is seen at follow up in the dermatology outpatient clinic. She is known to suffer from acne vulgaris and is on a long term oral treatment for this disease which does show evidence of improvement with fewer inflammatory comedones with a more restricted distribution on her face, chest and back. However, she complains of a discoloration of her skin which on examination has a generalised grey-blue hue with some discoloration of the gums.

Which one of the following is correct?

A) Amiodarone

B) Chlorpromazine

C) Erythromycin

D) Gold

E) Minocycline

Answer:E

Explanation:

This patient has acne vulgaris and the two medications listed which are consistent with treatment of acne vulgaris are minocycline and erythromycin. Minocycline can cause blue-grey pigmentation of the skin, sclera, gums and teeth which appears not predictably dose dependent but is most severe in those treated long term for acne vulgaris or rosacea. Pigmentation can reverse on cessation of treatment but discoloration of teeth is permanent. Tetracyclines of all varieties can cause teeth discoloration as they chelate calcium which explains their contraindication in pregnant or breast feeding women and children under 12 years of age. Additionally, they must be taken on an empty stomach as foods such as milk interfere with their absorption.

Amiodarone can cause slate grey pigmentation of the skin and photosensitive reactions but the patient will be older with a history of cardiac disease, typically atrial fibrillation. Gold therapy, most commonly used in rheumatoid arthritis as a disease modifying agent can cause bronze discoloration of the skin due to cutaneous deposition, and chlorpromazine can cause grey discoloration in patients treated for psychotic disease.

Question:

A 28 year old female with learning difficulties is brought to accident and emergency where her triage observations are BP 80/40mmHg, pulse 130bpm, temperature 39.5 degrees. Her chest is clear, heart sounds are normal, although she has a generalized blanching rash over her trunk and limbs. Her mother says she has got more ill throughout the day and has had a couple of episodes of diarrhoea, with some abdominal pain and one episode of vomiting. Her only medication is tranexamic acid. Initial blood tests show evidence of renal impairment.

She is taken to the intensive care unit for inotropic support as her blood pressure is not responsive to fluids.

Which one of the following is correct?

A) Echocardiogram

B) Serum aspirin estimation

C) Skin biopsy

D) Stool microscopy and cultures

E) Vaginal examination and removal of foreign body

Answer:E

Explanation:

This is a case of toxic shock syndrome, a life-threatening condition that results from toxin-mediated toxicity most commonly from staphylococcus aureus, but also streptococcus pyogenes. It is associated with retained superabsorbent tampons in which these bacterial are able produce a superantigen (TSST-1) which unlike conventional antigens, can bypass immunological antigen presentation mechanisms and produce a severe, generalized and fulminant immune response in which up to 20% of T-cells can be activated at any one time.

Patients with this condition have clinical shock, which may not respond to fluids and evidence of multiple organ involvement. Its onset is too quick and severe for gastroenteritis or endocarditis (in the absence of a murmur). Treatment is by recognition of TSS as a possibility and removing the source of the infection. In a patient with learning difficulties and history of heavy periods (tranexamic acid is used to treat menorrhagia), a vaginal examination with removal of the tampon is the only intervention which will arrest the production of TSST-1.

The rash of TSS is erythematous and blanching, resembling sunburn and can affect any part of the body. In surviving patients, this rash desquamates 10-14 days after its onset.

Question:

A 16-year-old girl is referred to general dermatology clinic for acne vulgaris that she has suffered from for three months. She becomes very upset during the consultation saying it is interfering with her relationship with her boyfriend and that others at school are noticing it and commenting. She has already tried some topical therapies, but states she wishes it “would go away” and that she is afraid of scarring. On examination, there are mixed comedones, papules and pustules affecting her face, upper chest and back but no nodulocystic changes.

Which one of the following is correct?

A) Optimization of topical therapies

B) Oral tetracyclines

C) Oral macrolides

D) Isotretinoin

E) Reassurance

Answer:D

Explanation:

This patient has moderate acne vulgaris, unresponsive to initial therapies. It must always be considered however that dermatological disease carries a significant psychological burden that at vulnerable ages can particularly cause a huge global morbidity to those affected by it. This impact must be assessed together with the objective findings on examination to determine whether Roaccutane or isotretinoin is appropriate for that patient. This girl would be a candidate for this drug as although her acne vulgaris is moderate, the impact of it on her life is considerable.

Isotretinoin is a vitamin A analogue and is highly teratogenic. Therefore patients must remain on strict contraception during treatment and for a month afterwards, with pregnancy excluded before commencing treatment. Other side effects include hepatitis, hyperlipidaemias, dry mucocutaneous surfaces (dry eyes, dry mouth). Patient should be advised not to wax as the skin is fragile during treatment and will easily desquamate. Contact lenses are not well tolerated during treatment.

Question:

A 45-year-old car mechanic presents to the accident and emergency department with a 36 hour history of a spreading, warm, tender rash on his left leg which appears swollen. At triage his vital signs were of a heart rate 110/min, BP 110/70mmHg and a respiratory rate of 18, temperature of 38.2 degrees Celsius and he feels unwell. On examination there is well demarcated region of erythema, which blanches on pressure, but is palpably warmer and tenderer than the surrounding skin. He has ipsilateral tender inguinal lymphadenopathy and there is evidence of tinea pedis between the toes of the left foot. He cannot walk on his leg due to the pain and swelling. He has no known drug allergies.

He had initially presented the previous day to casualty at the onset of the rash and had three doses of oral amoxicillin but without any clinical improvement. Blood cultures taken by the previous day in casualty grow gram positive cocci growing in clusters which are both catalase and coagulase positive.

Which one of the following is correct?

A) Intravenous flucloxacillin

B) Oral clindamycin

C) Oral prednisolone

D) Topical 1% hydrocortisone

E) Topical fusidic acid

Answer:A

Explanation:

This patient demonstrates classical clinical signs and symptoms of cellulitis, an infection of the subcutaneous tissues. The source of infection is often a break in the skin of the foot or shin (classically, athlete’s foot or tinea pedis), particularly in those who have peripheral vascular disease or diabetes which lead to increased susceptibility to infection. Causative organism is in most cases streptococcus pyogenes or staphylococcus aureus and treatment should be guided according to microbiological results. The coagulase and catalase positive cocci growing in clusters (staphylococcus) indicates staph aureus as the responsible organism, and the optimal treatment for methicillin sensitive staphylococcus aureus is flucloxacillin.

Topical antibiotics do not reach deep tissues in sufficient concentrations to be effective, and the choice is between oral and intravenous antibiotic agents depending on how septic or unwell the patient is. In this case, there is confirmed bacteriaemia (temperature of 38.2) and tachycardia with evidence of spreading erythema and an immobile patient, and intravenous antibiotics are warranted in this setting. If the patient is ambulatory and well, then oral antibiotics may be sufficient, although clindamycin is often used as second line in patients with severe penicillin allergies. Oral and topical steroids do not have any role in the treatment of cellulitis.

Question:

The consultant vitreo-retinal surgeon is operating in theatre and wishes to gain access to the posterior chamber of the eye to perform a vitrectomy on a patient with a macular hole. He wishes to make an incision that avoids damage to the ciliary body anteriorly and the anterior limit of the retina posteriorly.

Which one of the following is correct?

A) Cornea

B) Flattened pars plana

C) Ora serrata

D) Pars plicata

E) Suspensory ligaments

Answer:B

Explanation:

The pars plana is part of the ciliary body lying 1mm behind the limbus and continuing for around 6mm in the adult eye. The first 2mm of the pars plana is the pars plicata and the posterior 4mm is the flattened pars plana. Incision through the pars plicata would damage the ciliary body, threatening the lens, and possibly the suspensory ligaments interfering with accommodation in the post-operative period. The flattened pars plana is incised commonly during vitrectomy, permitting excellent access to the vitreous cavity whilst minimising trauma to anterior structures such as the iris and lens. The ora serrata is the anterior most limit of the retina, and the boundary of light sensitive function, serrata referring to its serrated appearance. It is prefereable to avoid damage to the retina, and hence incisions into the vitreous cavity are not commonly made posterior to the flattened pars plana.

Question:

A 67-year-old lady complains to her GP of a headache lasting three days, jaw claudication and visual loss affecting her right eye. The medical students enquire as to how temporal arteritis causes visual loss, and the GP explains that it is due to vasculitis affecting the vessels that pefuse the anterior optic nerve.

Which one of the following is correct?

A) Anterior ciliary arteries

B) Central retinal artery

C) Long posterior ciliary arteries

D) Ophthalmic artery

E) Short posterior ciliary arteries

Answer:E

Explanation:

This question revolves around an understanding of the arterial supply of ophthalmic structures. The internal carotid arteries feed the ophthalmic arteries which supply structures in the eye and orbit. Those branches that supply structures within and adjacent to the globe include the short posterior ciliary arteries (optic nerve, choroid) and long posterior ciliary arteries (iris, ciliary body and choroid), the anterior ciliary artery (conjunctiva and sclera), the central retinal artery (inner third of the retina – visible on fundoscopy at the optic disk), and others. This patient has anterior ischaemic optic neuropathy due to vasculitis of the short posterior ciliary arteries in the setting of temporal arteritis and is the mechanism of blindness in these patients.

Question:

A 72-year-old male with known atrial fibrillation and osteoarthritis presents to his GP 30 minutes after sudden loss of vision in his right eye. He says that he was making breakfast in the morning when he saw a black curtain coming down over his right eye. Visual field testing to confrontation reveals an upper altitudinal field defect in the right eye with a normal left eye. In the eye casualty three hours later, there has been no change in his symptoms.

Which one of the following is correct?

A) Amaurosis fugax

B) Branch retinal artery occlusion

C) Central retinal artery occlusion

D) Cerebrovascular accident

E) Papilloedema

Answer:B

Explanation:

This question tests the ability to differentiate causes of sudden visual loss on a historical basis, since most of the information relevant to making a diagnosis is found in the history. This patient has suffered a branch retinal artery occlusion secondary to atrial fibrillation. In this setting, a thrombus has formed in his left atrium and embolised into this retinal arterial tree, in this case to the inferior retinal vessels, causing ischaemia of the inferior retina and corresponding visual loss in the upper visual field. A cholesterol emboli can cause branch retinal artery occlusion and embolic material can be seen occluding the affected vessel with oligaemia of the altitudinal hemiretina.

An altitudinal field defect is one that respects the horizontal meridian in that there is visual loss above or below a line across the equator of the visual field. Lesions localized to the superior or inferior hemiretina, the optic nerve or the cerebral cortex can produce altitudinal visual loss – although a cortical lesion would result in bilateral homonymous field changes not present in this case. Central retinal artery occlusion would cause complete loss of vision in the affected eye since the central artery perfuses all the distal superior and inferior retinal arterioles.

Papilloedema and amaurosis fugax cause transient visual loss, and historically often the patient will describe this fleeting character, with recovery often by the time of presentation. Amaurosis fugax is secondary most commonly to carotid artery atheromatous plaques which produce emboli to the retinal artery, and carotid Doppler is therefore the investigation of choice. It produces unilateral visual loss which can be at the level of the retina or optic nerve, and result in total loss, an arcuate scotoma or an altitudinal field defect – but in each case transient. Papilloedema is optic disc swelling secondary to raised intracranial pressure, and there is an absence of cues from the history, such as headache, nausea etc to suggest this. Enlargement of the blind spot due to an increase in the size of the optic nerve head is characteristic, although the peripheral visual fields can be affected if papilloedema is chronic.

Question:

A 24-year-old male is diagnosed with diabetes having presented with ketoacidosis, discharged on a regime of insulin. His compliance is poor on his first three weekly diabetic nurse reviews, and on the fourth review he develops unilateral loss of vision that has progressed over the course of three days. Visual acuity has reduced to 6/60 in the right eye and the GP attempts fundoscopy but cannot elicit a red reflex in this eye.

Which one of the following is correct?

A) Background diabetic retinopathy

B) Diabetic maculopathy

C) Retinal detachment

D) Sugar cataract

E) Vitreous haemorrhage

Answer:D

Explanation:

This question revolves around the wide differential diagnosis of visual loss in patients with diabetes mellitus. In this patient, the onset of visual loss over three days makes vitreous haemorrhage and retinal detachment less likely since these would result in more acute visual loss. Diabetic maculopathy is a possibility since this grossly affects visual acuity, but is less likely given that the diagnosis of diabetes was very recent, and this does not explain the inability to generate a red reflex. A vitreous haemorrhage would however interfere with the red reflex.

Background diabetic retinopathy cannot on its own reduce visual acuity. However, if it allowed to progress to neovascularisation, or the grown of new vessels from the retina secondary to ischaemia and production of vascular endothelial growth factor (VEGF), it can lead to sight threatening disease – retinal detachment and vitreous haemorrhage.

This patient has developed a sugar cataract. Sugar cataracts occur in young patients who have type I diabetes and are poorly compliant with insulin. Severe and persistent hyperglycaemia results in sugar being metabolised in the crystalline lens by the aldose reductase pathway into sorbitol which accumulates in the lens and attracts water by osmosis. This disrupts the parallel arrangement of cellular fibres which form the lens, resulting in reduced transparency, and the development of a cataract. This form of cataract is unique to diabetes and the treatment is good blood glucose control which will resolve the lenticular oedema and opacity.

Question:

A 26-year-old mountain biker is riding along a hillside in Malaysia when his face strikes the branch of a tree whilst he is travelling at speed. His left eye is a little painful initially, but two days later becomes red in a circumcorneal distribution and more painful with a watery discharge. There is some photophobia, with a sensation of a foreign body that wasn’t initially present. Visual acuity is reduced slightly on the left at 6/12 and 6/4 on the right. Fluorescein staining reveals an epithelial defect that appears brown on examination with a feathery border and smaller satellite lesions. There is a corneal stromal infiltrate with a hypopyon evident in the anterior chamber. Gram staining does not reveal any organisms.

Which one of the following is correct?

A) Bacterial keratitis

B) Fungal keratitis

C) Herpes simplex keratitis

D) Protozoan keratitis

E) Subtarsal foreign body

Answer:B

Explanation:

Trauma to the external eye with organic matter such as tree branches, particularly in tropical climates should alert the clinician to the possibility of fungal keratitis. One should maintain a high index of suspicion for this disease as failure to identify it can lead to loss of vision due to corneal scarring. In contrast to bacterial keratitis, its onset is slower and there is less mucopurulent discharge with symptoms initially less severe. The negative gram staining also makes bacterial keratitis less likely.

Herpes simplex keratitis causes dendritic ulceration and is a significant cause of corneal scarring. Protozoan keratitis is most commonly a tropically acquired infection that is associated with fresh water swimming, and more common in those who wear contact lenses. Acanthamoeba is a feared organism as it is difficult to treat, and can cause severe, sight threatening corneal scarring. Subtarsal foreign body classically presents as a constant or intermittent foreign body sensation with vertical corneal epithelial excoriations that result as it scrapes along the cornea on blinking. It is for this reason that the eyelids should be inverted and inspected prior on ocular examination when a foreign body is clinically suspected.

Question:

A 42-year-old male with known acne rosacea presents to his GP with bilateral red eyes and a gritty sensation. He described burning and grittiness of the eyelid margins all year round which crust over particularly on waking and eventually flake off. On examination his eyelids appear red with mild redness in a general distribution affecting both eyes. There is no chemosis or pus evident on the eye, but there is debris at the eyelid margins which the GP clears with soaked cotton wool.

Which one of the following is correct?

A) Allergic conjunctivitis

B) Blepharitis

C) Chalazion

D) Hordeolum

E) Seborrhoeic dermatitis

Answer:B

Explanation:

Blepharitis is a disease characterised by chronic inflammation of the eyelid margins, often bilaterally, causing the eyes to appear red (particularly with conjunctival and corneal involvement), and feel gritty and sore, particularly around the lid margins. Crusting is a prominent feature and blepharitis may be associated with bacteria such as staphylococcus aureus or with skin diseases such as seborrhoeic dermatitis and acne rosacea.

Treatment of this condition is with good ocular hygiene, removal of crusts with warm compresses and lid massage. Oral tetracyclines can be used in severe cases to combat the infective component of blepharitis.

Allergic conjunctivitis can often, but not always, be seasonal and associated with conjuctival signs on slit lamp examination, such as cobble-stoning and will typically cause itching without flaking of the eyelid margins. Seborrhoeic dermatitis is also associated with blepharitis with flaking and seborrhoea affecting the scalp, face and often back and chest. A chalazion is an eyelid cyst that results from bacterial infection and blockage of a Meibomian gland, and a hordeolum is an abscess and presents often with acute inflammation and is more common in patients with blepharitis.

Question:

An 81-year-old male presents to casualty with a 30 minute history of visual loss. His visual acuity remains unchanged at 6/12 bilaterally although the emergency physician finds loss of his right visual field in both eyes. She asks the medical student in casualty where the pathological lesion is considering there is a right homonymous hemianopia and preservation of the visual acuity.

Which one of the following is correct?

A) Occipital cortex – middle cerebral artery territory

B) Occipital cortex – posterior cerebral artery territory

C) Optic chiasm

D) Optic radiations

E) Optic tracts

Answer:B

Explanation:

This case demonstrates the phenomenon of macular sparing in neuro-ophthalmology. Lesions affecting the occipital cortex may spare macular vision since there is a spatial separation of the fibres representing the macula at the posterior occipital pole from the fibres representing the remainder of the retina in the anterior occipital cortex. Therefore, lesions which affect the anterior occipital cortex can spare the macula cortex.

Additionally, the occipital pole representing the macula in some patients has dual perfusion from the posterior cerebral artery and branches of the middle cerebral artery lying close to their anastomosis. Therefore, posterior circulation disturbances such as basilar artery thromboses can spare the cortical representation of the macula since the middle cerebral anastomoses perfuse the cortex representing the macula. These scenarios can demonstrate the phenomenon of “macular sparing” and only occurs in lesions distal to the lateral geniculate nucleus; therefore lesions in the optic tract (anterior to the thalamus and LGN but posterior to the optic chaism) will not produce macular sparing but contralateral complete homonymous hemianopia. If a patient has preserved visual acuity, this indicates functionality of the macula and its central connections – the only portion of the retina capable of 6/6 vision.

Remember that posterior circulation abnormalities do not require carotid Doppler investigations since they cause ischaemia in the anterior circulation (anterior and middle cerebral artery territories).

Question:

A 24-year-old male has suffered from Juvenile Idiopathic Arthritis for 12 years and is regularly reviewed by the ophthalmologists to screen for and treat recurrent anterior uveitis. During acute flares of his eye disease, the consultant ophthalmologist prescribes ocular medication to prevent the intraocular inflammation causing adhesions between the inflamed iris and the lens which would result in an irregularly shaped pupil. The patient mentions that he is off work and does not mind blurred vision from this eye, only that he takes drops as infrequently as possible. What medication does he use to prevent these adhesions?

Which one of the following is correct?

A) Atropine

B) Cyclopentolate

C) Phenylephrine

D) Pilocarpine

E) Tropicamide

Answer:A

Explanation:

This question tests the ability to think logically through a clinical problem based on first principles. Chronic anterior uveitis is inflammation of the anterior uveal tract – the iris and the ciliary body. Knowledge of ocular anatomy will confer that the iris is closest to the lens of the eye toward the centre, and more distant at the periphery of the iris where the lens and iris do not contact one another. The pharmacological agents listed all affect pupillary size, either by constriction through muscarinic agonism (pilocarpine) or dilatation by sympathomimetic agents (phenylephrine) or muscarinic antagonism (atropine, tropicamide, cyclopentolate).

Pupillary dilatation in this instance pulls the iris away from the lens and reduces the formation of adhesions between the lens and the iris. The choice between these four agents lies in understanding that atropine has a far greater duration of action than the other four mydriatic drugs listed here, and therefore has a more convenient schedule of dosage for the patient (necessitating daily drops rather than six times a day). Atropine is given to patients with anterior uveitis to prevent the development of posterior synechiae or adhesions between lens and iris. Anterior synechiae are adhesions between the iris and the peripheral cornea, and are clinically less important.

Tropicamide and cyclopentolate are shorter acting mydriatic agents that are used to dilate the pupil for ocular examination.

Question:

A 34-year-old woman with systemic lupus erythematosus has joint pain, and troubling cutaneous photosensitivity, hair loss and oral ulceration. She is treated with a medication that reduces the severity of these symptoms. Seven years after starting this therapy she notices a reduction in her visual acuity. Ophthalmological assessment reveals acuity reduced to 6/36 and 6/24 in the left and right eyes, and slit lamp examination reveals a “bulls eye” macular lesion.

Which one of the following is correct?

A) Azathioprine

B) Cyclophosphamide

C) Glucocorticosteroids

D) Hydroxychloroquine

E) Methotrexate

Answer:D

Explanation:

Hydroxychloroquine is an anti-malarial medication that is used in various inflammatory disorders as a steroid sparing agent, most notably in systemic lupus erythematosus where it is effective in reducing symptoms of skin and joint involvement.

Hydroxychloroquine is toxic and can affect the corneas in an idiosyncratic manner that is not dose related causing corneal vortex keratopathy, and the macula which is a threat to vision and is dose dependent. Therefore each patient is assessed for their maximum cumulative dose prior to commencement of hydroxychloroquine to prevent maculopathy and regular screening whilst on this medication to detect early macular changes which are reversible on cessation of treatment. Toxicity related to this medication is very rare when used for less than 5 years, and has a weaker association with maculopathy in comparison to chloroquine.

Glucocorticosteroids cause open angle glaucoma and increase the probability of cataract formation.

Question:

A 52-year-old nurse of Indian origin who has been living in the sub-continent for a number of years presents to her family doctor with reducing visual acuity, itchy and gritty eyes and a foreign body sensation. She has been seen by ophthalmologists for some time for an overgrowth of her conjunctiva, but was lost to follow up. The GP notices that the nasal conjunctiva seems to have grown over the cornea such that it is now impinging on the visual axis.

Which one of the following is correct?

A) Exposure keratopathy

B) Pingecula

C) Pseudopterygium

D) Pterygium

E) Squamous cell carcinoma

Answer:D

Explanation:

A pterygium (ptery is greek for “wing”) is a triangular or wing shaped overgrowth of the conjunctiva over the cornea that occurs almost always on the nasal side of the sclera. It is associated with living in hot, dusty and windy environments around the equator, and actinic damage from sun exposure is thought to be contributory. The reason for the development of pterygia on the nasal aspect of the bulbar conjunctiva is the focussing of light through the cornea originating from the lateral aspect. The nasal profile reduces the effect of light focussed on the temporal aspect of the bulbar conjunctiva. It is not a threat to vision until it impinges on the visual axis of the cornea, and when this is threatened, surgical removal of the pterygium is indicated, often with an autologous conjunctival graft taken from the upper scleral surface. A pinguecula is a yellow degenerative conjunctival nodule, and is benign, requiring no treatment unless cosmetically desired. A pseudopterygium is an adhesion of the conjunctiva to the cornea following a burn or other injury.

Question:

A 34-year-old female with known multiple sclerosis presents to her GP with horizontal diplopia that is maximal on looking to her left. On examination, the GP finds that when asked to look to her left, she is unable to adduct her right eye with her left eye going into abductive nystagmus.

Which one of the following is correct?

A) Cerebellum

B) Medial longitudinal fasciculus – left side

C) Medial longitudinal fasciculus – right side

D) Medulla oblongata

E) Primary motor cortex

Answer:C

Explanation:

This patient has developed internuclear ophthalmoplegia due to a lesion of the medial longitudinal fasciculus – a neuronal tract that connects the oculomotor nuclei in the midbrain on one side to the abducens nuclei on the contralateral side to co-ordinate conjugate horizontal eye movements.

An interruption of this tract causes internuclear ophthalmoplegia which manifests by an inability to adduct the ipsilateral eye, with the contralateral eye going into abductive nystagmus. Bilateral INO is almost pathognomonic of MS, although tumours, strokes etc can cause unilateral disease.

Question:

A 14-year-old boy from Nigeria is seen by a World Health Organization team working to provide additional ophthalmology services to native populations. He lives close to the river Niger and is blind in his left eye as a result of sclerosing keratitis from recurrent infections with the organism Onchocerca volvuvlus. The ophthalmologist knows that a particular vector that breeds in fast flowing water is responsible for transmitting this disease to humans.

Which one of the following is correct?

A) Aedes egypti mosquito

B) Anopheles mosquito

C) Blackfly

D) Ixodes tick

E) Sandfly

Answer:C

Explanation:

River blindness is a major cause of world blindness that is transmitted by the Blackfly vector which also serves as its larval host. It transmits the parasite when the insect bites humans. It causes a range of inflammatory dermatological abnormalities caused by the immune response to dying parasites, and eventually migrates to the cornea where they cause chronic inflammation, scarring opacity and blindness.

The Aedes Egypti mosquito transmits yellow fever and dengue fever, the Anopheles mosquitoes transmit malaria, the Ixodes deer tick transmits Lyme disease and other tick borne diseases, and the sandfly transmits Leishmaniasis.

Question:

A 43-year-old woman is diagnosed by her GP to with Bell’s palsy after she presented with a two hour history of weakness involving the left side of her face. She is unable to fully close her left eye and the GP explains to the medical student that this results from paralysis of the muscle responsible for this action. Which muscle is the GP referring to?

Which one of the following is correct?

A) Buccinator

B) Corrugator

C) Frontalis muscle

D) Orbicularis oculi

E) Orbicularis oris

Answer:D

Explanation:

The facial nerve innervates the skeletal muscles of the face and provides parasympathetic innervation to the lacrimal, submandibular and sublingual glands in addition to the stapedius muscles. Palsy of this nerve from any cause therefore causes an inability to fully close the eye, an action of the orbicularis oculi muscle - an orbital muscle surrounding the eye. This can lead to exposure keratopathy and corneal scarring if left untreated, as the cornea dehydrates and is left prone to environmental insults. Temporary eyelid closure is therefore required, either with tape, or if prolonged, tarsorrhaphy in which the eyelids are temporarily sutured together.

Question:

A 75-year-old male is started on a topical eye medication for primary open angle glaucoma after tonometry carried out at his optometrist demonstrated raised intraocular pressures and some optic disc cupping (cup to disc ratio of 0.65) was confirmed on ophthalmology outpatient review. He then presents to casualty two days later after a syncopal episode. A 24 hour tape reveals episodes of complete heart block. He is known to have ischaemic heart disease and is currently taking aspirin, ramipril, atorvastatin and dilitiazem. The topical anti-glaucoma medication is stopped at the consultant physician’s instruction.

Which one of the following is correct?

A) Acetazolamide

B) Brimonidine

C) Latanoprost

D) Pilocarpine

E) Timolol

Answer:E

Explanation:

Topical medications administered as eye drops are often selected for this route on the basis that they have good tissue penetration when applied onto the surface of the eye - that is they are sufficiently lipid soluble. Excess drug quickly travels through the inferior punctum, down the lacrimal drainage system to the nasal cavity below the second nasal conchae. This is a highly vascularised mucous membrane where the drugs undergo significant systemic absorption.

Timolol is a beta-blocking agent that works in glaucoma by reducing the production of aqueous humour through beta receptor blockade on the ciliary body. It is absorbed systemically and is contraindicated in patients at risk of brochospasm, such as asthma and COPD. Additionally, beta-blockers when given with cardiac calcium channel blockers can precipitate complete heart block due to their cumulative negative inotropy and can cause syncope. This is the reason why the medication was stopped in this case. Topical ocular medications must therefore be prescribed carefully and their contra-indications considered.

Question:

An 83-year-old lady has age related macular degeneration and has difficulty to recognizing the faces of her three grandchildren. She then experiences an acute deterioration with metamorphopsia and relates that the clinic doorframe looks wavy to her even though she knows it to be straight. A fluorescein angiogram reveals a choroidal neovascular membrane under the macula. The consultant mentions there is a medication that can be given by the intravitreal route which binds to and blocks the action of vascular endothelial growth factor, the molecule which drives the growth of abnormal vessels at the back of the eye.

Which one of the following is correct?

A) Adalimumab

B) Etanercept

C) Omalizumab

D) Pegaptanib sodium

E) Rituximab

Answer:D

Explanation:

Biologic agents are being developed for many inflammatory, neoplastic and degenerative diseases of various organ systems in which a target molecule is identified, and another molecule such as an immunoglobulin generated to block its action. Biological agents are becoming more frequent in their use and medical students will manage patients who are being treated with them. A familiarity with these agents in clinical use is therefore required.

Wet ARMD is driven principally by vascular endothelial growth factor (VEGF) which drives angiogenesis and the production of a neovascular membrane, and increased permeability of vessels. There are three agents used as anti-VEGF agents in wet or neovascular ARMD, Lucentis (ranibizumab), Avastin (bevacizumab) and Macugen (pegaptanib sodium). These are given by intravitreal injection at intervals. Lucentis and Avastin are monoclonal antibodies, as indicated by the suffix “mab” – monoclonal antibody.

Adalimumab is a monoclonal antibody used in the treatment of rheumatoid arthritis, Rituximab a monoclonal antibody raised against the CD20 receptor expressed on B lymphocytes, therefore used in lymphomas, Etanercept is a soluble tumor necrosis factor soluble receptor used in rheumatoid arthritis, and omalizumab is a monoclonal antibody used in allergic disease such as asthma.

Question:

A 57-year-old lady with diabetic neuropathy causing neuropathic pain in her feet at night presents to casualty in tears. She says the pain is so severe she wanted to try something to make it go away. Her husband who brought her to casualty mentions that she has been more tearful of late, and that he found an empty bottle of medications by her bed where he found her. She is tachycardic, agitated and is complaining of a dry mouth, dry eyes and nausea. Her pupils are dilated on examination and her ECG demonstrates a broad QT interval. Two hours after arriving in casualty she begins seizing.

Which one of the following is correct?

A) Gliclazide

B) Insulin

C) Metformin

D) Paracetamol

E) Tricyclic antidepressants

Answer:E

Explanation:

Tricyclic antidepressants are used for the treatment of depression and neuropathic pain, but have become less common in clinical practice due to newer medications that have improved side-effect profiles (TCA have significant anti-cholinergic properties that cause dry eyes, dry mouth, difficulty with micturition and constipation), such as the serotonin selective reuptake inhibitors for depression. TCAs are also very dangerous in overdose owing to their effect on the central nervous system and the heart in which they block sodium channels and have effects on cardiac rhythm (as in this case).

Treatment is by recognition (and dilated pupils should alert you to the possibility of TCA poisoning in patients who have access to them), intensive monitoring with cardiac monitor/ serial ECGs and blood gases. Severe poisoning necessitates ITU admission with intravenous bicarbonate and full supportive care. If the patient presents within 1-2 hours, activated charcoal can reduce further absorption of the medication.

None of the other drugs listed as potential answer would affect the pupil size, although insulin and gliclazide can cause seizures and many diverse neurological symptoms (such as agitation) secondary to hypoglycaemia.

Question:

A 52-year-old surgeon has a family history of glaucoma, and despite Latanoprost daily, has difficult to control intraocular pressures; the pressures are 28 and 26mmHg on the left and right respectively at his last review. Visual field testing reveals an early arcuate scotoma on the right and his cup to disc ratios are 0.6 and 0.65. The ophthalmologist wishes to measure the intraocular pressure.

Which one of the following is correct?

A) Applanation tonometry

B) Estimation from optic cup to disc ratio

C) Examination under anaesthesia

D) Manual palpation of globes

E) Pneumatic tonometry

Answer:A

Explanation:

Goldmann applanation tonometry remains the gold standard for the assessment of intraocular pressure. Measurement is taken at the slit lamp after application of fluorescein and local anaesthetic drops since it requires corneal contact. A blue filter light is used and the patients eyelids are parted, the prism applied to the corneal surface. Two semicircular rings are seen and their edges approximated to measure the intraocular pressure. This method measures the force required to flatten a given surface area of cornea.

Pneumatic non-contact tonometry is often used by the optometrist for screening for ocular hypertension. The cup to disc ratio does not give an indication as to the degree of ocular hypertension since is it possible to have advanced glaucoma with abnormal fields and significant evidence of optic nerve disease but with normal intraocular pressure. Manual palpation through closed lids can be useful if the intraocular pressure is very high, the globe will feel firm in comparison to the other. Examination under anaesthesia is useful in children in whom Goldmann tonometry and other more detailed analysis may not be possible in an uncooperative child.

Question:

A 74-year-old male with known age-related macular degeneration presents with a three hour history of deteriorating vision in his left eye and metamorphopsia. His acuities are 6/36 on the left and reduced to counting fingers on the right. Examination reveals evidence of a choroidal neovascular membrane.

Which one of the following is correct?

A) 24 hour blood pressure monitoring

B) CT scan orbit

C) Fasting blood sugar

D) Fundus fluorescein angiography

E) Ultrasound scan of eye

Answer:D

Explanation:

This patient has progressed from geographical atrophy (dry ARMD) to wet or neovascular ARMD as evidenced by the subretinal neovascular membrane. This is a result of neovascularisation and like in diabetes, the vessels are not grounded in perivascular support structures and are liable to bleed or leak beneath the macula causing visual abnormalities and loss.

The investigation of choice is fluorescein fundus angiogram whereby fluorescein is injected intravenously and a filtered light is used to scan the retina, identifying the contrast in the retina and choroid. Areas of hyperperfusion, or ischaemia can be identified, as can vascular leakage and abnormal vessels. FFA requires clear media and is contraindicated in renal impairment. Photos are taken at various time frames, with those early after administration of IV contrast giving the clearest images of arterial structures, and late images of venous structures.

Question:

An 87-year-old male presents to the general ophthalmology clinic with glare and a gradual loss of vision affecting his right eye more than his left. Visual acuities are 6/24 OD and 6/12 OS, and ophthalmoscopy reveals bilateral nuclear sclerosis cataracts. In addition, he has suffered from left sided-ectropion, left-sided epiphora and a long-standing mucocoele of his left lacrimal sac. During the consultation, pus was expressed with gentle pressure over the mucocoele, expressed through the superior and inferior medial canthi. He says that his cataracts cause him much more trouble than his mucocoele and wishes to get them removed as soon as possible, stating that he can better tolerate the epiphora.

Which one of the following is correct?

A) Simultaneous bilateral phacoemulsification and cataract extractions

B) Staggered bilateral phacoemulsification and cataract extractions

C) Dacrocystorhinostomy

D) Dacryoadenectomy

E) Dacryocystectomy

Answer:C

Explanation:

Despite the obvious visual deficit conferred by this man’s bilateral nuclear sclerotic cataracts, the presence of an active infection within the immediate vicinity of the external eye precludes phacoemulsification cataract surgery as the risk of post-operative endophthalmitis – a serious threat to vision – in either eye far outweighs the benefit of early intervention. The mucocoele therefore requires surgical management with an external dacrocystorhinostomy performed under general anaesthetic to remove the static secretions and reservoir of infection sitting adjacent to, and in the presence of an ectropion, extending into the tear film and inferior fornix. Once this has been performed and a post-operative assessment confirms its success, then the patient can be listed for cataract surgery. In order to reduce the risk of intraocular infection, cataracts are not performed bilaterally at the same time since endophthalmitis affecting one eye is far more likely to affect both eyes resulting in potential bilateral blindness. They are often performed a few weeks apart for this reason.

Question:

A 45-year-old male has trouble reading his newspaper and finds that has to hold it at progressively longer distances in order to read it. He finds if particularly difficult to read the finer prints. He sees his optician who finds that his capacity to accommodate has reduced as a consequence of aging. He recommends lenses that refract for multiple distances and will allow him to read and to see clearly at multiple distances.

Which one of the following is correct?

A) Fresnel lenses

B) Multifocal lenses

C) Prismatic lenses

D) Toric lenses

E) Varifocal lenses

Answer:E

Explanation:

This patient has presbyopia, a condition in which the elasticity of the lens reduces to a critical threshold with age that results in a reduction in the refractive power of the lens and therefore difficulty with near vision. During the accommodation reflex, the ciliary body contracts, the suspensory ligaments relax and the elasticity of the lens fibres determines the refractory power of the lens. Presbyopia commonly starts to become a problem at around the age of 40-45 years, although the reduction in elasticity of the lens starts much earlier. The near point of vision become progressively longer in presbyopia until the individual seeks advice from an optometrist.

Bifocal lenses refract for two distances, for near vision and for distance vision but varifocals refract for multiple distances. Fresnel lenses are used to spread light, for example in lighthouses or car headlights. Prismatic lenses are used for corrections of squints and toric lenses to correct astigmatism.

Question:

Which of the following statements regarding Rheumatoid Arthritis is true?

Which one of the following is correct?

A) Men are affected more commonly than women

B) Prevalence is highest in young adults

C) It has been associated with HLA-DR4

D) Garrod’s pads are part of the clinical presentation

E) The American College of Rheumatology criteria does not include radiographic changes

Answer:C

Explanation:

Rheumatoid arthritis is a chronic systemic inflammatory disease that predominantly affects synovial tissues. Women are more commonly affected with a ratio of 3:1. The peak age of onset of the symptoms is between 35 and 45 years. The HLA-D allele DR4 is associated with RA patients.

The diagnosis of rheumatoid arthritis is often made in the presence of four out of the seven of the American College of Rheumatology criteria. These are: (i) Morning stiffness >1 hour located around joints and present for >6 weeks (ii) Arthritis in three or more joints present for >6 weeks (iii) Arthritis of hand joints present for >6 weeks (iv) Symmetric arthritis for >6 weeks (v) Physician observed rheumatoid nodules (vi) Serum rheumatoid factor positive, and (vii) Typical radiographic changes.

Garrod’s pads are thickening of the dorsum of PIPJ is a clinical feature of Dupuytren’s disease.

Question:

Which medication should be avoided in the treatment of acute attack of gout?

Which one of the following is correct?

A) Ibuprofen

B) Indomethacin

C) Colchicine

D) Steroids

E) Allopurinol

Answer:E

Explanation:

Gout is caused by an inflammatory response to the formation of monosodium urate crystals in joints secondary to hyperuricemia. Symptoms manifest in the skin as tophi, which are painful masses that represent precipitations of urate crystals. Acute gout presents with painful joints, which are red, shiny and tender. The clinical features can mimic septic arthritis and may result in failed attempts at drainage. A diagnosis is made with a history of gout, chronic disease in other joints or elevated serum uric acid levels. If the presentation is ambiguous, joint aspiration and microscopy to look for negatively birefringent needle-like uric acid crystals will clinch the diagnosis. In chronic gout, a secondary infection of an established tophus may be present.

Medical management is the mainstay of treatment for an acute attack of gout. Non-steroidal anti-inflammatory drugs are recommended as an initial treatment to relieve acute symptoms. Colchicine, which works by interfering with the uric acid crystals to reduce inflammation, can also be used as an alternative. In a severe attack of gout, where NSAIDs and colchicine failed to relieve the symptoms, corticosteroids can be used. Allopurinol is useful to prevent gouty attacks. It is a xanthine oxidase inhibitor that disrupts the enzyme responsible for converting purines into uric acid and hence will lower uric acid levels. However, during an acute attack, allopurinol should be avoided because sudden decrease in uric acid levels can trigger an acute attack or can prolong existing acute attack.

Question:

Level VI lymph nodes in the neck lie in the

Which one of the following is correct?

A) Carotid triangle

B) Submandibular region

C) Paratracheal area

D) Posterior triangle

E) Superior mediastinum

Answer:C

Explanation:

The lymph nodes in the neck are classified into various anatomical levels:

Level I: Submental and submandibular lymph nodes.

Level II: Upper jugular nodes

Level III: Mid jugular nodes

Level IV: Lower jugular nodes

Level V: Posterior triangle nodes.

Level VI: Paratracheal and paralaryngeal nodes

Level VII: Nodes in the superior mediastinum

Question:

Platysma is supplied by:

Which one of the following is correct?

A) Marginal mandibular branch of facial nerve

B) Ansa cervicalis

C) Supraclavicular branches from the brachial plexus

D) Cervical branch of facial nerve

E) Branches from great auricular and lesser occipital nerves

Answer:D

Explanation:

Platysma is supplied by the cervical branch of the facial nerve. The marginal mandibular branch supplies the depressor angulli oris (also receives branches from the buccal division), depressor labii inferioris and mentalis. The supraclavicular branches of the brachial plexus (dorsal scapular, suprascapular and long thoracic) do not supply the platysma. The ansa cervicalis is a loop of nerves that are part of the cervical plexus lying superficial to the internal jugular vein in the carotid sheath. Branches from the ansa cervicalis innervate three of the four infrahyoid muscles – sternohyoid, sternothyroid and omohyoid. Great auricular and lesser occipital nerves are sensory branches of spinal nerves in the neck.

Question:

The most common cause of lymphedema worldwide is

Which one of the following is correct?

A) Milroy’s disease

B) Lymphedema Praecox

C) Groin dissection

D) Filariasis

E) Meige’s disease

Answer:D

Explanation:

Filariasis is an infective disease caused by a parasite called Wuchereria bancrofti. This is transmitted by mosquito bite and certain crustacean bites. The most common symptom produced is lymphoedema of the lower limbs produced as a result of the lymphatic blockage by the parasites. It is diagnosed by finding the filarial load using a finger prick test (geimsa stain).

In the early stages, medical treatment with diethyl carbamazine might be effective. Compression stocking and elevation can complement medical management. If the disease becomes advanced, various excisional surgeries such as Charles procedure and Homan’s procedure are required for symptom control.

Question:

Lateral cutaneous nerve of the forearm is a continuation of:

Which one of the following is correct?

A) Median nerve

B) Lateral pectoral nerve

C) Suprascapular nerve

D) Musculocutaneous nerve

E) Radial nerve

Answer:D

Explanation:

Musculocutaneous nerve (C5, 6, 7) arises from the lateral cord of the brachial plexus. It supplies three muscles in the upper arm, viz. Biceps, Brachialis and Corachobrachialis (aide memoire - BBC). It continues in the forearm as the lateral cutaneous nerve of the forearm lying in the subcutaneous plane and supplies the lateral border of the forearm up to the base of the thumb.

Question:

A 9-year-old girl is scheduled to have a benign mole excised from her neck for cosmetic reasons. In the anaesthetic room, she gets agitated and refuses to have the operation. Her parents state that she always gets ‘worked up’ before visiting a doctor and she will be fine after the procedure. They thus want you to proceed with the procedure. The best practice in this situation is:

Which one of the following is correct?

A) Proceed with the procedure since parents have already signed the consent

B) Cancel the operation and review the child in out-patient clinic

C) Call the duty manager to obtain legal advice

D) Request the anaesthetist to sedate the child before giving the general anaesthetic

E) Fill an incident form and write in the notes but proceed with the operation

Answer:B

Explanation:

As legal custodians of the child, parents can give consent for operations. However, when surgery is undertaken for non-urgent procedures, it is essential to involve the child in the decision making process. With regards to excision of the mole, which in this situation is a cosmetic procedure, it is important that the child understands the risks (e.g., scarring) and benefits of the procedure and she requests the operation.

Question:

You are about to repair a simple laceration on the ear lobule of a 4-year-old boy. In the waiting area of the theatre, you realise that the consent form was signed by the child’s step-father who is currently married to his mother. On questioning, he informs you that the mother lives far away and she does not know about the injury. The best practice in this instance would be to:

Which one of the following is correct?

A) proceed with the procedure since the consent is valid

B) get a colleague or your senior to sign a two-doctor consent (consent form 4)

C) call the social services to obtain advice

D) defer the operation and try to contact the child’s mother

E) fill an incident form and write in the notes but proceed with the operation in the best interest of the child

Answer:D

Explanation:

The consent is not valid in this scenario since the man is not the child’s biological father although he is currently married to his mother. The best practice in this instance would be to defer the operation and attempt to contact the mother to obtain her consent. If she is unable to reach the hospital and sign the form, then a verbal consent over the phone is acceptable. If the mother in not contactable, the procedure should not undertaken since this neither a life- nor a limb-threatening emergency.

Question:

Bolam principle refers to the:

Which one of the following is correct?

A) competence of a child to consent for a surgical procedure

B) competence of a underage mother to consent for her child’s treatment

C) standard of care by a clinician as judged by his peers

D) ability of a 16-year-old child to consent for a cosmetic breast implant

E) freedom of a clinician in acting in the best interests of a patient who lacks capacity

Answer:C

Explanation:

The test to determine the standard of care expected of a doctor is often referred to as the Bolam principle, which states that ‘a doctor is not considered negligent if he reaches the standard of a responsible body of medical opinion’. This followed the case (1957) Bolam vs Friern hospital management committee, wherein the patient John Bolam received an uncontrolled electroconvulsive therapy and sustained serious injuries including acetabular fractures. He sued the hospital for compensation reasoning that they were negligent in not giving him muscle relaxants, not restraining and not warning him about the risks. The judge McNair noted that the medical opinion at the time was not to use muscle relaxants and it was considered that restraints may increase the risk of fractures. It was also common practice at the time not to warn patients about the risks of procedures unless asked. The jury delivered a verdict in favour of the hospital.

Question:

Which of the following is not one of the four ethical principles popularised by Beauchamp and Childress?

Which one of the following is correct?

A) Justice

B) Non-maleficence

C) Autonomy

D) Empathy

E) Beneficiance

Answer:D

Explanation:

Beauchamp and Childress proposed four cardinal principles in medical ethics, which are: (i) Justice (ii) Non-maleficence (iii) Autonomy, and (iv) beneficiance. Justice is fair, equitable and appropriate treatment. Non-maleficence is an obligation not to harm intentionally or impose the risks of harm through negligence. Autonomy is the individual’s freedom and capacity for intentional action, Beneficiance refers to acts performed for the welfare of others.

Question:

Which of the following statements is true regarding Gillick competence?

Which one of the following is correct?

A) Applies only in England and Wales

B) Refers to consenting capacity of a patient who is <18 years old

C) Is named after the judge who passed the judgement

D) A child <16 years cannot refuse treatment even if Gillick competent

E) Assessment for Gillick competence has to be carried out by a child psychiatrist

Answer:D

Explanation:

Gillick competence is a term used in medical law to decide whether a child <16 years of age is competent to consent for medical treatment. This ruling came into effect following the case of Gillick vs West Norfolk and Wisbech health authority (1985) wherein Mrs V Gillick ran an active campaign against prescribing contraceptives to under 16s without their parent’s consent. The decision of the House of Lords was that a child < 16 years of age can consent for treatment if he or she has sufficient understanding and intelligence to appreciate the proposed treatment. However, children cannot legally refuse treatment even if they are Gillick competent. The assessment for competence is done by the doctor undertaking the treatment. This standard has subsequently been approved in all of the United Kingdom as well as Australia, Canada and New Zealand.

Question:

A 55-year-old heavy smoker with a history of angina, hypertension and hypercholesterolaemia presents to his GP complaining of a 2-month history of severe episodic abdominal pains. These pains occur about 20 to 30 minutes after meals, and are especially severe after large meals. His fear of eating has resulted in him having lost 5 kg of weight in this time. The GP suspects peptic ulcer disease but a gastroscopy and colonscopy in hospital have shown no abnormalities.

Which one of the following is correct?

A) Acute mesenteric infarction

B) Chronic cholecystitis

C) Chronic mesenteric ischaemia

D) Chronic pancreatitis

E) Referred cardiac angina

Answer:C

Explanation:

Chronic mesenteric ischaemia usually results from atherosclerotic disease of the superior mesenteric trunk and eventually the more distal mesenteric arteries. Progressive stenosis of the arteries leads to inadequate gut perfusion at times of increased demand (i.e. during digestion after meals). The condition usually presents with severe epigastric abdominal pain approximately 30 minutes post-prandially. Patients often anticipate this pain and are afraid to eat, consequently losing significant amounts of weight. There is often co-existent atherosclerotic disease elsewhere, such as ischaemic heart disease, cerebrovascular disease and peripheral vascular disease.

Chronic mesenteric ischaemia should be differentiated from acute mesenteric infarction, which occurs after rupture of local atherosclerotic plaques or after arterial occlusion by emboli (i.e. from the heart, as a result of atrial fibrillation). Mesenteric infarction is extremely painful and typically lacks clinical signs (therefore necessitating urgent surgical review if suspected), although rapid hypovolaemia and shock may ensue.

Question:

An 85-year-old man presents to casualty with a 30 minute history of shortness of breath, mild chest discomfort and palpitations. Examination reveals an irregularly irregular pulse, a first heart sound of variable intensity and signs of left ventricular failure with bibasal crepitations and mild peripheral pitting ankle oedema. He is taking aspirin, rampiril, bisoprolol and atorvastatin.

Which one of the following is correct?

A) Atrial fibrillation

B) Atrial flutter

C) Lown-Ganong-Levine syndrome

D) Ventricular tachycardia

E) Wolff-Parkinson-White syndrome

Answer:A

Explanation:

Atrial fibrillation (AF) is a common supraventricular tachycardia that is seen in up to 10% of patients above 65 years of age. It is usually secondary to ischaemic heart disease but can also be precipitated by hypertension, MI (seen in 22%), pulmonary embolism, mitral valve disease, pneumonia, hyperthyroidism, alcohol, surgery, hypokalaemia and hypomagnesaemia. In AF, the atria depolarize in a rapid and disorganized manner, causing the atria to contact ineffectively at a rate of 300-600 beats per minute. Only sporadic impulses from the sinoatrial node are conducted through the atrioventricular node and to ventricular myocardium. Since these conducted beats are propagated irregularly, the ventricles contract in an ‘irregularly irregular’ fashion – irregular in rate and irregular in intensity since the volume of blood in the ventricles is proportional to the preceding diastolic interval. For the purpose of undergraduate exams, the use of this term to describe a cardiac rhythm is almost always limited to AF. Atrial fibrillation causes around a 20% reduction in cardiac output, which in the presence of reduced organ reserve can precipitate heart failure. Fast atrial fibrillation causing of rates greater than 100 risk myocardial ischaemia and chest pain since there is increased oxygen demand from the myocardium, but less supply as the diastolic interval is reduced. Therefore the cardiac rate should be controlled in this setting.

Other features of AF include palpitations, dyspnoea, syncope and the sequelae of systemic emboli such as stroke, acute limb ischaemia and even mesenteric ischaemia. An ECG will demonstrate a fibrillating baseline with irregularly spaced QRS complexes and absent P waves. Treatment involves the use of anticoagulants (e.g. warfarin) or antiplatelet agents (e.g. aspirin) to reduce the likelihood of thrombosis and embolism. The choice of agent depends on the risk of stroke; higher risk patients should undergo formal anticoagulation with warfarin. Patients should also receive rate-controlling medication such as digoxin or beta-blockers, or rhythm-controlling agents such as amiodarone.

Question:

An 80-year-old man presents to Casualty with a 30 minute history of central, crushing chest pain that occurred whilst he was watching a horror movie. He describes the pain as radiating to his neck and down his left arm, and it has not been relieved by his GTN spray. He feels nauseous and on examination, appears pale and sweaty. A 12-lead ECG is immediately performed and demonstrates ST segment depression leads II III and aVF and non-specific T wave changes. Another vital investigation is scheduled for later, whilst a chest X-ray is performed and with no obvious abnormalities detected.

Which one of the following is correct?

A) Exercise (stress) ECG

B) Myocardial perfusion scan

C) Serum lactate dehydrogenase

D) Serum troponin

E) Transthoracic echocardiography

Answer:D

Explanation:

The most likely diagnosis in this case is a non-ST elevation myocardial infarction (NSTEMI). Since the ECG findings in this condition are often non-specific, the diagnosis is based on the triad of history, examination and the presence of serum markers of myocardial necrosis (e.g. cardiac enzymes). Troponin is currently the most sensitive and cardiospecific marker available, and is used preferentially to the more traditional markers like creatine kinase, lactate dehydrogenase and aspartate transaminase for a single acute event. Following MI, troponin is released into the circulation from dying cardiac myoctes. Serum troponin levels peak at 12 hours post-infarction and remain elevated for up to 10 days. The sensitivity of troponin in diagnosing MI has been shown to be as high as 100% when measured 12 hours after the onset of symptoms (compared to sensitivities as low as 21% when measured at only 6 hours). Therefore, a non-elevated troponin level at 12 hours after symptom onset makes MI an unlikely diagnosis but a second sample after a further 12 hours should nonetheless be obtained, if the diagnosis remains uncertain. Troponin may also be elevated in conditions like myocarditis, arrhythmia, pulmonary infarction and sepsis – but to a lesser extent than in MI. It is therefore not specific to acute myocardial infaction. Exercise ECG testing is used to risk stratify patients who have not suffered a heart attack but who may require formal cardiac angiography before coronary artery stenting or coronary artery bypass grafting.

Question:

A 72-year-old man presents to casualty with a one hour history of central chest pain radiating to his left arm. He is nauseous, sweaty and short of breath. The pain reminds him of his heart attack 8 years previously, during which he was prescribed a ‘clot dissolving’ drug that he was instructed never to have again. His ECG shows ST elevation of 3 mm in V2, V3 and V4. There are no contraindications to thrombolysis. The drugs already administered to him include aspirin, clopidogrel, morphine and metoclopramide.

Which one of the following is correct?

A) Alteplase alone

B) Alteplase followed by intravenous heparin infusion

C) Beta-blocker

D) Low molecular weight heparin

E) Streptokinase

Answer:B

Explanation:

This patient’s anterior myocardial infarction is an indication for thrombolysis. Streptokinase is used to be the first-line thrombolytic agent in most hospitals but following the administration of streptokinase, patients develop anti-streptokinase IgG antibodies that will reduce the thrombolytic activity and potentially trigger a severe allergic reaction if administered a second time. To prevent this, patients who have received streptokinase carry a card or wear a MedicAlert bracelet to warn medical staff, should such an emergency recur. The other major class of thrombolytic drugs are the tissue plasminogen activators (tPA) – these include tenecteplase, alteplase and reteplase. When tPA is given, it is followed by an intravenous infusion of heparin in order to improve the chance of reperfusion. The main complications of thrombolysis are bleeding, reperfusion arrhythmias, allergic reactions and hypotension. Haemorrhagic stroke is regarded by some as the most serious complication of thrombolysis – this occurs in about 0.5% of all cases. It is important to rule out contraindications in any patient undergoing thrombyloysis for any reason, such as ischaemic stroke or ST segment elevation myocardial infarction.

Question:

A 70-year-old woman with a longstanding history of hypertension that has been poorly responsive to treatment presents to her GP with general lethargy, malaise and increasing dyspnoea at rest. Cardiovascular examination reveals a collapsing pulse, laterally displaced apex beat. Auscultation reveals an early diastolic murmur heard loudest at the left sternal edge, radiating to the apex with the patient leaning forward and the breath held in expiration.

Which one of the following is correct?

A) Aortic regurgitation

B) Aortic stenosis

C) Atrial septal defect

D) Mitral regurgitation

E) Ventricular septal defect

Answer:A

Explanation:

The clinical signs in this case strongly suggest an acute presentation of aortic regurgitation. Causes of this include infective endocarditis, rheumatic fever and severe hypertension (although it is also associated with a wide range of other acquired and congenital disorders). Chronic stable aortic regurgitation is commonly asymptomatic but fatigue and dyspnoea become apparent with progressively worsening regurgitation as the left ventricle dilates and begins to fail. Signs include collapsing (‘waterhammer’) pulse, visible capillary pulsations in the nailbed (Quincke’s sign), visible pulsations in the neck (Corrigan’s sign), head-nodding in time with the pulse (de Musset’s sign), a pistol-shot sound on auscultation of the femoral pulses (Traube’s sign), a to-and-fro murmur audible on compression of the femoral artery with the stethoscope (Duroziez’s sign), a laterally displaced and heaving apex beat, an early diastolic murmur loudest at the left sternal edge (radiating to the apex), an ejection systolic flow murmur (due to increased ventricular load from regurgitation; not necessarily due to aortic stenosis), and a rumbling mid-diastolic murmur at the apex (Austin-Flint murmur; caused by anterior mitral valve leaflet vibrating in the regurgitant jet). Management includes treatment of heart failure, aiming to replace the valve before left ventricular function deteriorates. Since the aortic valve is failing, there is typically a drop in the diastolic blood pressure as some blood volume regurgitates back into the ventricle, resulting in a wide pulse pressure (a large difference between systolic and diastolic blood pressure indices).

Question:

A 45-year-old publican with no significant past medical history presents to his GP with a 3-month history of paroxysmal nocturnal dyspnoea and orthopnoea (now using 3 pillows). Examination reveals a mild degree of ankle oedema and auscultation of the chest finds bibasal crackles, there is bilateral pitting oedema around the ankles and hepatomegaly. Full blood count reveals a macrocytic anaemia and liver function tests reveal raised liver transaminases and a raised gamma-glutamyltransferase.

Which one of the following is correct?

A) Cor pulmonale

B) Dilated cardiomyopathy

C) Hypertensive heart failure

D) Infective cardiomyopathy

E) Ischaemic cardiomyopathy

Answer:B

Explanation:

This patient’s presenting symptoms and signs are strongly suggestive of progressively worsening heart failure. The lack of a significant past medical history and the patient’s occupation suggest that alcohol consumption may be the cause of the underlying pathology. This is supported by initial blood test results, all of which are in keeping with the picture of chronic alcohol over-consumption; with bone marrow toxicity resulting in large red blood cells – macrocytosis, often without anaemia and biochemical evidence of hepatic dysfunction. Alcohol abuse has many deleterious effects on the body, one of which is its effect on the myocardium, resulting in dilated cardiomyopathy and subsequent heart failure. Although standard treatment for heart failure will be initiated in this patient, the underlying issue of alcohol abuse must be addressed to prevent further complications from it.

Question:

A 69-year-old gentleman with diet-controlled type 2 diabetes mellitus and peripheral vascular disease develops asymptomatic hypertension. Blood tests reveal normal urea and electrolyte concentrations and a urine dipstick is negative for protein. He is started on lisinopril 2.5mg od and reviewed one week later. However, repeat blood tests show an elevated serum urea (23.4 mmol/L) and serum creatinine (302 µmol/L).

Which one of the following is correct?

A) Coarctation of the aorta

B) Diabetic nephropathy

C) Glomerulonephritis

D) Polycystic kidney disease

E) Renal artery stenosis

Answer:E

Explanation:

This patient’s peripheral vascular disease suggests that he has evidence of significant arterial atherosclerosis, and he is consequently of higher risk of renal artery stenosis, in which athermatous plaque narrows the renal arterial lumen (a less common cause of which is fibromuscular dysplasia – typically in young females). ACE (angiotensin converting enzyme) inhibitors can drastically reduce the glomerular filtration rate of a patient with renal artery stenosis (by inhibiting angiotensin II from constricting the efferent arteriole of the glomerulus, thereby decreasing filtration pressure). This can result in acute renal failure. Therefore, patients’ U&Es should always be checked before, and at regular (1-2 week) intervals after starting ACE inhibitor treatment. Diabetic nephropathy, polycystic kidney disease and glomerulonephritis would demonstrate abnormalities on the urine dipstick.

Question:

A 59-year-old man presents to Casualty complaining of visual blurring and headaches. Initial observations reveal a blood pressure of 250/140 mmHg and a pulse rate of 90 beats per minute. Fundoscopy demonstrates bilateral papilloedema, flame haemorrhages and scattered cotton wool spots. He does not have any pulmonary oedema and Abbreviated Mental Test Score is 10/10. Neurological examination is otherwise normal and an urgent CT scan of the head does not demonstrate any obvious abnormality.

Which one of the following is correct?

A) Admit to High Dependency Unit + intravenous antihypertensive medication

B) Admit to ward + oral antihypertensive medication

C) Outpatient treatment: single oral antihypertensive agent

D) Outpatient treatment: two oral antihypertensive agents

E) No further assessment + review after 4 weeks

Answer:A

Explanation:

This is a case of severe malignant hypertension, as evidenced by the patient’s headache, visual loss and signs on fundoscopy such as papilloedema, flame haemorrhages and cotton wool spots. It warrants urgent treatment and monitoring to prevent serious complications (e.g. haemorrhagic stroke, blindness, renal failure, aortic dissection and death). All patients with features of severe disease require admission to the high-dependency or intensive care unit. Intravenous sodium nitroprusside and furosemide are first-line treatments of hypertensive encephalopathy and should be used to reduce blood pressure by approximately 25% over 2 hours and then to normal levels over the next 72 hours. Intravenous beta-blockers (e.g. labetalol) and long-acting calcium channel blockers may be considered as second-line agents if first-line medications are inadequate. Blood pressure should not be reduced too rapidly as this may result in retinal, cerebral and myocardial infarction, due to the failure of autoregulatory perfusion mechanisms in the setting of severe hypertension (typically >160 mmHg). If the patient does not have evidence of encephalopathy, seizures or coma, oral agents should be used to reduce the arterial pressure slowly since drug release is often more gradual with oral absorption. This may be done safely on a medical ward

Question:

A 75-year-old man suffers a massive anteroseptal myocardial infarct and is discharged after a week of inpatient treatment. Seven months later, an episode of severe pneumonia necessitates a chest radiography, which incidentally demonstrates a left ventricular ‘bulge’. Examination of his old ECGs demonstrates persistent ST segment elevation in the anterior chest leads since his myocardial infarct which had not resolved. Echocardiography confirms this bulge to expand during systole.

Which one of the following is correct?

A) False aneurysm within myocardium

B) Mural thrombus

C) Ventricular aneurysm

D) Ventricular wall rupture

E) Vitamin D deficiency

Answer:C

Explanation:

A large myocardial infarction (usually an anteroseptal infarct) may result in a transmural (i.e. full-thickness) infarction of the myocardium, as opposed to subendocardial infarction in which cardiac myoctyes close to the endocardium, which are most distal to the coronary arterial bloody supply are damaged.. A late complication of transmural infarction is a left ventricular aneurysm. A key feature of left ventricular aneurysms is persistent ST segment elevation on a 12 lead ECG that fails to resolve after an acute myocardial infarction. This results from replacement of the infarcted muscle by a thin layer of collagenous scar tissue that progressively stretches and bulges as the intraventricular pressure rises during systole. Ventricular aneuryms may cause complications including arrhythmias, left ventricular failure and mural thrombosis with systemic embolism. However, the aneurysm itself is unlikely to rupture. Patients with a left ventricular aneurysm should be anticoagulated because of the increased risk of systemic emboli. Indications for surgical aneurysmectomy include congestive heart failure, angina pectoris, recurrent ventricular tachyarrhythmias and systemic emboli. Patients undergoing resection of an aneurysm may also require coronary revascularization.

Question:

An 82-year-old man with a longstanding history of angina pectoris presents to Casualty with shortness of breath, chest pain and palpitations. His pulse is 140 beats per minute and regular. An ECG is performed immediately and reveals a regular, broad-complex tachycardia with concordance in the chest leads. No P waves are visible throughout the rhythm strip.

Which one of the following is correct?

A) Sick sinus syndrome

B) Sinus tachycardia

C) Supraventricular tachycardia

D) Ventricular fibrillation

E) Ventricular tachycardia

Answer:E

Explanation:

This case demonstrates a broad-complex tachycardia, which is potentially life-threatening and requires prompt diagnosis and treatment In broad-complex tachycardias, the underlying arrhythmia may be supraventricular in origin, with co-existing bundle-branch block, or it can be of ventricular origin. An ECG demonstrating a broad-complex tachycardia with QRS concordance in the chest leads, left axis deviation, fusion and capture beats are all strongly suggestive of ventricular tachycardia. In this patient, as long as his blood pressure is stable, the treatment of choice is intravenous lidocaine followed by amiodarone, if necessary. Electrolyte abnormalities (e.g. hypokalaemia, hypomagnesaemia) should be urgently corrected. If the drugs prove ineffective, or if the blood pressure drops even further, synchronized DC shock should be administered to help to restore normal cardiac rhythm. Ventricular fibrillation does not produce a cardiac output, and therefore no pulse will be palpable and no blood pressure will be recordable.

Question:

The visiting registrar in dermatology is teaching medical students in a tutorial. He mentions that the 5-year survival for patients with malignant melanoma is 100% when on histological examination of the biopsy specimen, the deepest malignant cell identified has not penetrated this structure.

Which one of the following is correct?

A) Basement membrane

B) Deep fascia

C) Stratum corneum

D) Stratum granulosum

E) Stratum spinosum

Answer:A

Explanation:

Malignant melanoma that has not penetrated the basement membrane is referred to as malignant melanoma in situ. The basement membrane is located at the dermo-epidermal junction, and since the vascular and lymphatic vessels lie in the dermis, there is a much lower likelihood of metastatic spread when the malignancy is confined to the epidermis – an avascular structure. The other strata mentioned in this question are located in the epidermis, superficial to the basement membrace and have no prognostic significance.

Melanocytes are located predominantly in the stratum basale and on malignant transformation can penetrate deeper structures through the basement membrane and into the dermis. The prognosis of malignant melanoma is most closely related to the depth of tumour invasion, Breslow’s thickness. This is measured histologically following excision biopsy of a suspicious lesion. Ulceration, perineural invasion, regional lymphadenopathy, distant metastases are other indicators of a poorer prognosis. The location of the lesion has prognostic significance – facial lesions have a poorer prognosis than lesions on the trunk or limbs – this may also be associated with vascularization; the face is richly perfused.

Question:

A general surgeon is performing a laparotomy and asks the medical students in theatre which structure, that he will divide to gain access to the peritoneal cavity, can form up to 3cm thick on the abdominal wall and functions to reduce the loss of heat from the internal viscera to the environment. He mentions that it is physiologically active particularly in oestrogen metabolism and can help to contribute to insulin resistance.

Which one of the following is correct?

A) Epidermis

B) Fascia transversalis

C) Peritoneum

D) Rectus abdominis

E) Subcutaneous fat

Answer:E

Explanation:

The subcutaneous fat provides insulation over body cavities and can differ tremendously in thickness between body areas and between individuals. It is made up of adipose cells, fibroblasts and macrophages and is metabolically active, particularly in oestrogen metabolism (the production of oestrogen by subcutaneous fat is one of the explanations behind infertility in the overweight patient and may serve roles in the pathophysiology of polycystic ovarian syndrome). Furthermore, it provides a store of energy which can be utilized through lipolysis under the influence of steroids and to a lesser extent, adrenaline.

The other structures listed are also divided at laparotomy.

Question:

A 62-year-old receptionist suffers from polymyalgia rheumatica for a number of years and is maintained on 30mg of prednisolone, the minimum dose of steroids required to control symptoms of morning stiffness and pain. As a consequence of long-term steroids she has developed multiple vertically orientated, atrophic purple linear marks symmetrically on her abdomen that have never been painful, but are a cosmetic problem.

Which one of the following is correct?

A) Burrow

B) Excoriation

C) Fissure

D) Keloid

E) Striae

Answer:E

Explanation:

Long term use of glucocorticosteroids is discouraged due to the number and severity of adverse side effects which increase the risk of dangerous complications such as hypertension, diabetes and osteoporosis. Steroids also have a number of effects on the skin such as easy bruising, poor wound healing, increased susceptibility to infections and often a rebound flare of inflammatory skin disease, such as psoriasis on cessation. Some individuals develop acne when started on high dose steroids. The lesions described here are abdominal striae which are a result of changes in cutaneous connective tissues induced by corticosteroids.

Burrow is classically seen in the finger webs of patients with Scabies caused by the parasite Sarcoptes Scabeii, and can be teased out by skilful hands to clinch the diagnosis. Excoriations represent objective evidence of pruritus and may be seen around vesicles, bullae or overlying any skin lesions. Chronic scratching of eczema for example may cause lichenification, where the skin becomes thickened and plaque-like with exaggeration of skin creases – an example of a secondary lesion.

A fissure is a break in the skin, often linear that can result from trauma, infection or inflammation and can be painful. A keloid is a form of scarring caused by an exaggerated response to wound healing with granulation tissue forming beyond the original wound. It is often seen in the context of surgery or piercings, but can also occur as a result of inflammatory skin disease such as acne vulgaris. They are more common in certain ethnic groups such as those of African and Asian descent. Keloids are firm, rubbery lesions and are non-tender.

Question:

An 18-month-old child stops playing with his toys and becomes less responsive during the course of the day, developing a fever of 39 degrees. His mother removes his clothes in response to the fever and under his socks finds several purple flat lesions around 6-8mm in diameter bilaterally that do not blanch when she rolls a glass tumbler over them. She calls the ambulance immediately.

Which one of the following is correct?

A) Ecchymosis

B) Haemangioma

C) Haematoma

D) Pupura

E) Telangiectasia

Answer:D

Explanation:

A bleed under the skin (therefore non-blanching due to extravasated blood, rather than reactive hyperaemia which is blanching) can variously be described as purpura, ecchymosis or petechiae. Petechiae are small red-brown lesions, whereas purpura are larger and appear more purple in colour initially although both can appear in meningococcal septicaemia and will result in a positive tumbler test. However, the lesions described in this vignette are more typical of purpura than petechiae owing to their size and colour.

The distinction between ecchymosis and purpura is not clear, although it is the convention that an ecchymosis is used to refer to a larger collection of blood under the skin that may occur commonly from warfarin therapy. Ecchymosis is a term used less by specialists. A haematoma is most often reserved for a palpable collection of blood that can contribute a mass effect if within a mass limited structure (cranium), or can separate tissue planes (subaponeurotic haematoma). They are commonly traumatic rather than secondary to infectious or inflammatory disease.

Telangiectasia are superficial dilated blood vessels that can be blanched with pressure (tel = end, angi = blood vessel, ectasia = dilatation). They are typical occur in the edges of a basal cell carcinoma and contribute to the erythema seen in acne rosacea.

Question:

A 34-year-old swimwear model presents to the dermatology outpatient clinic with a two month history of a flesh coloured papule on her face. It does not cause any symptoms of itching or bleeding but she feels it is unsightly at photo shoots. On examination there is a 4mm firm flesh coloured papule at her left nasolabial fold. There is no pigmentation.

Which one of the following is correct?

A) Compound naevus

B) Dermatofibroma

C) Intradermal naevus

D) Junctional naevus

E) Viral wart

Answer:C

Explanation:

A naevus is a benign proliferation of a cellular component of the skin. Junctional naevi, intradermal naevi and compound naevi are proliferations of melanocytes and are therefore examples of melanocytic naevi. Junctional naevi appear as flat macular pigmented lesions with collections of melanocytes at the dermo-epidermal junction, intradermal naevi are collections of melanocytes in the dermis and appear as flesh coloured, non pigmented papules, and compound naevi are collections of melanocytes at both the dermo-epidermal junction and the dermis, and are therefore pigmented and raised lesions.

Dermatofibromas are flesh coloured, nodular lesions that commonly grow as a solitary lesion on the legs after an insect bite typically in young adult females. It can cause pain and itching and classically feels like a frozen pea on the skin surface and demonstrates a dimple sign due to tethering to the epidermis. Rarely, malignant transformation within the lesion can occur called dermatofibrosarcomaprotuberans (DFSP).

Question:

A 49-year-old male is gardening when he pricks himself with a rose thorn. It bleeds minimally and he returns to gardening soon after applying a plaster. Two days later he presents to his GP with a deep red pedunculated nodule around 1cm in length from the site of the original trauma. It bleeds substantially on minor trauma and is irritating the patient because he is not able to perform routine manual tasks owing to the bulk and friability of this lesion.

Which one of the following is correct?

A) Basal cell carcinoma

B) Keratoacanthoma

C) Nodular malignant melanoma

D) Pyogenic granuloma

E) Strawberry naevus

Answer:D

Explanation:

This is a classical description of a pyogenic granuloma, a misnomer since it is an acquired capillary haemangioma demonstrating no granulomatous features at all. It commonly follows trauma, and therefore occurs on areas that are prone to it, particularly the hands. It grows quickly as a red nodule that bleeds easily on contact, enlarging over several weeks. Treatment is to remove it surgically, either with a curette, cryotherapy or excision. The major differential is nodular malignant melanoma and the biopsy specimen requires histological analysis to exclude this diagnosis.

A keratoacanthoma is a rapidly growing squamoproliferative nodule that has a keratin plug at its apex, often growing on the face or arms. It is very similar histologically to a squamous cell carcinoma differentiated most accurately on the history of rapid onset from previously healthy skin. Treatment is excision biopsy and exclusion of SCC, although the lesion will resolve spontaneously in most cases.

Question:

A 38-year-old bricklayer of Irish descent presents to general dermatology clinic with a four week history of a change in a mole situated on his upper back that was noticed by his girlfriend. He mentions that it has become larger, with an irregular border, bleeds spontaneously and it has become darker in its central area. He mentions that he has frequently suffered from sunburn on his back as a teenager and during his working life.

Which one of the following is correct?

A) Excisional biopsy

B) Incisional biopsy

C) Observation with clinical photographs

D) Punch biopsy

E) Shave biopsy

Answer:A

Explanation:

This patient has a lesion that is very suspicious of a malignant melanoma. Public health campaigns have sought to inform the public to be vigilant for change in moles, to look for the ABCD of change: Asymmetry, Border changes, Colour changes, Diameter. In addition, elevation, enlargement, itch or irritation could indicate malignant transformation. Examination with a dermatoscope by experienced clinicians can identify microscopic features of malignant melanoma. Treatment of suspicious lesions (and clinical examination, even in experienced hands is not 100% sensitive, or 100% specific) is excision biopsy which serves to confirm the histological diagnosis. The primary excision is performed 2mm from the margin of the lesion, since histological depth and grade of lesion will dictate the surgical margins for excision of the scar, to the depth of fascia. Prognosis is closely related to the depth of invasion (Breslow’s thickness, or Clarke’s level) with the thickness of the lesion inversely proportional to the 5 year survival rate, and the presence of nodal or distant metastases. Lesions are poorly responsive to radiotherapy and chemotherapy, contributing to the poor prognosis of advanced malignant melanoma. A clinician should always examine for regional and general lymphadenopathy and abdominal organomegaly in the setting of any suspicious mole.

A punch biopsy is often reserved for medical dermatoses whose diagnoses is uncertain and for removing circular lesions easily with a margin. Incisional biopsies can be useful for looking for malignant change within an existing lesion, or for microbiological analysis. Clinical photographs are useful in patients with multiple atypical moles, or at high risk of malignant transformation and can be used to monitor lesions for change at serial follow-up.

Question:

A 57-year-old Japanese male presents to his family doctor with a two week history of dyspepsia, poor appetite and difficulty swallowing. He mentions that he has lost 8kg in weight in the previous month. On examination, he is obviously cachectic, has an epigastric mass, a lymph node palpable in the left supraclavicular fossa. When the physician is palpating for axillary lymph nodes, he notices that there is a purple, velvety lesion affecting both the patient’s axillae.

Which one of the following is correct?

A) Acanthosis nigricans

B) Congenital naevus

C) Metastases

D) Necrolytic migratory erythema

E) Tylosis

Answer:A

Explanation:

Acanthosis nigricans is a paraneoplastic phenomenon, in that it is caused by the humoural effects of a tumour on distant organs rather than a result of direct metastasis. It is associated particularly with adenocarcinoma of the stomach and oesophagus, with insulin resistant states such as type II diabetes, polycystic ovarian syndrome, the metabolic syndrome and obesity. This man has adenocarcinoma of the stomach as evidenced by clinical findings and the nationality of the patient – Japan has an epidemic incidence of gastric cancer owing to the frequent consumption of pickled foods and meats.

Tylosis is paraneoplastic thickening of the epidermis of the hands, and necrolytic migratory erythema is associated with a glucagonoma.

Question:

A 12-year-old boy presents to the dermatology tumour clinic wearing long sleeved clothing, gloves and a wide-brimmed hat. He is accompanied by his mother who relates a history of severe burning on the child’s first exposure to sunlight, and that despite sun avoidance and sunblocks ever since, he repeatedly burned on minimal exposure. She is concerned about new growths on her son’s skin, particularly around his face and arms. On examination, he has multiple freckles and telangiectasia around his nose and cheeks with scaly skin and palpable actinic keratoses. Of particular concern, he has a nodular, pearly telangiectatic growth on his left ear and a squamoproliferative growth on the back of his hand near several other actinic keratoses. This lesion is 2 by 3 cm with a heavily crusted surface and a palpable dermal component. There is ipsilateral axillary lymphadenopathy. His parents are alive and well, with no comparable history.

Which one of the following is correct?

A) Ehlers-Danlos syndrome

B) Gorlin’s syndrome

C) Pseudoxanthoma elasticum

D) Von-Hippel Lindau syndrome

E) Xeroderma pigmentosum

Answer:E

Explanation:

This patient has xeroderma pigmentosum, an autosomal recessive disorder of DNA repair in which there is defective cellular repair mechanisms of UV induced damage to cellular components of the skin. The phenotype can vary depending on the specific mutations but affected patients typically burn on first and repeated exposure to sunlight, and suffer from cutaneous malignancies at a very young age, commonly dying of metastatic squamous cell and malignant melanomas.

Patients develop freckles at an early stage, telangiectasia with areas of hyper- or hypo-pigmenation with the development of scaly skin and actinic keratoses. Soon after this, the development of basal cell carcinomas (such as on this patient’s ear) and squamous cell carcinomas (on this patient’s hand) develop in addition to malignant melanoma.

Treatment is by very strict avoidance of any sunlight but severe forms of the disease are fatal in the second or third decades. Genetic counselling is advised for parents of patients who can be treated for skin cancers as they present, although the fight against malignancy will prove ultimately futile.

Question:

A 10-year-old boy is brought to the GP by his mother for a rash on his legs and buttocks which does not blanch under a glass tumbler. He also complains of pain in his large joints and his abdomen. His mother mentions that he has been otherwise well apart from a sore throat two weeks ago that has now cleared. The GP carries out a urine dipstick which demonstrates microscopic haematuria.

Which one of the following is correct?

A) Henoch-Scholein purpura

B) Idiopathic thrombocytopenic purpura

C) Meningitis

D) Meningoccoal septicaemia

E) Non-accidental injury

Answer:A

Explanation:

This is a typical case of Henoch-Schonlein purpura, a rash that presents in young individuals in dependent extensor regions, associated with immune complex deposition of IgA in the glomeruli (microscopic haematuria), the joints (arthralgia), the GI tract (GI involvement; haemorrhage). It is often associated with an upper respiratory tract infection thought to trigger the immunological reaction which forms the basis of the disease. The rash is purpuric, caused by bleeding into the skin – as in other causes of purpura such as meningococcal sepsis. Whilst this diagnosis should always be considered, it will usually occur in an unwell child who is febrile. Non-accidental injury should always be similarly considered as it can be fatal if missed, however the findings here suggest primary organic disease rather than child abuse which must be correlated with the individual’s physical abilities, medical history and current social circumstances. Delayed presentation and inconsistency in the medical history are other typical features of non-accidental injury. Meningtitis is unlikely without a fever, headache or neck stiffness.

Treatment of HSP is often with steroids if there is severe systemic involvement, and around 5% of patients will go on to develop end stage renal failure requiring renal transplantation or dialysis.

Question:

A 42-year-old male presents to his GP complaining of itching and flaking of his scalp and skin on various parts of his face that are also red. On examination there is erythematous, greasy scaling of his forehead, eyebrows, hairline, chin, nasolabial fold, chest and upper back. He has evidence of scaling of his scalp and says he uses a medicated shampoo with some improvement in the scaling.

Which one of the following is correct?

A) Lichen simplex chronicus

B) Pityriasis rosea

C) Seborrhoeic dermatitis

D) Systemic lupus erythematosus

E) Tinea capitis

Answer:C

Explanation:

This is a typical description of seborrhoeic dermatitis, an inflammatory papulo-squamous skin disease characterized by erythema, flaking, scaling and itchiness association with the yeast Malassezia furfur although with a complex aetiology. Dandruff or scaling of the scalp and crusting and scaling of the nasolabial fold is typical of seborrhoeic dermatitis. Flares of disease can be triggered by intercurrent illness and it is more common in patients with HIV.

Treatment is with medicated shampoos (such as ketoconazole) to reduce scaling of the scalp, topical therapies to reduce the itch, scaling and flaking symptoms, and consideration is given to a course of oral anti-fungal agents targeted at the causative yeast. Topical corticosteroids can be used for short courses but can lead to a rebound flare effect if used for long periods.

Question:

A 3-year-old boy develops warm, red lesions on his left cheek which develop blisters containing cloudy fluid and then rupture leaving golden crusts on an erythematous base. The GP prescribes antibiotics for this infection and wishes the drug to be active against the most common causative organism of this disorder

Which one of the following is correct?

A) Group A streptococcus

B) Group B streptococcus

C) Mycobacterium tuberculosis

D) Staphylococcus aureus

E) Staphylococcus epidermidis

Answer:D

Explanation:

This is a case of impetigo, a highly contagious infection in young children most often occurring on the face. It starts as a warm erythematous rash that develops vesicles or bullae which eventually rupture leaving golden crusts (crusts are exudates). The most common bacteria implicated in impetigo is Staphylococcus aureus, although group A streptococcus, or Streptococcus pyogenes, can less commonly cause impetigo infection or co-exist with Staphylococcus aureus. Because of this, topical fusidic acid or oral flucloxacillin if the infection is widespread (both anti-staphyloccocal agents) are given in its treatment.

Impetigo can occur within a primary skin disease such as eczema, psoriasis, herpes or scabies. Staphylococcus aureus (a specific subtype of the bacteria – type71) in the very young can cause staphylococcal scalded skin syndrome (SSSS), an acute toxic illness characterised by widespread, generalised blistering and desquamation as a toxin produced by the bacteria acts against desmoglein-1 which attaches the stratum granulosum and spinosum, resulting in a sheeting off of epidermis, resembling scalding.

Staphylococcus aureus can infect the hair follicle causing folliculitis (multiple follicles), carbuncles (group of follicles) and furuncles (adjacent to follicles).

Mycobacterium tuberculosis can cause lupus vulgaris in the skin, staphylococcus epidermidis is a skin commensal that rarely causes skin disease, often a contaminant in microbiological samples and group B streptococcus is an important cause of sepsis in newborns.

Question:

A 46-year-old woman who is regularly under the care of a consultant dermatologist with chronic skin disease is referred to the medical admissions unit by her GP as an emergency with generalised erythema covering the more than 90% of her body. She is unwell with a fever of 37.9 degrees Celsius, a blood pressure of 100/70 and a pulse rate of 110/min. She is admitted to the ward, although there is no evidence of desquamation of epidermis.

Which one of the following is correct?

A) Erythrasma

B) Erythroderma

C) Sepsis

D) Staphylococcal scalded skin syndrome

E) Toxic epidermal necrolysis

Answer:B

Explanation:

Erythroderma is a state in which more than 90% of a patient’s skin is inflamed. It is a dermatological emergency as inflamed skin cannot provide an effective barrier function, resulting in a marked increase in fluid loss across the skin, loss of albumin, difficulties in thermoregulation and susceptibility to infection – a state of skin failure. Causes of erythroderma are eczema, psoriasis, pityriasis rubra pilaris, drugs and cutaneous T-cell lymphoma (Sezary syndrome).

Treatment is as an inpatient for intravenous fluid resuscitation, anti-pyretics, and treatment of the underlying disease with topical or systemic treatment as appropriate. This condition does not require antibiotics as the fever is not a result of sepsis but a response to thermodysregulation – this should be clearly recorded in the notes to prevent unnecessary blood cultures and antibiotic treatment from on-call clinical teams not familiar with the management of erythroderma.

Question:

A 26-year-old male presents to casualty with lower abdominal pain that is found secondary to urinary retention. He says that he cannot bring himself to pass urine as it is too painful. When he eventually agrees to catheterization, the house officer finds two genital ulcers that the patient did not mention. He states that they have been present for two weeks and are tender. He also has bilateral tender inguinal lymphadenopathy.

Which one of the following is correct?

A) Chancroid

B) Granuloma inguinale

C) Herpes simplex

D) Lymphogranuloma venerum

E) Syphillis

Answer:C

Explanation:

This patient has genital ulcers secondary to the herpes simplex virus. There are two main forms of the virus, with HSV-1 most often causing disease in the peri-oral regions and HSV-2 causing genital disease although genital ulceration caused by HSV-1 is increasing. Genital herpes is transmitted sexually in most cases and causes vesicles which rupture and ulcerate. It can affect the urinary epithelium causing dysuria and occasionally, urinary retention. Painful inguinal lymphadenopathy is characteristic. The diagnosis is made on clinical features supported with PCR testing of fresh fluid from the ulcer base. Treatment is with painkillers and oral acyclovir which can reduce the pain and number of lesions but is not curative. Testing for other sexually transmitted infections, contact tracing and contraceptive advice should be provided.

Urinary retention can occur because of involvement of the sacral roots of the spinal nerves or because of dysuria. In such cases, catheterisation may need to be considered to prevent hydronephrosis and renal impairment.

Syphillis and granuloma inguinale cause painless genital ulceration whereas herpes simplex and chancroid cause painful ulceration.

Granuloma inguinale is a sexually transmitted disease common in Australia, India, the Carribean and Africa and is characterised by a painless indurated nodule that ulcerates. It is in the differential diagnosis of a painless genital ulcer with syphilis. It is characterised by Donovan bodies which are intracellular inclusions caused by the responsible organism Calymmatobacterium granulomatis.

Question:

A 28-year-old lady presents to the dermatology outpatient clinic with blistering eruptions that affect her hands, forearms, upper back and chest most often when she is on holidays. She admits she drinks more alcohol than she should and enjoys all-inclusive holidays in sunny resorts. On examination there are a few active blisters that have ruptured and are in the process of healing, and multiple scars are evident on the sites she reports as being affected by these blisters.

Which one of the following is correct?

A) Bullous pemphigoid

B) Herpes simplex

C) Pemphigus vulgaris

D) Porphyria cutanea tarda

E) Systemic lupus erythematosus

Answer:D

Explanation:

The porphyrias are a group of disorders in which there is abnormal metabolism of haem molecule that is a breakdown product of haemoglobin. Porphyria cutanea tarda is the most common form of porphyria and is genetic with environmental influences such as alcohol, oestrogen and iron. Patients present with recurrent sub-epidermal blistering on sun exposed sites such as face and hands, healing with scarring. There is an association with chronic hepatitis C, and commonly of excessive alcohol. Treatment is with avoidance of exacerbating factors, such as sensible sun behaviours and sun block, reduction of alcohol intake and in resistant cases cholorquine can increase the excretion of uroporphyrin which is increased in the urine in this disease. If excess iron is contributory, venesection can reduce total body iron and help in the management of this patient group.

Systemic lupus erythematosus can cause a photosensitive rash, although blistering is not a prominent feature.

Question:

A 29-year-old hotel administrator presents to the dermatology outpatients clinic where he is a regular attendee. The dermatology registrar asks the house officer to inspect the patient’s nails before full examination to determine what signs are present and what the likely diagnosis is. The house officer inspects the patient’s hands and notices prominent nail pitting, splitting off of the distal nail plate from the nail bed, thickening of the nails with brown discoloration and subungal hyperkeratosis in some fingers.

Which one of the following is correct?

A) Alopecia areata

B) Darier’s disease

C) Eczema

D) Lichen planus

E) Psoriasis

Answer:E

Explanation:

All of the listed options are dermatological diseases which are known to affect nail growth. However, the specific abnormalities described here are typical of psoriatic nail dystrophy with nail pitting the most sensitive clinical sign, which in severe cases can cause onycholysis (splitting of nail from nail bed), nail thickening and discoloration and subungal hyperkeratosis. Darier’s disease (keratosis follicularis) affects young females, made worse by the sunshine, and is characterised by longitudinal ridges in the nails. Eczema and alopecia can cause nail pitting and lichen planus can cause the distal nail plate to become tethered to the nail bed. Nail pitting, trachyonychia (roughness of the nail) and loss of nails occur in alopecia areata and lichen planus.

Dilated nail fold capillaries can be seen with a dermatoscope in connective tissues diseases such as dermatomyositis, scleroderma and systemic lupus erythematosus. Hyperthyroidism can cause clubbing (thyroid acropachy) and distal onycholysis. Periungal fibromas are typical of tuberous sclerosis. Trauma to nails is common and often there is a difficulty clinically separating subungal haematomas from subungal/acral melanomas when no clear history of trauma exists. Nail infection (paronychia) can be acute in which setting the responsible organism is Staphylococcus aureus, or chronic in which it is often Candida albicans in patients who work with their hands in moist conditions. Fungal nail infection is known as onychomycosis and presents as a thickened, discoloured, dystrophic nail often affecting the toes and beginning distally. It is rare for all the toenails to be involved, differentiating it from psoriatic nail changes. Treatment is with a long course of anti-fungal drugs.

Question:

A 3-year-old pre-school infant is brought to the GP by his mother as she is worried about a rash on the child’s, face, neck and trunk. On examination, the child appears well but there are numerous scattered flesh coloured, pearly papules with an umbilicated centre around 2-3mm in diameter. Some have been excoriated to reveal a cheesy white material that can be expressed from lesions when they are squeezed.

Which one of the following is correct?

A) Molluscum contagiosum

B) Orf

C) Skin tags

D) Tinea corporis

E) Warts

Answer:A

Explanation:

This child has the typical lesions of molluscum contagiosum, a cutaneous disease caused by a poxvirus which has now been named the molluscum contagiosum virus. It often affects children less than 10 years of age, but can also occur through sexual transmission and in patients with HIV/AIDS spectrum disease where immunosuppression can increase the risk of infection.

Lesions are pearly or flesh coloured, classically with a dimpled or umbilicated top. It is a self-limiting infection although is very contagious and can infect broken skin in the same patient. Most lesions disappear within 12 months, but can take longer, and treatment is symptomatic to control itching and to treat secondary infections. Sometimes cryotherapy, curettage, and even excision may be attempted in older individuals, but these management strategies are poorly tolerated in children.

Question:

A 23-year-old medical student is seen at follow up in the dermatology outpatient clinic. She is known to suffer from acne vulgaris for three years and is on a long term oral treatment for this disease which does show evidence of improvement with fewer inflammatory comedones with a more restricted distribution on her face, chest and back. However, she complains of a discoloration of her skin which on examination has a generalised grey-blue hue with some discoloration of the gums.

Which one of the following is correct?

A) Amiodarone

B) Chlorpromazine

C) Erythromycin

D) Gold

E) Minocycline

Answer:E

Explanation:

This patient has acne vulgaris and the two medications listed which are treatments for acne vulgaris are minocycline and erythromycin. Minocycline can cause blue-grey pigmentation of the skin, sclera, gums and teeth which appears not predictably dose dependent but is most severe in those treated long term for acne vulgaris or rosacea. Pigmentation can reverse on cessation of treatment but discoloration of teeth is permanent. Tetracyclines of all varieties can cause teeth discoloration as they chelate calcium which explains their contraindication in pregnant or breast feeding women and children under 12 years of age. Additionally, tetracyclines must be taken on an empty stomach as foods such as milk interfere with their absorption.

Amiodarone can cause slate grey pigmentation of the skin and photosensitive reactions but the patient will be older with a history of cardiac disease, typically atrial fibrillation. Gold therapy, most commonly used in rheumatoid arthritis as a disease modifying agent can cause bronze discoloration of the skin due to cutaneous deposition, and chlorpromazine can cause grey discoloration in patients treated for psychotic disease.

Question:

A 28-year-old female with learning difficulties is brought to accident and emergency where her triage observations are BP 80/40mmHg, pulse 130bpm, temperature 39.5 degrees. Her chest is clear, heart sounds are normal, although she has a generalized blanching rash over her trunk and limbs. Her mother says she has got more ill throughout the day and has had a couple of episodes of diarrhoea, with some abdominal pain and one episode of vomiting. Her only medication is tranexamic acid. Initial blood tests show evidence of renal impairment.

She is taken to the intensive care unit for inotropic support as her blood pressure is not responsive to fluids.

Which one of the following is correct?

A) Echocardiogram

B) Serum aspirin estimation

C) Skin biopsy

D) Stool microscopy and cultures

E) Vaginal examination and removal of foreign body

Answer:E

Explanation:

This is a case of toxic shock syndrome, a life-threatening condition that results from toxin-mediated disease most commonly from Staphylococcus aureus, but also Streptococcus pyogenes. It is associated with retained superabsorbent tampons in which these bacteria are able produce a superantigen (TSST-1) which unlike conventional antigens, can bypass immunological antigen presentation mechanisms and produce a severe, generalized and fulminant immune response in which up to 20% of T-cells can be activated at any one time.

Patients with this condition have clinical shock, which may not respond to fluids and evidence of multiple organ involvement. Its onset is too quick and severe for gastroenteritis or endocarditis (in the absence of a murmur). Treatment is by recognition of TSS as a possibility and removing the source of the infection. In a patient with learning difficulties and history of heavy periods (tranexamic acid is used to treat menorrhagia), a vaginal examination with removal of the tampon is the only intervention which will arrest the production of TSST-1.

The rash of TSS is erythematous and blanching, resembling sunburn and can affect any part of the body. In surviving patients, this rash desquamates 10-14 days after its onset.

Question:

A 16-year-old girl is referred to general dermatology clinic for acne vulgaris that she has suffered from for three months. She becomes very upset during the consultation saying it is interfering with her relationship with her boyfriend and that others at school are noticing it and commenting. She has already tried some topical therapies, but states she wishes it “would go away” and that she is afraid of scarring. On examination there are mixed comedones, papules and pustules affecting her face, upper chest and back but no nodulocystic changes.

Which one of the following is correct?

A) Optimization of topical therapies

B) Oral tetracyclines

C) Oral macrolides

D) Isotretinoin

E) Reassurance

Answer:D

Explanation:

This patient has moderate acne vulgaris, unresponsive to initial therapies. It must always be considered however that dermatological disease carries a significant psychological burden that at vulnerable ages can particularly cause a huge global morbidity to those affected by it. This impact must be assessed together with the objective findings on examination to determine whether Roaccutane or isotretinoin is appropriate for that patient. This girl would be a candidate for this drug as although her acne vulgaris is moderate, the impact of it on her life is considerable.

Isotretinoin is a vitamin A analogue and is highly teratogenic. Therefore patients must remain on strict contraception during treatment and for a month afterwards, with pregnancy excluded before commencing treatment. Other side effects include hepatitis, hyperlipidaemias, dry mucocutaneous surfaces (dry eyes, dry mouth). Patient should be advised not to wax as the skin is fragile during treatment and will easily desquamate. Contact lenses are not well tolerated during treatment.

Question:

A 45-year-old car mechanic presents to the accident and emergency department with a 36 hour history of a spreading, warm, tender rash on his left leg which appears swollen. At triage his vital signs were of a heart rate 110/min, BP 110/70mmHg and a respiratory rate of 18, temperature of 38.2 degrees Celsius and he feels unwell. On examination there is well demarcated region of erythema, which blanches on pressure, but is palpably warmer and more tender than the surrounding skin. He has ipsilateral tender inguinal lymphadenopathy and there is evidence of tinea pedis between the toes of the left foot. He cannot walk on his leg due to the pain and swelling. He has no known drug allergies.

He had initially presented the previous day to casualty at the onset of the rash and had three doses of oral amoxicillin but without any clinical improvement. Blood cultures taken by the previous day in casualty grow gram positive cocci growing in clusters which are both catalase and coagulase positive.

Which one of the following is correct?

A) Intravenous flucloxacillin

B) Oral clindamycin

C) Oral prednisolone

D) Topical 1% hydrocortisone

E) Topical fusidic acid

Answer:A

Explanation:

This patient demonstrates classical clinical signs and symptoms of cellulitis, an infection of the subcutaneous tissues. The source of infection is often a break in the skin of the foot or shin (classically, athlete’s foot or tinea pedis), particularly in those who have peripheral vascular disease or diabetes which lead to increased susceptibility to infection. The causative organism is in most cases Streptococcus pyogenes or Staphylococcus aureus and treatment should be guided according to microbiological results. The coagulase and catalase positive cocci growing in clusters indicates Staph. aureus as the responsible organism, and the optimal treatment for methicillin-sensitive staphylococcus aureus is flucloxacillin.

Topical anti-biotics do not reach deep tissues in sufficient concentrations to be effective, and the choice is between oral and intravenous antibiotic agents depending on how septic or unwell the patient is. In this case, there is confirmed bacteriaemia (temperature of 38.2) and tachycardia with evidence of spreading erythema and an immobile patient, and intravenous anti-biotics are warranted in this setting. If the patient is ambulatory and well, then oral anti-biotics may be sufficient, although clindamycin is often used as second line in patients with severe penicillin allergies. Oral and topical steroids do not have any role in the treatment of cellulitis.

Question:

A previously healthy 35-year-old man presents to his GP with an 18-month history of weight gain, fatigue, weakness, easy bruising and loss of libido. On direct questioning, he does have some degree of polydipsia and polyuria. On examination there is centripetal obesity with purple striae visible on his abdomen and evidence of proximal myopathy. Body hair distribution and secondary sexual characteristics are normal. His ankle reflexes relax normally.

Which one of the following is correct?

A) Cushing’s syndrome

B) Drug abuse

C) Hypogonadism

D) Hypothyroidism

E) Type I diabetes mellitus

Answer:A

Explanation:

Cushing’s syndrome results from prolonged, excessive exposure to glucocorticoids. The most common cause of Cushing’s syndrome in general medical practice is the chronic use of steroid medication. Endogenous causes are rarer and include autonomous adrenal secretion by adrenal tumours, ectopic ACTH secretion by a neuroendocrine-derived tumour (e.g. small-cell lung carcinoma and carcinoid tumours), and Cushing’s disease, where ACTH is secreted by a pituitary adenoma. The complications of Cushing’s syndrome include DM, hypertension and cardiovascular disease, osteoporosis, infection and psychiatric disease. Management depends on the cause:

Iatrogenic: Stop or reduce the dose steroid medications if possible.

Cushing's disease: Selective removal of pituitary adenoma via a trans-sphenoidal approach. Bilateral adrenalectomy if the source cannot be located or recurrence post-surgery (complications include Nelson's syndrome: post adrenalectomy development of a locally aggressive pituitary tumour (corticotrophinoma) due to lack of negative feedback). Pituitary radiotherapy is effective in children and is used in adults to prevent Nelson's syndrome.

Adrenal adenoma or carcinoma: Adrenalectomy: curative for adenoma, rarely for carcinoma. Radiotherapy & adrenolytic drugs (mitotane) follow if a carcinoma is present.

Ectopic ACTH: Surgery if the tumour can be located and has not become locally or systemically advanced.

Medical treatment, e.g. metyrapone or ketoconazole, are used to reduce cortisol secretion pre-surgery or while awaiting radiation to become effective.

Question:

An 85-year-old man with a longstanding history of type 2 DM presents to his GP with pain in his left thigh of 3-months duration. On examination, the left quadriceps is wasted and tender, with a diminished knee-jerk reflex on that side. Sensory examination in the left lower limb shows mild loss of fine touch and proprioception in the feet only, the same as on the right hand side. The GP asks the medical student what the cause of this patient’s thigh pain is.

Which one of the following is correct?

A) Delayed healing of fractured left femur

B) Diabetic amyotrophy

C) Diabetic neuropathy

D) Mononeuritis multiplex

E) Myositis secondary to infection

Answer:B

Explanation:

Diabetic amyotrophy involves painful wasting of the quadriceps and other pelvifemoral muscles. The pathogenesis of this condition is not fully understood but it generally occurs in the context of poor glycaemic control. It has been known to resolve once treatment is optimized and glycaemic control is re-established. Electrophysiological testing may demonstrate lumbosacral radiculopathy, plexopathy, or proximal crural neuropathy. The natural course of amyotrophy is variable with gradual but often incomplete resolution. Diabetic sensory peripheral neuropathy is also present in this patient, but is symmetrical and limited to the feet which would not explain the far more proximal thigh muscle wasting and loss of associated reflex – expressions of motor neuropathy. Microvascular disease in diabetes is also expressed as diabetic nephropathy, diabetic retinopathy and autonomic neuropathy.

Question:

An 80-year-old man with a 30-year history of poorly-controlled Type 2 DM presents to his GP with a sudden, painless, total loss of vision in his left eye. Fundoscopy reveals loss of the red reflex in the affected eye, with a grey haze obscuring the retina. There is also clearly an element of proliferative retinopathy present, although the patient has not complained of visual problems until now.

Which one of the following is correct?

A) Retinal artery occlusion

B) Retinal vein occlusion

C) Retinal detachment

D) Retinal haemorrhage

E) Vitreous haemorrhage

Answer:E

Explanation:

Vitreous haemorrhage is one of the commonest causes of sudden visual loss in patients with diabetes. It can occur in poorly-controlled diabetes as a result of proliferative retinopathy, and can cause floaters or complete visual loss. It can also occur following retinal tears, or as a result of neovascularisation secondary to branch retinal vein occlusion. The haemorrhage may be resorbed over a period of months (thereby allowing a degree of visual improvement) but further haemorrhage or tractional retinal detachment can supervene. In any case, emergency ophthalmological referral is warranted to rule out retinal detachment as a cause of sudden visual loss, usually by means of a B-scan ultrasound assessment as direct visualization of the retina through the vitreous haemorrhage is not always possible. Retinal artery and retinal vein occlusions would not prevent visualization of the retina or loss of red reflex although can present with unilateral dense visual loss. Retinal detachment may be preceded by floaters and flashes, field loss and gradually falling visual acuity.

Question:

A 62-year-old man with a 20-year history of reasonably well-controlled type 2 DM has recently been started on a new drug by his GP, to further optimize glycaemic control. However, he begins to suffer from disturbing flatulence after taking it.

Which one of the following is correct?

A) Acarbose

B) Glibenclamide

C) Gliclazide

D) Nateglinide

E) Rosiglitazone

Answer:A

Explanation:

Acarbose is an intestinal a-glucosidase inhibitor that delays carbohydrate absorption (by decreasing breakdown of starch to simple sugars), thereby reducing post-prandial hyperglycaemia. It is used as an add-on drug to many diabetic treatment regimes, and is chewed at the start of each meal. Its principle side-effects are intestinal (especially flatulence, which is usually poorly tolerated; diarrhoea; and abdominal distension and pain), but note that it can rarely cause hepatic dysfunction as well. Complex carbohydrates in the lower GI tract are metabolized by gut bacteria causing the production of gas, as with other high fibre foods. This side-effect can be troublesome and patients must be counseled appropriately.

Question:

A 24-year-old man presents to his GP with a 2-day history of progressive polyuria and polydipsia after a head injury. After searching the online literature, he is concerned that he has begun to develop type 1 diabetes mellitus. After preliminary investigations, he is trialled on intranasal desmopressin, which surprisingly cures his symptoms.

Which one of the following is correct?

A) Cranial diabetes insipidus

B) Diabetes mellitus

C) Drug-induced diuresis

D) Nephrogenic diabetes insipidus

E) Primary polydipsia

Answer:A

Explanation:

Cranial diabetes insipidus is caused by a deficiency of secretion of antidiuretic hormone (ADH, also known as ‘arginine vasopressin’) by the posterior pituitary gland. It is a recognized complication of head injuries (especially basal skull fractures which may traumatize the pituitary stalk), as well as a common complication of pituitary and hypothalamic surgery. Biochemically, it can be demonstrated by an elevated serum osmolality with an inappropriately low urine osmolality. The correction of this by desmopressin (a synthetic ADH analogue) as part of the ‘water deprivation test’ is confirmatory and excludes nephrogenic diabetes insipidus in which there is resistance to ADH.

Question:

A 50-year-old man attends a well man clinic, at which his blood pressure is found to be 180/110 mmHg at successive consultations. General examination is normal with a BMI of 22.5 with normal fat distribution and no cutaneous or skeletal abnormalities. Initial blood tests reveal a normal serum sodium concentration but a degree of hypokalaemia. After trying a number of anti-hypertensives (to which he responds poorly), he is started on spironolactone, which causes his BP to drop to gradually to 120/90 mmHg.

Which one of the following is correct?

A) Acromegaly

B) Adrenal carcinoma

C) Conn’s syndrome

D) Cushing’s syndrome

E) Phaeochromocytoma

Answer:C

Explanation:

Primary hyperaldosteronism involves the excess production of aldosterone, independent of the renin-angiotensin system, causing increased sodium and water retention, and decreased renin release. It should be considered in all individuals with hypertension, hypokalaemia or alkalosis, who are not on diuretics. Sodium tends to be mildly raised or normal. Conn’s syndrome itself is responsible for about 2/3 of cases and is due to a solitary aldosterone-secreting adenoma. Diuretics that block the distal tubular Na+/K+ ATPase pump or antagonize aldosterone (e.g. potassium-sparing diuretics like spironolactone) are effective forms of treatment but if an adenoma can be demonstrated and localized, surgery (e.g. laparoscopic adrenalectomy) offers the best chance of a long-term cure. Conn’s syndrome is probably often missed since not all patients are overtly hypokalaemic. Renin and aldosterone measurements, taken whilst supine and after the patient has been upright for 4 hours, help to confirm the diagnosis. Conn’s syndrome patients do not have glucocorticoid excess and consequently, will not demonstrate features of Cushing’s disease on examination.

Question:

A 34-year-old woman presents to her GP with a 4-month history of a painless, enlarging mass in her neck. Examination reveals a smooth, painless lump just right of the midline and in the lower third of the neck. The lump demonstrates some degree of fluctuance and moves on swallowing but not on tongue protrusion. Although clinically euthyroid, the patient’s thyroid function tests demonstrate elevated levels of free thyroxine but no detectable TSH.

Which one of the following is correct?

A) Multinodular goitre

B) Thyroglossal cyst

C) Thyroid adenoma

D) Thyroid carcinoma

E) Viral thyroiditis

Answer:A

Explanation:

In this case, the patient’s clinical findings suggest a solitary thyroid nodule. However, one must bear in mind that in clinical practice, this type of lump is most commonly a single prominent nodule within a multinodular thyroid gland. The nodule could also be a carcinoma but the investigative finding of increased thyroid function is extremely rare with thyroid carcinoma. This can, however, occur in multinodular goitre due to the development of autonomous hyperfunctioning nodules (toxic multinodular goitre or Plummer’s syndrome). Note that although a thyroglossal cyst is commonly associated with upward movement on tongue protrusion, these cysts are not known to affect thyroid hormone levels.

Question:

A 52-year-old man is brought into Casualty by the ambulance crew after feeling extremely unwell whilst in the park. He is known to be hyperthyroid but has a history of poor compliance with carbimazole treatment. He admits to not taking it for the past 3 months. On examination, he is drowsy, confused and sweating profusely with a pyrexia of 39oC. He is tachypnoeic (respiratory rate 30), tachycardic (heart rate 120 bpm) and in atrial fibrillation.

Which one of the following is correct?

A) 50% glucose

B) Hydrocortisone

C) Lugol’s iodine

D) Propranolol

E) Propylthiouracil

Answer:C

Explanation:

Thyrotoxic crisis is an endocrine emergency, the signs and symptoms of which are similar to those of severe hyperthyroidism (e.g. fever, agitation, confusion, coma, tachycardia, atrial fibrillation, diarrhoea and vomiting, goitre, thyroid bruit, which may simulate an acute abdomen). Precipitants include recent thyroid surgery or radioiodine, infection, myocardial infarction and trauma. The diagnosis may be confirmed with technetium uptake if possible, but this should not delay any necessary urgent treatment. It should be treated with propylthiouracil or carbimazole (the former also inhibits peripheral conversion), steroids, beta-blockers and fluids. Note that Lugol’s iodine should NOT be used acutely as it can lead to further thyroid hormone release, but it may be used a few hours after anti-thyroid medication to help inhibit thyroid function.

Question:

A 43-year-old man experiences perioral tingling and weakness 24 hours after undergoing a subtotal thyroidectomy for thyroid malignancy. Routine blood tests demonstrate a normal full blood count, normal renal function and albumin, but a corrected serum calcium level of 1.9 mmol/L.

Which one of the following is correct?

A) Dietary calcium deficiency

B) Hypoparathyroidism

C) Pseudohypoparathyroidism

D) Pseudopseudohypoparathyroidism

E) Vitamin D deficiency

Answer:B

Explanation:

Hypoparathyroidism is a relatively common and transient complication of subtotal thyroidectomy. The reduced PTH levels result in high phosphate and low calcium levels. Symptoms of hypocalcaemia include perioral paraesthesia, cramps and depression; signs include Trousseau’s sign (carpal spasm after inflating a blood pressure cuff over the brachial artery for 3 minutes) and Chvostek’s sign (ipsilateral contraction of facial muscles induced by tapping over the facial nerve passing through the parotid gland). If the patient is stable and only mildly symptomatic, oral calcium supplementation may suffice. However, for significant symptoms, 10 ml of 10% calcium gluconate may be administered intravenously. Approximately 10% of patients undergoing subtotal tyhroidectomy will suffer transient hypocalcaemia due to oedema around the glands secondary to surgical trauma which in most cases resolves. Only around 1% of patients will suffer from permanent hypoparathyroidism, and in these cases it results from inadvertent surgical removal of one or more parathyroid glands.

Pseudohypoparathyroidism is an autosomal dominant condition characterized by end-organ resistance to PTH. Features of this include learning difficulties, short stature and short 4th and 5th metacarpals. This is accompanied by a low PTH, low calcium and high phosphate. Pseudopseudohypoparathyroidism describes the condition where all phenotypic features of pseudohypoparathyroidism are present with normal serum biochemistry.

Question:

An 82-year-old woman with a recent diagnosis of small-cell lung carcinoma complains to her GP of embarrassing hirsutism. Physical examination reveals a plethoric face, acne, abdominal striae and multiple bruises of varying ages. Upon referral to the endocrinologist, a test is performed to confirm the diagnosis.

Which one of the following is correct?

A) Aldosterone and renin levels

B) Dexamethasone suppression test

C) Hydrocortisone suppression test

D) Short Synacthen test

E) Urinary free catecholamines

Answer:B

Explanation:

This patient presents with hirsutism, striae, acne, plethora and bruising, all of which are features of Cushing’s syndrome. Other ‘Cushingoid’ features include psychosis, cataracts, impaired wound healing, impaired glucose tolerance (which may progress to diabetes mellitus) and proximal myopathy. From her history of small-cell lung carcinoma, the cause of her Cushing’s syndrome is likely to be ectopic ACTH secretion from the tumour.

The diagnosis of Cushing’s syndrome is established by finding a raised 24-hour urinary free cortisol or a low dose dexamethasone suppression test (i.e. not a random cortisol level, as this exhibits diurnal variation.) In the dexamethasone suppression test, the high serum cortisol in Cushing’s syndrome will not be suppressed by low-dose (‘overnight’) dexamethasone. Plasma ACTH may then be measured to ascertain whether it is the adrenal gland or an ACTH-secreting tumour (i.e. of either the pituitary or an ectopic source) that is causing the problem. If it is the latter, a high-dose dexamethasone suppression test (which would suppress an ACTH-secreting pituitary adenoma, thereby confirming primary Cushing’s disease) may be performed. Tumour localization can then be sought with abdominal CT or MRI scanning, adrenal venous sampling or inferior petrosal sinus sampling (i.e. for an ACTH-secreting source) may be performed.

Question:

A 25-year-old woman presents to her GP with the sensation of a lump in her throat that occasionally causes discomfort on swallowing. Video fluoroscopic imaging and upper GI endoscopy reveal no obvious abnormalities with oesophageal function or anatomy. There are no other neurological abnormalities or history of fatiguability. Routine full blood count, urea and electrolytes do not detect any abnormalities.

Which one of the following is correct?

A) Chagas’ disease

B) Diffuse oesophageal spasm

C) Globus pharyngeus

D) Myasthenia gravis

E) Pharyngeal web

Answer:C

Explanation:

Globus pharyngeus (previously known as globus hystericus) describes the sensation of a foreign body at the level of the suprasternal notch. However, detailed examination and investigations often reveal no organic pathology. Some patients describe difficulty in swallowing, and some find that swallowing particular foods or drinking liquids relieves the discomfort. The symptoms are typically worse when the patient is under stress (possibly due to cricopharyngeal spasm during this time). Treatment may be directed towards addressing underlying problems (i.e. causes of stress) but it is imperative to first rule out other major causes of dysphagia. Dysphagia in patients over 55 years of age often warrants upper GI endoscopy to exclude oesophageal and gastric carcinoma which are more common in this age group. Causes may be divided into endoluminal (such as oesophageal carcinoma, extraluminal (such as extrinsic compression from enlarged left atrium or lymph node), or abnormalities of the oesophageal wall (such as myasthenia or diffuse oesophageal spasm).

Question:

A 2-week-old neonate has been vomiting since birth, losing greater than 10% of body weight. There was initially some regurgitation of his feed but the vomiting has become persistent and contains greenish fluid suggestive of bile. Antenatal ultrasound scans had revealed polyhydramios. His mother was 43 years old, but declined antenatal screening for fetal chromosomal abnormalities. Plain radiography demonstrates a distended stomach and duodenum

Which one of the following is correct?

A) Congenital pyloric stenosis

B) Duodenal atresia

C) Intussusception

D) Meningitis

E) Viral gastroenteritis

Answer:B

Explanation:

The presence of bile in the vomitus of a neonate who begins to vomit immediately after birth is a serious sign. In this case is it indicative of duodenal atresia. Clues in the history are high maternal age and refusal of antenatal screening – this increases the risk of Down’s syndrome in the neonate (mothers at 40 years of age have a 1:100 chance of having a child with Down’s syndrome, the risk at 45 years of age is 1:50). Polyhydramnios can often indicate reduced swallowing in the neonate, in this case due to duodenal atresia. Other possible causes of obstruction are a band, midgut volvulus, meconium ileus and an annular pancreas. If untreated, any of these conditions may progress to perforation and infarction of the gut.

Duodenal atresia may be due to a complete absence of the duodenum, a fibrous band, a diaphragm, or a partial diaphragm. It most commonly occurs at the point of junction of fore- and midgut within the duodenum below the major duodenal papilla. It should be investigated by electrolyte and acid-base monitoring (with correction of abnormalities), plain abdominal X-ray (which may show a 'double bubble' sign of duodenal obstruction) and barium studies (which may show stenosis). Treatment involves surgical correction via a duodenojejunostomy with resection of the atretic section.

Question:

A 67-year-old man presents to his GP with a 2-month history of constipation, flatulence and colicky left-sided abdominal pain relieved by defecation. He has lost 3 kg in weight over the last month but puts this down to a change in his diet and an increasingly active lifestyle. He has no family history of malignancy and initial blood tests are normal.

Which one of the following is correct?

A) Chronic idiopathic constipation

B) Colorectal cancer

C) Diverticular disease

D) Irritable bowel syndrome

E) Simple constipation

Answer:C

Explanation:

Diverticula are herniations of the gut wall (commonest in the sigmoid colon) that are suggested to result from high intraluminal pressures, which are presumably due to the low fibre diets common in developed (especially Western) countries. The incidence of diverticulosis increases with age, such that a third of the UK population will have it by the age of 65. The main complications of diverticulosis are severe inflammation (diverticulitis) with subsequent fistulae, haemorrhage, diverticular abscess formation, perforation and post-infective strictures. Note that if diverticulitis is suspected (i.e. abdominal tenderness with fever, raised CRP or WCC, etc.), barium enema is contraindicated because of the risk of perforation and subsequent chemical peritonitis due to the contrast used.

Simple constipation and irritable bowel syndrome should not result in weight loss, and colonic carcinoma would often reveal a microcytic anaemia due to chronic blood loss from the site of malignancy. Colon cancer should not present with abdominal pain, unless it has progressed to bowel obstruction and a consequent acute abdomen.

Question:

A 15-year-old girl is brought to the GP by her mother, who says that her daughter has been ‘going to the toilet’ up to six times daily over the last month. The mother also says that her clothes have appeared more loose-fitting over this time. Examination reveals a slightly underweight girl with lanugo hair on her face and arms. There are also ambiguous marks on the knuckles of her right hand. Colonoscopy reveals a dark discolouration of the mucosa.

Which one of the following is correct?

A) Coeliac disease

B) Irritable bowel syndrome

C) Laxative abuse

D) Thyrotoxicosis

E) Ulcerative colitis

Answer:C

Explanation:

Laxative abuse is most often seen in association with eating disorders and is a relatively common cause of chronic diarrhoea. It may also lead to the development of electrolyte imbalances, protein-losing enteropathy and intestinal paralysis. The marks on the patient’s knuckles are abrasions indicating repeated trauma on the incisors (acquired during the induction of vomiting with her fingers). Lanugo hair (resembling the fine hair on a newborn baby) is a feature of severe bulimia – it serves to insulate the malnourished patient against heat loss. Other features suggestive of an eating disorder include low mood, weight loss, hair loss, dry skin, ankle oedema, amenorrhoea and signs of iron-deficiency anaemia (e.g. koilonychia, palmar crease pallor, angular stomatitis and tachycardia). Chronic abuse of senna causes melanosis coli – dark discoloration of the colonic mucosa which is characteristic.

Question:

A 27-year-old woman presents to her GP with a 5-month history of unintentional weight loss and intermittent diarrhoea. She claims that her previously heavy menstrual periods have now become surprisingly light. Examination reveals onycholysis, a resting tachycardia, warm peripheries, and hypopigmented patches over the dorsum of her hands. There is no evidence of oral ulceration.

Which one of the following is correct?

A) Anorexia nervosa

B) Crohn’s disease

C) Laxative abuse

D) Thyrotoxicosis

E) Whipple’s disease

Answer:D

Explanation:

This lady has signs and symptoms consistent with thyrotoxicosis. Some of the symptoms include weight loss (despite increased appetite), heat intolerance, sweating, diarrhoea, tremor, irritability, frenetic activity, emotional lability, psychosis, itch, oligomenorrhoea (patients may present with infertility). Signs include resting tachycardia, AF, warm peripheries, fine tremor, palmar erythema, hair thinning, lid lag, and lid retraction. There may be a goitre, thyroid nodules or bruit depending on the cause. It is important to do an autoantibody screen (especially since the commonest causes of hyper- and hypothyroidism in the UK are Graves’ and Hashimoto’s diseases respectively – both autoimmune conditions). The hypopigmentation seen in this case is due to vitiligo, an organ-specific autoimmune disease (which have a tendency to cluster in the same patient).

The triad of signs specific to Graves’ disease is ophthalmopathy, thyroid acropachy and pretibial myxoedema (not to be confused with the ‘myxoedema’ of hypothyroidism). After thyroid function tests confirm the abnormality, treatment options include symptomatic (propranolol for tachycardia or tremor), medical (carbimazole or propylthiouracil via titration or block-and-replace), radioiodine (contraindicated in pregnancy and lactation) and surgery. Propylthiouracil is preferred to carbimzole in pregnancy as there is reduced incidence of neonatal goitre. However, the block and replace regimen is contraindicated since thyroxine supplemented pharmacologically does not cross the placenta.

Question:

A 52-year-old man presents to his GP with a 5-month history of worsening epigastric pain and dyspepsia. This does not resolve with antacid medication and so a referral to Gastroenterology is made. Subsequently, upper GI endoscopy reveals multiple gastric as well as duodenal ulcers. The physician orders a serum gastrin level which returns as 250pmol/L (normal range 4.8--96 pmol/L).

Which one of the following is correct?

A) Chemical gastroduodenitis

B) Chronic active gastritis

C) Infective gastritis

D) Pyloric stenosis

E) Zollinger-Ellison syndrome

Answer:E

Explanation:

Zollinger-Ellison syndrome (ZES) is the association of peptic ulcers (most commonly multiple duodenal ulcers) with a gastrin secreting adenoma (i.e. gastrinoma). Gastrin results in excessive gastric acid production, which may produce multiple ulcers in the duodenum and stomach. The adenoma is usually found in the pancreas, although it may arise in the stomach or duodenum. Most cases are sporadic; 20% are associated with Multiple Endocrine Neoplasia type 1 (MEN1). 60% are malignant with metastases found in local lymph nodes and the liver. Symptoms of ZES include abdominal pain and dyspepsia (from the ulcers) and chronic diarrhoea due to inactivation of pancreatic enzymes (also causing steatorrhoea) and damage to intestinal mucosa. About 0.1% of patients have peptic ulcer disease as a part of ZES. It should therefore be suspected in those with multiple peptic ulcers, ulcers distal to the duodenum, or a family history of peptic ulcers (or of islet cell, pituitary, or parathyroid adenomas). Raised fasting serum gastrin levels are usually present; otherwise, the secretin stimulation test may be used. The gastrinoma is often difficult to locate and somatostatin receptor scintigraphy, endoscopic ultrasound and CT are used to localise and stage the tumour. Treatment includes proton-pump inhibitors, octreotide (a somataostatin analogue) and if possible, tumour resection.

Question:

A 55-year-old man is referred by his GP to the Medical Assessment Unit for a rapidly worsening chest infection. On examination, he appears unwell and is pyrexial, with signs of left lower lobe pneumonia. However, the consultant physician notices icteric sclerae and orders liver function tests together with routine bloods. The results are: haemoglobin 14.2 g/dl, WCC 25.4 x 109/l, platelets 400 x 109/l, Na+ 136 mmol/l, K+ 3.7 mmol/l, urea 6.0 mmol/l, creatinine 80 µmol/l, random blood glucose 7.3 mmol/l, total bilirubin 40 µmol/l, AST 19 IU/l, ALT 29 IU/l, alkaline phosphatase 50 IU/l, albumin 45 g/l. Abdominal ultrasound reveals no abnormalities, and a split bilirubin estimation demonstrates unconjugated hyperbilirubinaemia.

Which one of the following is correct?

A) Carcinoma of the head of the pancreas

B) Gallstones

C) Gilbert’s syndrome

D) Liver metastases from lung cancer

E) Primary liver tumour

Answer:C

Explanation:

Gilbert’s syndrome is a metabolic disorder thought to be inherited in an autosomal dominant fashion. It is a common cause of unconjugated hyperbilirubinaemia and is due to decreased bilirubin UDP-glucuronosyltransferase activity. Prevalence is estimated at 1-2%. The onset is shortly after birth, but it may go unnoticed for many years. Jaundice occurs during intercurrent illness, and bilirubin rises on fasting. Liver biopsy is normal, but should rarely be required clinically. It is a benign condition requiring reassurance. Traditionally, barbiturates have been used to induce hepatic enzymes, increasing bilirubin metabolism. However, since bilirubin is not toxic in the adult patient, this is not required. Neonatal jaundice however can lead to kernicterus with permanent brain damage, and consequently hyperbilirubinaemia in the postnatal period must be monitored closely and treated with phototherapy and exchange transfusion if required.

All other causes listed would cause an obstructive jaundice that results in conjugated hyperbilirubinaemia associated with pale stools since bilirubin is prevented from entering the GI tract, where it is metabolized to stercobilin – responsible for giving faecal material a dark colour.

Question:

A 35-year-old Pakistani immigrant is referred by his GP to the Gastroenterologist for a 3-month history of progressive weight loss and loose, offensive stools. Initial blood tests reveal a macrocytic anaemia and hypoalbuminaemia, although U&Es, LFTs, random blood glucose and thyroid function tests are all within normal limits. A chest radiograph demonstrates some evidence of apical lung calcification with hilar lymphadenopathy. An upper GI endoscopy does not reveal any abnormalities.

Which one of the following is correct?

A) Crohn’s disease

B) Giardiasis

C) Sarcoidosis

D) Tropical sprue

E) Tuberculous enteritis

Answer:E

Explanation:

Tuberculosis, which should always be considered in individuals from endemic areas, has affected this gentleman’s terminal ileum, resulting in malabsorption. A similar ‘terminal ileitis’ may develop from Crohn’s disease and ‘backwash ileitis’ of ulcerative colitis. However, one should bear in mind that inflammatory bowel disease is uncommon in Asian and South-East Asian populations, unlike in most Western countries. Tuberculosis should therefore be excluded in this case by sputum culture (for acid-fast bacilli) or biopsy of lung tissue (histologically demonstrating a caseating granuloma); the tuberculin test (e.g. Mantoux test) may also be used. Treatment is with anti-tuberculous therapy for 6-12 months (i.e. 6 months of rifampicin and isoniazid supplemented in the first 2 months with pyrazinamide and ethambutol). Vitamin supplementation (particularly vitamin B12 which is absorbed in the terminal ileum) should also be prescribed. Rifampicin causes tears and urine to turn orange, may cause an hepatitis and induces hepatic cytochrome P450 enzymes. Pyrazinamide can cause hepatitis and gout, isonizaid can cause a peripheral neuropathy whose incidence is reduced with co-administration of pyridoxine, and ethambutol can cause an optic neuropathy.

Question:

A 70-year-old man with known polycythaemia rubra vera presents to his GP with a 2-week history of nausea, vomiting and abdominal pain. Examination reveals a tender hepatomegaly 3 cm below the costal margin and moderate ascites. Liver function tests reveal mildly elevated transaminases and bilirubin but a normal alkaline phosphatase. Abdominal ultrasound demonstrates a normal biliary tract without any evidence of gallstones, and Doppler ultrasound demonstrates reduced flow in the hepatic vein. He consumes 15 units of alcohol per week.

Which one of the following is correct?

A) Alcoholic hepatitis

B) Budd-Chiari syndrome

C) Chronic viral hepatitis

D) Hepatocellular carcinoma

E) Metastasis from extra-hepatic tumour

Answer:B

Explanation:

Budd-Chiari syndrome describes thrombosis of the hepatic vein with consequent hepatic dysfunction. This may present acutely if the thrombus is large with rapid onset, or may follow a more insidious course with ascites and hepatic dysfunction. The causes of this syndrome include hypercoagulable states (the Pill, pregnancy, malignancy, paroxysmal nocturnal haemoglobinuria, polycythaemia rubra vera, or inherited thrombophilias) or liver, renal or adrenal tumours. In this syndrome, hepatic vein obstruction causes ischaemia and hepatocyte damage, presenting with liver failure, or insidious cirrhosis. Abdominal pain, hepatomegaly, ascites and raised ALT occur, with portal hypertension developing in chronic forms. Useful imaging modalities include ultrasound with hepatic vein Dopplers, CT and MRI. Angioplasty, transjugular intrahepatic portosystemic shunt (TIPS) or a surgical shunt may be needed. Lifelong anticoagulation should be instituted unless there are varices present, and liver transplantation should be considered in cases of fulminant hepatic necrosis or cirrhosis.

Question:

A 45-year-old woman with a long standing history of gallstones presents to Casualty with an 18-hour history of severe abdominal pain radiating to the back. Examination reveals tachycardia, tachypnoea and low blood pressure. Investigations reveal a serum bilirubin of 54umol/L (normal range 3-17umol/L) and a serum amylase of 976iu/L (normal range 23-85iu/L). An abdominal ultrasound demonstrates a stone in the common bile duct.

Which one of the following is correct?

A) Acute pancreatitis

B) Biliary colic

C) Recurrent acute cholecystitis

D) Ruptured abdominal aortic aneurysm

E) Ureteric colic

Answer:A

Explanation:

Acute pancreatitis classically presents with sudden-onset abdominal pain with signs of shock such as tachycardia, hypotension and tachypnoea. The two commonest causes of acute pancreatitis are gallstones and alcohol (note that alcohol is the commonest cause of chronic pancreatitis). Haemorrhagic necrosis of the pancreas can cause Grey-Turner’s sign (bruising evident in the flanks due to retroperitoneal haemorrhage), or Cullen’s sign (bruising around the umbilicus due to intraperitoneal haemorrhage).

Although a raised serum amylase is seen in other abdominal emergencies (e.g. perforated duodenal ulcer), if the amylase is more than five times greater than normal, acute pancreatitis is the most likely diagnosis. However, do note that amylase is not included in the Glasgow criteria for predicting the severity of pancreatitis. Management involves prompt rehydration (beware of ‘third space sequestration’ in acute pancreatitis – large volumes of fluid accumulating in extracellular space around the pancreas) with normal saline, analgesia and close hourly observation. If gallstones are found to be the cause, ERCP (with gallstone removal) may be attempted if jaundice is progressively worsening. Repeated imaging (usually CT) is performed to monitor progress.

Question:

A 49-year-old lady with longstanding but currently well-controlled rheumatoid arthritis visits her GP for a routine blood test. She is found to have a haemoglobin of 9.6 g/dL, an MCV of 82 fL and a raised serum ferritin level. The only medication that she has been taking for her condition is paracetamol and an occasional non-steroidal anti-inflammatory drug.

Which one of the following is correct?

A) Anaemia of chronic disease

B) Autoimmune haemolytic anaemia

C) Iron-deficiency anaemia

D) Pernicious anaemia

E) Sideroblastic anaemia

Answer:A

Explanation:

The blood results in this case demonstrate a normocytic normochromic anaemia. This pattern of anaemia is most commonly associated with chronic inflammatory diseases (e.g. rheumatoid arthritis, inflammatory bowel disease; hence the name ‘anaemia of chronic disease’), malignancy, chronic renal failure, and in some haematological disorders (e.g. aplastic anaemia), as well as in the acute setting after massive blood loss. In anaemia of chronic disease, patients have a normocytic anaemia (although 25% of cases are microcytic) with normal or raised ferritin levels (thereby making iron-deficiency a less likely cause). Consequently, because iron supplementation is not required as body stores are adequate, treatment focuses on addressing the underlying condition. If the anaemia is secondary to chronic renal failure (i.e. via reduced erythropoietin secretion), exogenous erythropoietin may be used to stimulate erythrocyte production. Note that patients with chronic conditions requiring long-term non-steroidal anti-inflammatory drugs (NSAIDs) may also develop microcytic hypochromic anaemia from chronic blood loss secondary to gastritis or other gastrointestinal bleeding.

Other noteable causes of anaemia in rheumatoid arthritis patients are autoimmune haemolytic anaema (macrocytic blood picture), disease modifying anti-rheumatoid drugs which can suppress the bone marrow (normocytic picture; although methotraxate, an anti-folate agent can cause macrocytosis) and Felty’s syndrome in which red blood cells are sequestered with other formed blood elements in an enlarged spleen (normocytic picture), in this circumstance associated with life-threatening neutropenia.

Question:

A 2-year-old boy is brought to the GP by his parents for a painful, swollen right knee. His parents state that over the past 6 months he has had multiple episodes of easy bruising to his skin, as well as similar painful knee swellings. Initial investigations reveal: haemoglobin 10.5 g/dL, MCV 87 fL, WCC 7.4 x 109/L, platelets 270 x 109/L, APTT raised, INR 1.1, factor VIII grossly reduced and factor IX and von Willebrand factor both normal.

Which one of the following is correct?

A) Haemophilia A

B) Haemophilia B

C) Immune thrombocytpaenic purpura

D) Thrombotic thrombocytpaenic purpura

E) Von Willebrand’s disease

Answer:A

Explanation:

This patient has ‘classical haemophilia’ (haemophilia A), an X-linked recessive disorder of coagulation in which the patient cannot synthesize clotting factor VIII due to a genetic mutation. Haemophilia B (Christmas disease) is caused by an inability to synthesize factor IX and is clinically indistinguishable from the much more common haemophilia A. Although usually familial, a significant proportion of cases are caused by sporadic mutations. Factors VIII and IX are essential in the intrinsic clotting cascade – therefore, haemophilia A and B result in a prolonged APTT, while PT (or INR) and bleeding time remain normal. Symptoms usually begin when patients begin to crawl or walk, and manifest as recurrent painful episodic bleeding into the joints (haemarthroses) and soft tissues (haematomas), which if inappropriately managed, may lead to crippling arthropathy and neuropathy respectively. Treatment of haemophilia A involves factor VIII concentrate given either as a regular infusion or simply during active bleeding. Those receiving regular infusions have higher factor VIII levels and therefore a better quality of life but are at a higher risk of developing antibodies to the extrinsic factor VIII, reducing its efficacy.

Those who receive VIII only when bleeding are less likely to form these antibodies but are at a higher risk of bleeding. Those with mild disease may be treated with desmopressin (DDVAP), which releases factor VIII into the circulation. Factor VIII concentrate can be given prior to invasive procedures but DDAVP may suffice for minor procedures. Haemophilia B is treated similarly but with factor IX concentrate. Many haemophiliac patients who received blood products prior to the initiation of blood screening programmes (before 1985) have contracted bloodborne viruses such as HIV and hepatitis C.

Question:

A 9-year-old boy becomes generally unwell whilst receiving chemotherapy on the ward for acute lymphoblastic leukaemia. He describes pins and needles around his lips and cramps in this hands and feet. His urine output has significantly decreased and urgent blood tests reveal raised serum potassium, phosphate and uric acid levels and a low serum calcium level.

Which one of the following is correct?

A) Disseminated intravascular coagulation

B) Haemolytic uraemic syndrome

C) Neutropenic sepsis

D) Thrombotic thrombocytopenic purpura

E) Tumour lysis syndrome

Answer:E

Explanation:

This acute post-chemotherapy presentation is known as tumour lysis syndrome. It is usually seen after chemotherapy in patients with lymphoproliferative disease. Massive cell death results in the release of intracellular potassium, phosphate and uric acid into the circulation. Phosphate binds to calcium, thereby lowering levels of the latter and causing symptoms of hypocalcaemia (e.g. perioral paraesthesia, tetany, Trousseau’s sign – carpal spasm on inflating a blood pressure cuff over the brachial artery, Chvostek’s sign – facial muscle twitching after tapping over the facial nerve at the angle of the jaw, and arrhythmias.) There is a risk of acute renal failure secondary to the release of nephrotoxic uric acid. Treatment involves intravenous fluids, allopurinol, renal support and correction of any electrolyte imbalances. Patients at risk of tumour lysis syndrome should be prescribed intravenous fluids and allopurinol (or rasburicase) prophylactically, to reduce levels of uric acid before commencing chemotherapy. Those at risk of this syndrome have regular monitoring of blood indices during initial chemotherapy when the risk of tumour lysis syndrome is greatest.

Question:

A 70-year-old man presents to his GP with a 5-month history of progressively worsening back pain. Radiographs demonstrate multiple lytic lesions in the lumbar vertebrae and in the iliac crest. Blood tests show hypercalcaemia, a mild degree of anaemia, and low white cell and platelet counts. Serum electrophoresis detects an IgG paraprotein band, and examination of bone marrow aspirate reveals a significant proportion of cytologically abnormal plasma cells.

Which one of the following is correct?

A) Heavy chain disease

B) Monoclonal gammopathy of uncertain significance

C) Multiple myeloma

D) Paraproteinaemia of chronic lymphocytic leukaemia

E) Waldenstrom’s macroglobulinaemia

Answer:C

Explanation:

plasma cells in the bone marrow, the monoclonal IgG band on electrophoresis and the lytic bone lesions. In multiple myeloma, there is a malignant proliferation of plasma cells that secrete monoclonal antibodies and light immunoglobulin chains. The multisystem disease presents with lethargy, bone pain, pathological fractures, renal failure, amyloidosis and pancytopenia (due to marrow infiltration).

The diagnosis requires 2 of 3 criteria: marrow plasmacytosis, serum/urine immunoglobulin light chains (Bence Jones protein) and skeletal lesions (osteolytic lesions, ‘pepperpot’ skull and pathological fractures). If serum or urine monoclonal antibodies are present but the other diagnostic criteria are not met, the diagnosis of ‘monoclonal gammopathy of uncertain significance’ is made – this has a 2% annual risk of transforming into multiple myeloma and requires monitoring.

Treatment aims to improve symptoms and suppress disease activity: bone pain is controlled with analgesia, bisphosphonates and orthopaedic intervention for pathological fractures. Renal failure (caused by light chain deposition within the kidney) is managed by increasing fluid intake, although renal replacement therapy made be required. Infection, anaemia and bleeding caused by pancytopenia secondary to marrow infiltration can be managed with broad-spectrum antibiotics, erythropoietin and blood product replacement, respectively. In patients under the age of 55, allogenic stem cell transplantation may offer a chance at curing the disease but it has a treatment-related mortality rate of 30% and is associated with significant morbidity from treatment-related side-effects. Chemotherapy is used to suppress disease activity but is generally viewed as palliative. Prognosis is poor, with survival being less than 4 years; death occurs due to renal failure or infection.

Question:

A 63-year-old lady presents to her general practitioner with a three-month history of abdominal pain, tiredness, loss of appetite and weight loss. She also states that she has excessive sweating at night. On examination, she appears pale and weak, and her temperature is 37.8 °C. She is tender over the epigastrium and the left hypochondrium. Lymph nodes are found to be enlarged in her neck, axillae and groins. Liver function test reveals an elevated lactate dehydrogenase level. She was referred to the hospital to have an ultrasound of the abdomen, which revealed gross splenomegaly, together with free fluid in the abdomen and pelvis.

Which one of the following is correct?

A) Carcinoid tumour

B) Kaposi’s sarcoma

C) Non-Hodgkin’s lymphoma

D) Infectious mononucleosis

E) Multiple myeloma

Answer:C

Explanation:

The symptoms and signs in this patient are suggestive of Non-Hodgkin's lymphoma, a malignancy of the lymphatic system. Approximately eighty-five percent of Non-Hodgkin's lymphomas are derived from a clone of B-cells and the remainder has a T-cell origin. Non-Hodgkin lymphoma may develop in any organ since lymphatics are required in all tissues to remove extracellular proteins. The disease spreads from one lymph node group to another and the patients develop systemic symptoms with advanced disease. The common clinical presentations of Non-Hodgkin lymphoma include pyrexia of unknown origin, night sweats, anorexia, weight loss, fatigue and the development of painless, generalized lymphadenopathy. Abdominal involvement of the disease may lead to abdominal pain, hepatomegaly or splenomegaly, nausea and vomiting. Lactate dehydrogenase levels are usually elevated in patients with Non-Hodgkin lymphoma due to increased cell turnover. Ann Arbor staging criteria (Stage I - involvement of a single lymph node area; Stage II - involvement of two or more lymph node regions on same side of the diaphragm; Stage III - involvement of lymph node regions on both sides of the diaphragm +/- spleen; Stage IV - disseminated extralymphatic spread) is used to stage the disease.

Question:

A 75-year-old resident at a nursing home was found by his carer collapsed in the corridor. On arrival in casualty, the patient has a blood pressure of 90/60mmHg with a pulse of 110 beats per minute. Initial blood tests reveal severe anaemia and a raised urea and creatinine. The on-call house officer prescribes 3 litres of intravenous fluid replacement, followed by 2 units of blood over the following 24 hours. Midway through the blood transfusion, the patient complains of shortness of breath. Examination reveals a tachycardia, a raised JVP and basal crepitations in both lungs.

Which one of the following is correct?

A) Acute renal failure

B) Delayed haemolytic transfusion reaction

C) Fluid overload

D) Graft-versus-host disease

E) Transfusion-related acute lung injury

Answer:C

Explanation:

The clinical features mentioned in the question are highly suggestive of fluid overload. Every house officer should know that the normal daily fluid requirement of a healthy 70 kg man is between 2.5 to 3 litres. However, fluid (and especially blood products) should always be administered more slowly in elderly patients and other individuals with poor renal or cardiac function, due to the physiological strain that an acutely increased intravascular volume may have on these vital organs. As in this case, fluid overload should be managed similarly to acute left ventricular failure (i.e. sit the patient upright, administer high-flow oxygen and intravenous furosemide and diamorphine, together with sublingual glyceryl trinitrate). In refractory cases, continuous positive airways pressure (CPAP) as well as venesection may be attempted to decrease the degree of pulmonary oedema present, if necessary.

Question:

The consultant neuroradiologist is reviewing T2 weighted MRI scans with the trainee neurologist who strongly suspects multiple sclerosis in one of his outpatients. The radiologist points to a demyelinating lesion within a structure located in the posterior fossa. The neurologist explains this structure is responsible for co-ordination, timing and precision of complex motor movements required for walking and speaking. It receives ascending information on joint position sense.

Which one of the following is correct?

A) Cerebellum

B) Midbrain

C) Occipital cortex

D) Pons

E) Thalamus

Answer:A

Explanation:

The cerebellum is located in the posterior fossa, separated from the occipital cortex superiorly by the tentorium cerebella, a fold of dura mater. Lesions in cerebellum do not cause paralysis but in-coordination of complex motor movements such as walking, pointing, writing etc. Clinical manifestations of cerebellar disease follow the mnemonic DANISH (Disdiadochokinesia, Ataxia, Nystagmus, Intention tremor, Scanning dysarthria, Heel-shin test positivity). It is commonly involved in multiple sclerosis, tumours, strokes and paraneoplastic disease from solid tumours elsewhere in the body. Lesions affecting the cerebellum produce these symptoms and signs ipsilaterally – on the same side as the lesion.

Question:

An anatomy demonstrator is presenting pro-sections of the brainstem to a group of medical students. She demonstrates the pyramids of the medulla oblongata, explaining that a group of neuronal axons originating in the primary motor cortex decussate in the pyramids of the medulla oblongata before synapsing with the cell body of the lower motor neurone which relays signals to the skeletal muscle via the motor end plate of the neuromuscular junction.

Which one of the following is correct?

A) Corticospinal tract

B) Dorsal columns

C) Rubrospinal tract

D) Spinocerebellar tract

E) Spinothalamic tract

Answer:A

Explanation:

The corticospinal tract contains first order motor neurones (upper motor neurones) from the primary motor cortex in the frontal lobe to the synapse with the lower motor neurones in the anterior horn of the spinal cord. The majority of these fibres decussate in the medulla, and therefore control motor functions on the opposite or contralateral side of the body. This is the reason why lesions such as infarction or haemorrhage in the cerebral cortex can cause contralateral motor deficits or weakness, that is described as pyramidal in nature (weaker flexors in the legs and weaker extensors in the arms – since gravity trains these anti-gravity muscles to grow stronger compared with their antagonist muscles). The corticospinal tract is therefore also known as the pyramidal tract, and weakness due to lesions affecting this tract produce what is termed “pyramidal weakness”. Damage to the tract in the spinal cord will cause ipsilateral motor deficits below the lesion which will result in upper motor neurone signs below it, but may cause lower motor neurone signs at the level of the lesion due to damage caused to exiting lower motor neurones.

Question:

A 27-year-old individual with intractable epilepsy, resistant to multiple anti-convulsant medications in combination has a surgical procedure to separate his right and left cerebral hemispheres. As a result, he cannot name objects he holds in his non-dominant left hand, or objects in his left visual field, but can do this if they are held or viewed on the opposite side. His epilepsy now has far less impact on his quality of life.

Which one of the following is correct?

A) Anterior commissure

B) Corpus callosum

C) Interventricular foramen

D) Optic chiasm

E) Septum pellucidum

Answer:B

Explanation:

All of the named structures lie in the midline on saggital sections of the brain, but it is the corpus callosum that was divided surgically in this patient. The corpus callosum is a huge white matter tract connecting the right and left hemispheres of the brain, containing over 200 million myelinated axons. This procedure is still occasionally used in severe, intractable epilepsy as a treatment of last resort, but leads to a split-brain disconnection syndrome in which objects on the same side as the language centres cannot be named if held or seen in that visual field, since they their names are recognized and processed on the contralateral side of the brain, in the other dominant hemisphere.

Question:

A 32-year-old local gang leader is involved in a shooting and is brought to casualty against his will although now is in too much pain to resist admission. Although he is not forthcoming with details of the history, he complains that he has been shot in his back and in his shoulder, that he cannot move his leg. On examination he is haemodynamically stable. The consultant examines him soon after and finds he has spastic weakness in his left leg with hyperreflexia and equivocal plantars together with absent joint position sense, vibration and fine touch. His right leg is normal on motor examination but has reduced sensation to pain and temperature sensation from the level of T11 with intact joint position and proprioception.

Which one of the following is correct?

A) Cauda equina traction

B) Complete transection of the spinal cord

C) Damage to conus medullaris

D) Hemisection of the left side of the spinal cord

E) Hemisection of the right side of the spinal cord

Answer:

Explanation:

This patient has complete hemisection of the left side of his spinal cord, known as the Brown-Sequard syndrome. This causes a characteristic pattern of neurological signs owing to the organisation and decussation of motor and sensory nerve tracts within the spinal cord. Damage to half of the spinal cord causes upper motor neurone signs in the ipsilateral lower limb (since these fibres decussate in the medulla oblongata), loss of fine touch, vibration and proprioception in the ipsilateral limb (involvement of the dorsal columns), but loss of pain and temperature sensation in the contralateral limb (since the spinothalmic tract decussates close to the entry point of the spinal sensory nerve). The contralateral limb also demonstrates normal motor function without any weakness in a pure lesion.

Brown-Sequard hemisection can be complete or partial and can result from trauma, tumours or demyelinating plaques.

Question:

A 39-year-old retail manager with rheumatoid arthritis presents to her GP with a one month history of pain radiating up her forearm at night, associated with tingling in her thumb, index and middle fingers. She has also noticed that her hands have become a little weaker. On examination, there is wasting of the thenar eminence with loss of sensation over most of the palm lateral to the ring finger, and at the tips of the index and middle finger on the dorsal side. Tapping over the flexor aspect of the wrist seems to reproduce the tingling sensation in her hands and forearm, as does flexion for a prolonged period in the examination room.

Which one of the following is correct?

A) Anterior interosseous nerve

B) Median nerve

C) Posterior interosseous nerve

D) Radial nerve

E) Ulnar nerve

Answer:B

Explanation:

This patient has carpal tunnel syndrome, a very common mononeuropathy that results from compression of the median nerve at the wrist in the carpal tunnel. Females are most at risk because their tendons are a similar size to those in men, although their carpal tunnels are smaller. Patients with rheumatoid arthritis, diabetes, acromegaly, hypothyroidism, amyloidosis or who are pregnant are predisposed to carpal tunnel syndrome. The disease is often bilateral and presentation with pain, typically at night where the hand may be held in a flexed position, which compresses the carpal tunnel, increasing pressure on the median nerve. There is weakness in the hand of the pronator teres (pronation), flexor digitorum profundus and superficialis (flexion of the fingers), flexor pollicis longus (flexion of the thumb) abductor pollicis brevis (abduction of the thumb) opponens pollicis (apposition of the thumb and base of little finger. There is sensory loss in the distribution of the nerve, over the lateral aspects of the hand, particularly on the palmar side.

Tinel’s test is often positive where tapping over the carpal tunnel on the flexor aspect of the wrist reproduces paraesthesia in the distribution of the median nerve. Phalen’s test is where there is reproduction of the pain or paraesthesia is produced on flexion of the wrist in less than 60 seconds.

Treatment is with splints that maintain the wrist in an extended position at night, steroid injections or decompressive surgery where the flexor retinaculum is divided, thereby increasing the space in the carpal tunnel.

Question:

During a neuroanatomy teaching session, pro-sections are used to teach medical students about the anatomy of the cranial nerves. One particular nerve is described as unique as it is the only one to emerge from the dorsal aspect of the brainstem, it has the longest intracranial course of any of the cranial nerves, it decussates before its motor target and is the smallest nerve in that it contains the least number of axons.

Which one of the following is correct?

A) Abducens nerve

B) Hypoglossal nerve

C) Olfactory nerve

D) Spinal accessory nerve

E) Trochlear nerve

Answer:E

Explanation:

The trochlear nerve provides motor innervation to a single skeletal muscle, the superior oblique and for this reason, contains the smallest number of axons of any cranial nerve. It exits the brainstem from the dorsal (posterior) rather than the ventral (anterior) aspect and decussates before reaching its target organ, the only cranial nerve to do so. The superior oblique muscle is responsible for depression of the adducted eye (therefore looking down and in, like when descending stairs or reading), and its secondary action is intorsion (inward rotation). Its complex action results from the fact that the muscle is not a rectus muscle (straight muscle) which only has a single action – the superior oblique in contrast attaches eccentrically to the posterior surface of the globe. Damage to the trochlear nucleus affects the contralateral eye (since this nerve decussates before its target muscle), but since the contribution of this nerve is small, other clinical manifestations due to damage to adjacent structures will dominate the clinical picture. Damage to the peripheral nerve in isolation is rare, and usually only happens in the context of trauma, although mononeuritis (inflammation of the vasa nevorum) can affect any peripheral nerve.

Question:

A 64-year-old female fractures her femoral neck after falling down the stairs at home. This is repaired under spinal anaesthetic and sedation with a hemi-arthroplasty. Eight hours later she is sitting up in bed complaining of a severe headache that she says is 8/10 on a severity scale and unresponsive to paracetamol that the nurses gave 1 hour earlier. She is afebrile, her respiratory rate is 22 and pulse rate 110/min. She was given 1.2g of co-amoxiclav during her operation intravenously. There is no neck stiffness or photophobia.

Which one of the following is correct?

A) Analgesia misuse headache

B) Idiopathic intracranial hypertension

C) Meningitis

D) Post dural puncture headache

E) Tension headache

Answer:D

Explanation:

This patient has had a spinal anaesthetic which involves inserting a needle into the subarachnoid space under sterile conditions and injecting small amounts of local anaesthetic bupivacaine and often an opiate such as diamorphine. This provides adequate analgesia below the level of infiltration and sedation is used to relax the patient, who often is not fit for a general anaesthetic.

Much like lumbar punctures, patients who have spinal anaesthetics can suffer from leakage of CSF from the puncture site which leads to intrathecal hypotension, causing a postural headache that is worse in an upright position (and can be severe), and is alleviated by lying recumbent. This can happen after neurosurgical procedures, trauma or lumbar puncture. The treatment of choice is a blood patch in which blood is collected under sterile conditions and injected over the meninges at the site of puncture, which then clots and seals the dural defect.

Meningitis is clearly a worry in any patient with a severe headache, particularly those who have had instrumentation of the CSF space. However, the patient is apyrexial with no neck stiffness or photophobia, and the headache of meningitis should not be orthostatic as in this case. Eight hours post-operative is perhaps too short a period of time for bacteria to have multiplied to cause clinical pyogenic meningitis without underlying immunosuppression.

Question:

A 35-year-old male presents to his GP suffering from excruciating headaches that start behind his left eye and feel as if it is boring into his head. This always starts at around 2am and lasts around three hours during which he cannot sleep and finds himself pacing up and down the corridor to get some relief but unsuccessfully. During these episodes his left eye turns red with some ptosis and lacrimation. These occur every night for several weeks before an intermission of several months without them followed by relapse.

Which one of the following is correct?

A) Acute angle closure glaucoma

B) Acute iritis

C) Cavernous sinus thrombosis

D) Cluster headache

E) Scleritis

Answer:D

Explanation:

This patient is suffering from cluster headaches which are so severe as to be designated as the worse pain ever felt by most patients who experience them. They occur with remarkable regularity, waking patients up from sleep, but in contrast to migraines do not cause nausea or a desire to lie still in a quiet, dark environment but restlessness. They are however, unilateral and last for weeks before remitting and then return to affect the patient in the same pattern. They are much more common in men and more common in smokers. Standard analgesics have no effect on cluster headaches, and high flow oxygen therapy with sumatriptan can be attempted. Prophylactic treatments include verapamil and steroids, although others such as lithium may be tried. Cluster headaches in a minority of patients can be chronic and therefore suffered by patients every day for years. It is considered to be due to vascular dilatation that impinges on the trigeminal nerve.

Question:

A 15-year-old girl is a newly diagnosed type 1 diabetic schoolgirl and complains to her mother at 11am of having a headache and feeling lethargic, and is given 1 gram of paracetamol and encouraged to sleep it off. Thirty minutes later, she looks sweaty, is shaking and complains of pins and needles in her arms and appears particularly irritable. When she attempts to walk, she appears ataxic as if she were acutely intoxicated with alcohol. Her mother takes her straight to casualty where upon waiting for triage, she loses consciousness and falls to the floor, shaking all limbs and is unresponsive to central pain.

Which one of the following is correct?

A) Acute alcohol intoxication

B) Drug withdrawal

C) Epilepsy

D) Hypoglycaemia

E) Multiple sclerosis

Answer:D

Explanation:

This patient, a known diabetic, has had a life-threatening episode of hypoglycaemia – a medical emergency. Most hypoglycaemic episodes occur in known diabetics who take hypoglycaemic drugs, either insulin or the sulphonylureas and may be accidental or purposeful self-harm, and not uncommonly taken for the purposes of self-harm by those who have access to the medications such as family members. Symptoms relate to the autonomic reaction to hypoglycaemia (shaking, sweating, palpitations, tachycardia), the neuroglycopenia (fatigue, change in mood or personality, focal neurological signs, paraesthesia, ataxia). If left untreated, this will eventually result in unconsciousness, seizures, permanent brain damage or death. The human brain is dependent on a constant supply of glucose for function (around 70g/day) and therefore hypoglycaemia results in progressive neurological dysfunction as the blood glucose drops. Every patient, particularly a known diabetic, should have their glucose checked when presenting with such symptoms, and patients experiencing seizures should have a capillary glucose estimation and rapid replacement of glucose (by the intravenous route) to correct it before irreversible damage ensues.

Multiple sclerosis, although can cause ataxia and paraesthesias would not have an onset this quick. Acute alcohol intoxication would not result in progressive loss of consciousness without continuing consumption of alcohol and often clinically this would be suspected from the alcoholic foetor. Drug withdrawal is unlikely given her age, but sweating, shaking, and mood change could occur in withdrawal from depressants such as heroin “cold turkey withdrawal”. However, the seizure is not characteristic. Epilepsy is defined as continuing predisposition to suffering unprovoked seizures, and therefore a single seizure cannot be diagnosed as epilepsy on this basis alone.

Question:

A 43-year-old woman with known anti-phospholipid syndrome with previous pulmonary emboli and cerebrovascular events presents to casualty with a six hour history of weakness in her legs. On examination, her cranial nerves and upper limbs are normal but there is spastic paraparesis of her legs with 3/5 power symmetrically below the hip, hyperreflexia and extensor plantars. There is reduced perception of pain and temperature sensation in the same distribution but intact perception of joint position sense and proprioception.

Which one of the following is correct?

A) Anterior spinal artery thrombosis

B) Cauda equina syndrome

C) Motor neurone disease

D) Spinal cord compression

E) Syringomyelia

Answer:A

Explanation:

This woman has anti-phospholipid syndrome and is at risk of recurrent arterial and venous thromboses, often despite being on anti-coagulant therapy. This is a case of anterior spinal artery thrombosis which perfuses the anterior two-thirds of the spinal cord, and therefore the corticospinal tracts and spinothalamic tracts which run anteriorly in the spinal cord are damaged, and posterior columns which carry fine touch and proprioception are preserved. This is similar to syringomyelia in that it demonstrates a dissociated sensory loss, although a syrinx would cause lower motor neurone signs in the upper arms with a more insidious onset and possibly with increasing symptoms with manoeuvres that cause increased pressure (coughing, sneezing – which can enlarge the syrinx).

Cauda equina syndrome often causes saddle anaesthesia as it affects sensory innervation around the anus and perineum and also affects lower motor neurones, thereby causing a flaccid rather than spastic paraparesis with hyporeflexia. Motor neurone disease does not cause sensory loss as evidenced here.

Question:

A 69 year old male presents to casualty with dizziness, nausea and vomiting and double vision. He says he is unable to swallow water properly and that the room feels like it is spinning. On examination he has left sided ataxia, left sided miosis and ptosis with loss of pain and temperature sensation on the right hand side below the neck, and on the left side of his face. His uvula deviates to the right and he has some dysarthria with his voice sounding nasal in quality.

Which one of the following is correct?

A) Anterior cerebral artery

B) Internal carotid artery

C) Posterior cerebral artery

D) Posterior communicating artery

E) Posterior inferior cerebellar artery

Answer:E

Explanation:

This is a patient has suffered occlusion of his posterior inferior cerebellar artery (PICA) causing the lateral medullary syndrome in which there is ischaemia or infarction of the lateral portion of the medulla oblongata. This causes lower motor neurone palsies of the bulbar (or brainstem) cranial nerves (such as the vagus – causing difficulties in swallowing and speaking), the sympathetic outflow to the eye resulting in ipsilateral Horner’s syndrome. Involvement of the ascending spinothalamic tracts causes a crossed sensory loss contralaterally below the lesion and ipsilaterally at the level of the lesion. Cerebellar signs such as vertigo (sensation of the room spinning), nystagmus are common as are nausea and vomiting. An MRI of the brainstem is more discerning than a CT scan, and may show ischaemic necrosis. Treatment will depend on the cause.

This questions tests the distinction between anterior circulation strokes (those which affect the internal carotid artery and its branches) and posterior circulation strokes affecting the vertebrobasilar arteries and its branches. In this case a carotid Doppler would be an unnecessary investigation since the disease is not related to the carotid arteries.

Question:

A 61-year-old male with a four year history of chronic diarrhoea and malabsorption, who is also under treatment by the rheumatologists for uncharacterised but recurrent joint disease presents to the general neurology clinic with a history of recent and progressive cognitive decline reported to him by established colleagues at work and double vision. On examination, his MMSE score is 25/30, he has nystagmus and ophthalmoplegia, and is noted to contract his jaw muscles when he looks at a target moving from side to side in front of him. He is noted to have generalised lymphadenopathy and has lost 10kg of weight since his last review nine months ago.

Which one of the following is correct?

A) Creutzfeld-Jakob disease

B) Korsakoff’s psychosis

C) Normal pressure hydrocephalus

D) Pellagra

E) Whipple’s disease

Answer:E

Explanation:

Whipple’s disease is a multisystemic infectious disease caused by the organism Tropheryma whippelli. It is a cause of chronic diarrhoea and malabsorption typically affecting Caucasian males. Jejunal biopsy in such cases reveals periodic acid Schiff (PAS) positive macrophages. The disease can also cause chronic arthritis and if disseminated, can affect the heart (endocarditis) or the central nervous system (dementia, ophthalmoplegia). The finding of contraction of the jaw muscles with ocular movements (oculomasticatory myorhythmia) is pathognomonic. Although this is rare, it is an important responsibility of the clinician to understand that there are many treatable causes of dementia such as syphilis, vitamin B12 deficiency, hypothyroidism etc that if identified and treated can dramatically improve cognitive function and independence from a clinical course that would result otherwise in progressive decline and death.

Creuztfeld-Jakob disease is a prion disease in which prion proteins (non-degradable proteins) accumulate in the brain and may be genetic, sporadic or linked to environmental agents. It has no known cure. Korsakoff’s psychosis occurs most often in the setting of chronic alcoholism, not treated by thiamine replacement characterised clinically by confabulation and anterograde amnesia. Normal pressure hydrocephalus should be suspected in individuals with confusion, ataxia and urinary incontinence. Pellagra is nicotinic acid deficiency that presents with dermatitis, diarrhoea and dementia. It is treatable with nicotinic acid replacement

Question:

A 29-year-old male is an unrestrained passenger a road traffic accident and suffers a head injury that causes him to lose consciousness at the scene, the paramedics report that he was still drowsy when they arrived. He is brought to casualty where he is orientated, asking continuously after the driver of the car. He is haemodynamically stable, and he has no focal neurological signs with pupils equal and reactive to light. Overlying his temporo-parietal region on the left side near his temple, there is a boggy swelling at the site of trauma which is tender to palpation. Two hours later, he becomes more confused screaming that it was “all his fault” and of an awful headache. Shortly after, he is found seizing in his examination room.

Which one of the following is correct?

A) Extradural haematoma

B) Pseudoseizure

C) Subarachnoid haemorrhage

D) Subdural haematoma

E) Transient ischaemic attack

Answer:A

Explanation:

This history is typical of an extradural (or epidural) haematoma, a collection of blood that accumulates rapidly between the dura and the cranium, and causes an acute increase in intracranial pressure typically in the setting of significant trauma. The vessels most commonly involved are the middle meningeal vessels which run along the inside of the cranium behind the temporo-parietal bones on the lateral sides of the head. Trauma to these areas, particularly if producing a fracture or severe enough to cause loss of consciousness should alert a clinician to the possibility of this diagnosis. Typical of these cases is a “lucid interval” that occurs between the initial trauma and the acute bleed and deterioration and this is evident in this case. Confirmation is with CT head and will demonstrate a lens (biconvex) shaped haematoma between the dura and the skull. Treatment is with urgent neurosurgical decompression and evacuation of the haematoma. Untreated, the acute rise in intracranial pressure is poorly tolerated and would eventually cause the uncus of the temporal lobe to herniate through the tentorium cerebelli (tentorial herniation) and compress the oculomotor nerve in the process. This will be followed by herniation of the cerebellar tonsils and brainstem through the foramen magnum, coma and death.

Question:

A 28-year-old female who takes the oral contraceptive presents to her GP with headaches that are worse in the morning, some nausea and vomiting. Her headache is made worse be sneezing, coughing or bending forwards. She has no significant past medical history. She is admitted to hospital and bilateral papilloedema is noted on fundoscopy, although a CT head scan is normal. She then develops a sudden onset severe headache and sudden onset of hemiplegia with hemisensory involvement but no visual field loss or dysphasia. A repeat CT head shows a haemorrhage in the frontoparietal region and a delta sign in the posterior saggital sinus.

Which one of the following is correct?

A) Intracranial venous thrombosis

B) Meningitis

C) Middle cerebral artery haemorrhage

D) Pituitary apoplexy

E) Subarachnoid haemorrhage

Answer:A

Explanation:

This is a case in intracranial venous sinus thrombosis, in this case affecting the saggital sinus. Just as thromboses can develop in peripheral veins, such as in deep venous thrombosis, Virchow’s triad can be applied similarly to the cerebral venous sinuses. In this case, the oral contraceptive pill has contributed to cause abnormalities in blood constituents, which together with venous stasis (which may occur due to dehydration) may result in venous sinus thrombosis. This can present subacutely with a gradually rising intracranial pressure (which acts to compress sinuses further) before complete occlusion and the development of a venous infarct (often haemorrhagic due to extravasation of blood in venules) corresponding to onset of focal neurological signs. The neurological signs may not correspond to an arterial vascular bed and seem irregular in their pattern. The diagnosis can be clinched on contrast enhanced CT head where the venous phase of the scan can show filling defects in the affected sinuses, but the investigation of choice is magnetic resonance venography. The “delta sign” is a filling defect in the saggital sinus on contrast enhances CT or MRI scans of the head in saggital sinus thrombosis. Treatment is with rehydration, cessation of prothrombotic drugs and anticoagulation with heparin.

Question:

A 32-year-old alcoholic is admitted to casualty after he presents with some upper gastrointestinal bleeding which is thought to be a Mallory-Weiss tear secondary to forceful vomiting. He is resuscitated with copious intravenous normal saline although his haemoglobin hadn’t dropped sufficiently to warrant a blood transfusion. His blood results were notable for a raised MCV, raised ?GT and a serum sodium of 115mmol/L. Two days after admission he experiences quadriparesis, unable to move his arms or legs, he has slurring of his speech, is unable to swallow water properly and complains of some double vision. A repeat set of blood tests demonstrate a serum sodium of 152mmol/L.

Which one of the following is correct?

A) Bilateral stroke

B) Central pontine myelinolysis

C) Delerium tremens

D) Multiple sclerosis

E) Myasthenia gravis

Answer:B

Explanation:

This patient has suffered central pontine myelinolysis due to rapid correction of his stable, chronic hyponatraemia – a condition characterised by demyelination of the pons in the brainstem through which descending corticospinal and corticobulbar tracts traverse. It can present with para- or quadriparesis with evidence of bulbar skeletal muscle weakness such as dysarthria or dysphagia and double vision. A T2 weighted MRI of the brainstem is the investigation of choice and shows an area of high signal in the pons. A serum sodium estimation compared with admission sodium may gather evidence for CPM over other diseases.

Central pontine myelinolysis is one of the reasons why hyponatraemia must be corrected slowly, and junior clinicians who are often responsible for fluid management (particularly out of hours) should consider this when prescribing fluids. CPM is most often seen in alcoholics, but can occur in anorexia, hyperemesis gravidarum, malnutrition, burns and non-alcoholic liver disease.

Question:

A 21-year-old female presents to her GP with right sided visual loss associated with pain on eye movements, red desaturations, a central scotoma, and a relative afferent pupillary defect. Fundoscopy showed no abnormalities at the time. Four months later, she experiences paraesthesias affecting the right side of her body which get worse on taking a hot bath. An MRI scan demonstrates white matter lesions affecting her parietal cortex on the left side with optic nerve disease on the right, and peri-ventricular white matter. A lumbar puncture demonstrates oligoclonal bands on CSF electrophoresis not present in a paired serum sample and visual evoked potentials from the right eye are delayed. Repeat fundoscopy of the right eye demonstrates optic disc pallor, although her left optic disc appears normal.

Which one of the following is correct?

A) Cerebral lymphoma

B) Glaucoma

C) Multiple sclerosis

D) Neuromyelitis optica

E) Progressive multifocal leucoencephalopathy

Answer:C

Explanation:

This patient has evidence of demyelinating lesions in the central nervous system white matter separated in space and time, highly suggestive of multiple sclerosis. MS is an inflammatory neurodegenerative disease characterised by episodes of demyelination, which can follow a relapsing-remitting cycle or become progressive with little neurological recovery between flares and accumulating disability. MS is much more common in extremes of latitude, and complex genetic and environmental influences are thought to contribute to disease development. Diagnosis is by MRI scanning demonstrating evidence of demyelinating white matter lesions, paired CSF and serum electrophoresis demonstrating oligoclonal bands localised to the CSF (and therefore the CNS) often supported by visual or somatosensory evoked potentials demonstrating delayed conduction.

Neuromyelitis optica (Devic’s disease) is a variant of MS that as the name suggests, only affects the optic nerve and spinal cord (myelitis), and not the brain itself. Progressive multifocal leucoencephalopahy is caused by the JC virus and occurs most often in the setting of advanced HIV infection heralding the onset of AIDS. Glaucoma can cause visual loss that is non-reversible as opposed to optic neuritis (the presenting feature here) which often resolves over a period of weeks with steroid therapy. Glaucoma does not cause MRI white matter lesions of CSF abnormalities. Cerebral lymphoma would demonstrate malignant cells in the CNS associated with raised intracranial pressure and seizures which are not typical features of MS although focal neurological signs may exist. Fundoscopy would demonstrate papilloedema in this setting, rather than a unilateral disc pallor indicative of optic atrophy (typical in multiple sclerosis after an episode of optic neuritis).

Question:

A 54-year-old male presents to his GP with a four month history of difficulty walking, particularly in the mornings. He also feels dizzy when he gets up, which in itself is more difficult than it was six months ago. On examination there is proximal muscle weakness in the arms and legs which improves in strength with each contraction. There is global hyporeflexia but no sensory loss with mild ptosis evident. He has smoked 20 cigarettes per day since the age of 24 years. After the examination he asks if he can have something to treat his erectile dysfunction.

Which one of the following is correct?

A) Dermatomyositis

B) Lambert-Eaton myasthenic syndrome

C) Myasthenia gravis

D) Polymyalgia rheumatica

E) Polymyositis

Answer:B

Explanation:

This patient has Lambert-Eaton myasthenic syndrome (LEMS), a disease characterised by antibodies generated against the presynaptic calcium channels at the motor-end plates. It is therefore a disease of the neuromuscular junction. It is associated strongly with small-cell lung cancer in around 50% of patients which may predate the radiological appearance of the cancer by many years. It also occurs in patients with a history of autoimmune disease and therefore the aetiology of LEMS is not clear. Most affected individuals are male (5:1). It is characterised clinically by proximal muscle weakness which improves with repetitive activity in the affected muscle groups (in contrast to MG which strength decreases with repetition), autonomic disturbance (postural hypotension, erectile dysfunction, constipation etc), less severe involvement of ocular and respiratory muscles when compared with myasthenia gravis, hyporeflexia (reflexes are normal in MG). Individuals diagnosed with LEMS may have a screening chest x-ray serially to detect malignancy and anti-bodies to voltage gated calcium channels. Treatment is with 3,4-dihydropyridine or IV immunoglobulins.

Question:

A 49-year-old female presents to her GP with a one month history of weakness that she feels is worse towards the end of the day. On examination, her voice becomes softer as she is speaking although recovers after a period of silence. She has bilateral ptosis worse on the right and diplopia that is variable in nature initially worse on left lateral gaze, then on looking up although her pupils are equal and reactive to light. She says she sometimes finds swallowing her dinner difficult towards the end of a meal, particularly chewy foods like steak. When asked to get up from a seated position repeatedly, she quickly tires, equal in both shoulder and hip girdles symmetrically. When the GP applies a block of ice to her eyelid on the right, there is resolution of her ptosis temporarily in that eye of around 4mm.

Which one of the following is correct?

A) Antibodies against pre-synaptic voltage-gated calcium channels

B) CT scan of chest

C) Edrophonium test

D) MRI scan brain

E) Muscle biopsy

Answer:C

Explanation:

This patient has myasthenia gravis, an autoimmune disorder of the neuromuscular junction caused by antibodies generated against the nicotinic acetylcholine receptors at the motor end plate. This causes a reduction in available receptors for acetylcholine to activate, causing a fatigable muscle weakness in numerous muscle groups, particularly limb girdles, extraocular muscles (diplopia), levator palpebrae superioris (ptosis), bulbar muscles (difficulty in swallowing or chewing), and laryngeal muscles (difficulty vocalising). It may eventually affect respiratory muscles at which point it represents a threat to life and may require intensive care admission with ventilatory support. The diagnosis is made on the basis of the edrophonium test (Tensilon test) in which a short acting acetylcholine-esterase inhibitor is injected, causing a temporary reversal of muscular fatigue by increasing the availability of acetylcholine at the motor end plate (by preventing its degradation) and competitive agonism of available receptors. This should only be done with full resuscitation to hand as it may cause parasympathomimetic effects such as bradycardia, and in extreme cases may result in cardiac arrest.

Myasthenia gravis is associated with thymic hyperplasia in patients under 50, and thymic tumours in predominantly male patients over 50, and therefore often a CT scan of the chest is done in confirmed cases to identify thymic tumors that may be amenable to surgery (particularly in refractory cases). Antibodies against the nicotinic acetylcholine receptors are positive in 90%, and those negative may test positive for anti-MUSK antibodies. Neurophysiology may reveal reduced amplitude signals with repetitive nerve stimulation and can be used to gather evidence for the diagnosis. Antibodies against pre-synpatic voltage gated calcium channels are used to diagnose Lambert-Eaton myasthenic syndrome. MG is not a muscular disease, it is a disorder of the neuromuscular junction, and therefore muscle biopsy will be negative. MRI scans of the brain have no role in diagnosing myasthenia gravis. Treatment is with acetylcholine-esterase inhibitors such as neostigmine, which in a more protracted action than edrophonium, reduce muscular fatiguability but predictably can cause cholinergic side effects (miosis, sweating, difficulty in micturition, constipation etc). Immunosuppressant such as steroids, or cytotoxic agents can improve symptoms. In patients more acutely unwell, treatment with plasmapheresis or plasma exchange can deplete the patient’s plasma of antibodies and result in some degree of clinical resolution. Intravenous immunoglobulins can also be used in the acute setting, and vital capacity measurements to screen for respiratory compromise.

Question:

A 73-year-old man presents to the general neurology clinic with recurrent falls, recently escalating in frequency. On examination he has difficulty initiating walking with a stooped posture, shuffling his feet as he walks. His facial expressions are blunted, he has a reduced blink rate, and has cogwheel rigidity in his right wrist. Flexion of both elbows demonstrates rigidity that appears constant throughout the range of movement, equivalently present on extension. He has a resting tremor between his thumb and forefinger.

Which one of the following is correct?

A) Benzatropine

B) Deep brain stimulation

C) Levodopa and benserazide

D) Oral desferrioxamine

E) Subcutaneous apomorphine

Answer:C

Explanation:

This patient has idiopathic Parkinson’s disease, a neurodegenerative disease resulting from degeneration of the dopaminergic neurons that connect to the substantia nigra in the basal ganglia. It presents as a triad of bradykinesia, tremor and ridigity. Bradykinesia is demonstrated by eliciting difficulty in the initiation and termination motor actions such as walking and the gait of a patient with Parkinson’s disease is characteristic shuffling with difficulty turning, resulting from a loss of postural reflexes - resulting in recurrent falls. Tremor results in cogwheeling, most demonstrable at the wrist most commonly unilateral and accentuated by distraction. The rigidity in contrast to spasticity is present equally in flexors and extensors (and is therefore not pyramidal), and is equal throughout the range of movement (“lead pipe” in contrast to spasticity which is described as “clasp knife” as resistance decreases throughout the range of movement).

Treatment of Parkinson’s disease is started when symptoms start to interfere with function. Levodopa is the precursor of dopamine which is deficient in Parkinson’s disease, but peripherally causes nausea and vomiting (it is a dopamine agonist). It is therefore given concurrently with a peripheral (it does not cross the blood brain barrier) dopa-decarboxylase inhibitor. Levodopa becomes less effective with time, resulting in “on-off” effects in which rigidity and excessive involuntary movements occur close together and can be helped with modified release preparations. It is becoming more common to use dopamine agonist drugs before levodopa to delay the onset of this phenomenon, especially in younger patients. Subcutaneous apomorphine can be given as an infusion to control severe on-off effects as an inpatient. Muscarinic antagonists are often given to reduce the tremor and movement disorder seen in PD. Desferrioxamine is given in patients with Wilson’s disease who can manifest parkinsonian clinical features due to deposition of copper in the basal ganglia. Deep brain stimulation can be given to patient’s refractory to medical therapy with intractable symptoms as a treatment of last resort.

Question:

An 86-year-old lady is making a cup of tea in her residential home one morning when she experiences weakness of her right arm and face. She reports that it came on quite suddenly, that she managed to walk several paces to a chair and called for help. Her fellow resident noted that she was talking in sentences that seemed words spoken at random with no meaning. Her face was also sagging on the right side, and an ambulance was called immediately. In casualty two hours later she has 5/5 strength in both arms and legs, with no evidence of facial weakness or speech disorder. Her sensory examination and gait are normal, mobilising with a stick.

Which one of the following is correct?

A) Aspirin and clopidogrel

B) Aspirin and dipyridamole

C) Carotid Doppler

D) MRI scan of brain

E) Thrombolysis

Answer:B

Explanation:

This patient has suffered a transient ischaemic attack, a sudden onset focal neurological deficit that reverses completely within 24 hours of onset. It is often described to patients as a “mini stroke” as it heralds the increased risk of a stroke in the near future, unless measures are taken to reduce this risk. Evidence suggests the most effective immediate medical treatment of transient ischaemic attacks is with aspirin and dipyridamole, which are anti-platelet agents that act through two different mechanisms. This reduces the likelihood of thromboembolism from a carotid atherosclerotic plaque, the most common source of a TIA. Aspirin and clopidogrel are used to treat unstable angina. Carotid Doppler and echocardiogram can be useful in identifying the source of a clot and to determine whether the patient fulfils the clinical criteria for carotid endarterectomy (70-99% stenosis of the ipsilateral carotid artery). However, in this case the patient is likely to be too frail to survive this operation and therefore preventative treatment must take priority, in this case with dual anti-platelet therapies. The history is typical of TIA, and the absence of neurological signs on examination would make an MRI scan difficult to justify. However, if these signs persisted, an MRI scan is the most sensitive imaging modality to detect ischaemia or infarction, and a CT scan may remain negative for three days before demonstrating an infarct. Thrombolysis is not indicated to treat TIAs, but has a role to play in MRI/CT confirmed ischaemic strokes that present acutely to hospital with severe neurological deficits, provided no contraindications exist.

Question:

A 3-month-old boy is diagnosed with congenital hydrocephalus at birth, suspected on initial neonatal examination from a large cranial circumference which has grown progressively, and now is at the 98th centile. The paediatric neurosurgeons inform the parents that this is due to an obstructive hydrocephalus at the base of the fourth ventricle and that the spinal fluid would need to be kept drained continuously to prevent the pressure in the child’s head from escalating and causing symptoms, which could eventually be life threatening.

Which one of the following is correct?

A) Decompressive craniectomy

B) Dural patch

C) Repeated aspiration through a lumbar puncture

D) Temporal lobectomy

E) Ventriculoperitoneal shunt

Answer:E

Explanation:

The Monroe-Kelly doctrine models an understanding of intracranial pressure by viewing the cranium as a fixed volume structure containing the brain, CSF and blood. If the amount of any of these substances increases the intracranial pressure will elevate (hence, a haematoma, a CSF blockage, or cerebral oedema). This child has hydrocephalus and requires chronic drainage of CSF to prevent increased intracranial pressure which would compress vascular structures and the brain parenchyma. Rather than repeatedly perform lumbar punctures which would not be practical as a long term solution, a CSF shunt can be placed that drains CSF from the ventricles in the brain to the peritoneal cavity most commonly (ventriculoperitoneal shunt), but also shunting to the right atrium or the pleural space or a possibility. Care must be taken that the flow of CSF is regulated: too slow and the intracranial pressure will increase, and too fast and cerebral hypotension will occur causing postural headaches. The VP shunt is made of plastic and does not grow as the patient does. Therefore it will need to be replaced once the excess of tubing left in the peritoneal cavity shortens. The shunt can be seen and monitored on plain radiography.

Question:

A 30-year-old surgical registrar presents with sleeping difficulties. Her husband says that when she is about to sleep, she wakes up suddenly, sits upright and is wide-awake. The patient doesn’t have any recollection of this but recalls vivid nightmares.

Which one of the following is correct?

A) Cataplexy

B) Hypnagolgic hallucination

C) Hypnopompic hallucination

D) Narcolepsy

E) Nocturnal fit

Answer:A

Explanation:

Narcolepsy is a chronic sleep disorder characterized by excessive daytime sleepiness in which a person experiences extreme fatigue and falls asleep at inappropriate times. Some narcoleptics experience cataplexy, a sudden muscular weakness typically brought on by strong emotions and most experience sleep paralysis in which a patient loses motor control on falling asleep or awakening whilst being conscious. Hypnagogic and hypnopompic hallucinations are hallucinations on falling asleep and waking up, respectively. They may be normal phenomenon or seen in narcoleptics. The classical tetrad of symptoms of narcolepsy is night terrors, cataplexy, hypnagogic/hypnopompic hallucinations and daytime sleepiness.

Question:

A homeless 27-year-old man was admitted to the general medical ward with left medial thigh pain and several infected left leg ulcers. He has no significant past medical history except for Deep Vein Thrombosis (DVTs) affecting both legs. On examination, he is thin, smells of alcohol and is agitated. His left thigh is slightly swollen and tender to touch. His lower limb pulses are all palpable. His temperature is 38 oC. He is admitted and treated for suspected deep venous thrombosis. On day 2 of admission he begins to become more agitated with coarse generalized tremor on examination.

Which one of the following is correct?

A) Chlordiazepoxide

B) Methadone

C) Zopiclone

D) Diazepem

E) Lorazepem

Answer:B

Explanation:

This patient has been admitted and treated for a suspected DVT but is likely to be dependent on alcohol. This is a common problem in patients admitted to hospital who then have no access to alcohol and a process of physical alcohol withdrawal takes place which if untreated may lead to delirium tremens. The symptoms include shaking, anxiety, nightmares, confusion, disorientation and visual hallucinations – classically of crawling insects on the body – and other features of autonomic hyperreactivity. Delerium tremens is associated with a mortality of up to 15% and therefore, it is critical to acquire an alcohol history on all admitted patients and start a reducing course of chlordiazepoxide to prevent delirium tremens.

Question:

You are the FY2 doctor on call. A 45 year-old patient who is suicidal and known to be suffering from paranoid schizophrenia threatens to leave the hospital. Under what section of the Mental Health Act can you detain this patient?

Which one of the following is correct?

A) Section 4

B) Section 2

C) Section 3

D) Section 5(2)

E) Section 136

Answer:D

Explanation:

The Mental Health Act is legislation that defines the legal basis upon which an individual thought to be suffering from a mental disorder and at risk to the general public or to themselves may be detained for assessment and/or treatment of that mental illness with or without their consent.

It is informally known as “sectioning” which refers to the following sections which define the purpose of detention, the person(s) required to enact the section and the duration. The patient has the right to a Mental Health Review Tribunal to challenge a section.

Section 2: Admission for assessment Max duration 28 days Requires two medical practitioners and AMHP to enact

Section 3: Admission for treatment Maximum duration 6 months, can be renewed Requires two medical practitioners and AMHP Nearest relative must consent.

Section 4: Emergency admission for assessment Lasts 72 hours Requires one medical practitioner and Approved Mental Health Practitioner (AMHP) to enact

Section 5(2): Allows detention of an informal patient for up to 72 hours Designed as an emergency order in order for a mental health act assessment to take place

Section 136: Allows a police officer to remove someone who appears to be suffering form a mental health disorder to a place of safety Should not exceed 72 hours and allows patient to be assessed by medical practitioner.

Question:

You are the FY2 doctor in Accident and Emergency. An 18-year-old girl took an overdose of antidepressants and co-codamol 2 hours ago. She doesn’t know the name of the antidepressants or how many tablets she took. It is suspected they may be tricyclic antidepressants. What do you do first?

Which one of the following is correct?

A) Full Blood Count

B) Arterial Blood Gas

C) Paracetamol levels

D) Urea & Electrolytes

E) Liver Function Tests

Answer:B

Explanation:

Tricyclic antidepressants are harmful in overdoses due to systemic acidosis and excitability of cardiac tissues resulting in arrythmias and neural tissues resulting in seizures. For this reason, they are not favoured as first line treatments for depression, a high risk group for self harm. Arterial blood gas analysis is essential to quickly assess the degree of acidosis, and an ECG would be useful to exclude tachycardia and cardiac conduction deficits. Severe intoxication of antidepressants with a combination of paracetamol (in co-codamol) can cause severe metabolic acidosis, which can be treated by boluses of 50mmol iv 8.4% sodium bicarbonate, aiming for pH of 7.4-7.55.

Question:

A 35-year-old man was involved in a pub brawl and was brought in to Casualty by the police. He has a laceration on his arm and smells of alcohol. You are the F2 doctor attending to him. He tells you you’re not suturing his wound properly and says he could do a better job. He is abusive to other members of staff. He has no psychiatric history and no criminal records.

Which one of the following is correct?

A) Alcohol dependence syndrome

B) Delirium tremens

C) Factitious disorder

D) No mental illness

E) Schizophrenia

Answer:D

Explanation:

It is important to recognize the spectrum of behaviour associated with alcohol abuse, both in the acute and chronic phases. Drinking large amounts of alcohol over a short period of time can lead to anti-social, aggressive and violent behaviour. Extreme levels of drinking (more than 30 units per day for several weeks) can cause psychosis.

Question:

A 17-year-old girl is brought in to see the GP by her mother. Over the last three months, she has been steadily losing weight, despite an apparently normal appetite. However, yesterday her mother observed the patient using her fingers to induce vomiting. A careful inspection of her bedroom had revealed several brands of commonly available laxatives. She has a BMI of 24.

Which one of the following is correct?

A) Anorexia Nervosa

B) Binge Eating syndrome

C) Body Dysmorphic Disorder

D) Bulimia Nervosa

E) Munchausen’s Syndrome

Answer:D

Explanation:

This patient has bulimia nervosa. There are 5 points in the DSM-IV diagnostic criteria for bulimia nervosa. One discriminating feature from anorexia nervosa is recurrent inappropriate compensatory behaviour to prevent weight gain by self-induced vomiting, laxative or diuretic misuse or excessive exercise. If there is no compensatory behaviour, then the diagnosis of binge-eating disorder is considered.

The DSM-IV diagnostic criteria for anorexia nervosa include: refusal to maintain normal body weight at more than 85% of expected body weight and amenorrhoea for at least three consecutive cycles (not on oral contraceptive pill) in postmenarchal females. Unlike patients with anorexia, patients with bulimia tend to have near normal body weight.

Body dysmorphic disorder is a preoccupation with the appearance of a body part. They are excessively worried about a certain part of their body, which they perceive to have a defect despite reassurances about their appearance.

Munchausen’s Syndrome, also known as factitious disorder, is a psychological and behavioural condition where the individual pretends to be ill, or sometimes induces symptoms of illness in themselves.

Question:

A 40-year-old woman presents to her GP with a three week history of low mood, poor appetite, crying frequently and not getting enjoyment out of her normally enjoyable hobbies. The GP prescribes fluoxetine 20mg once daily. A week later the patient comes back to the GP complaining that she has taken the tablets and she doesn’t feel any better.

Which one of the following is correct?

A) Add benzodiazepine

B) Add antipsychotics

C) Change antidepressants

D) Do nothing and continue with the current treatment

E) Stop antidepressants

Answer:D

Explanation:

Antidepressants take at least 2 weeks to begin to exert a therapeutic effect due to changes in upregulation of central serotonergic receptors. It is important to counsel the patient and explain to them that they will need to take them for 4 weeks to notice an effect of the drug treatment, and to persist with it. They may well need to be on anti-depressant medications for up to a year, after which the medication can be reviewed. Mild depression can be managed in primary care, but severe/psychotic depression often requires psychiatric input and may well require anti-psychotic medications.

Question:

A 36-year-old man has been stable on lithium for bipolar illness for the past 2 years. During a routine visit with his GP, he complains of feeling weak and lacking energy. He says he has been feeling particularly cold this winter and wonders if he is getting depressed.

Which one of the following is correct?

A) Check the patient’s lithium levels

B) Check the patient’s TSH levels

C) Increase the dose of lithium

D) Reduce the dose of lithium

E) Start antidepressants for depression

Answer:B

Explanation:

Long-term use of lithium has been known to reduce the activity of thyroid hormone and result in memory impairment. The patient in this scenario is describing symptoms of hypothyroidism; therefore the most appropriate next step would be to check the patient’s TSH levels. Lithium salts have a narrow therapeutic/toxic ratio; hence, it is important to be aware of toxic effects, which include tremor, ataxia, dysarthria, nystagmus, renal impairment, and convulsions. If these potentially hazardous signs occur, treatment should be stopped, serum-lithium concentrations redetermined, and steps taken to reverse lithium toxicity.

Question:

A 30-year-old first time mother went to see her GP with her husband. Her husband says that she has been tearful since the arrival of their baby 6-weeks ago. She also has trouble eating and sleeping properly. She gets more tearful when she is alone with the baby.

Which one of the following is correct?

A) Baby Blues

B) Depression

C) Postnatal depression

D) Pseudocyesis

E) Puerperal psychosis

Answer:C

Explanation:

This lady has postnatal depression. Postnatal Depression (PND) is a depressive illness, which affects approximately 1 in 10 women having a baby. The symptoms are similar to patients with depression, which include low mood and other symptoms lasting at least two weeks. PND can be relatively short lived or can last up to six months or more. Treatments involve counselling, psychotherapy sessions and antidepressants.

Baby blues is a “temporary” depressive illness in a new mother lasting up to 10 days after giving birth. This usually resolves with no treatment.

Puerperal psychosis has two features: delusions (false beliefs) and hallucinations. In addition, sufferers may experience: confusion and rigidity or extreme flexibility of the limbs. Pharmacological treatment is always needed to treat puerperal psychosis.

Pseudocyesis is a rare condition in which a woman believes she is pregnant and develops symptoms of a real pregnancy as a result of that belief.

Question:

A 20-year-old slightly withdrawn man states he experiences auditory hallucinations. He is noted to have poverty of speech and a flat affect. His family notice that he has been acting ‘odd’ and has locked himself in his room for the past few weeks. He frequently hears voices talking about him, and feels they are able to remove his thoughts. He has no previous psychiatric history and he does not feel suicidal.

Which one of the following is correct?

A) schizophrenia

B) manic-depressive disorder

C) depression

D) delirium

E) opioid abuse

Answer:A

Explanation:

This patient has schizophrenia as he has at least 1 symptom from Group 1 and Group 2 for the duration of a month.

The ICD-10 Criteria for diagnosing schizophrenia are:

Either at least one of the syndromes, symptoms and signs listed under Group 1; or at least two of the symptoms and signs listed under Group 2. The signs should be present for most of the time during an episode of psychotic illness lasting for at least 1 month (or at some time during most of the days)

Group 1: at least one of the following Group 2: at least two of the following

thought echo, thought insertion or withdrawal, or thought broadcasting

delusions of control, influence or passivity

hallucinatory voices

persistent delusions of other kinds that are culturally inappropriate and completely impossible

persistent hallucinations in any modality

incoherence or irrelevant speech

catatonic behaviour

‘negative’ symptoms, such as marked apathy, paucity of speech and blunting or incongruity of emotional response

Question:

A 63-year-old carpenter with a history of emphysema was admitted to Accident and Emergency with difficulty in breathing and sputum producing cough. When taking a smoking history, he claims to have quit smoking 3 years ago, but has previously smoked on average 15 cigarettes a day since he was 16 years old. Calculate his pack years.

Which one of the following is correct?

A) 59

B) 44

C) 33

D) 35

E) 45

Answer:C

Explanation:

Cigarette pack years are used to approximate the number of cigarettes a person has smoked over time. A pack year is defined as 20 manufactured cigarettes (one pack) smoked per day for one year. It is calculated by multiplying the number of packs of cigarettes smoked per day by the number of years the person has smoked. For example, 1 pack year is equal to smoking 20 cigarettes per day for 1 year, or 40 cigarettes per day for half a year. The patient above has smoked for 44 years. Therefore 44 multiplied 15 cigarettes smoked per day and then divided by 20. Even though symptoms of chronic bronchitis or emphysema can present earlier, patients are diagnosed with COPD when they are older than 45 years of age and have at least a 20 pack-year smoking history. A higher pack year number correlates with a lower lung cancer survival rate and an increased risk for oral cancer.

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Question:

A 58-year-old plumber who smokes 35 cigarettes a day for 42 years presented to his GP with recent onset of shortness of breath associated with cough and haemoptysis. He also complained of weight loss of 3 kilograms in the last month. The GP also noticed clubbing on his fingers and toes. Which type of lung carcinoma is he most likely to have?

Which one of the following is correct?

A) Sarcoma

B) Carcinoid

C) Small cell lung carcinoma

D) Malignant mesothelioma

E) Non-small cell carcinoma

Answer:E

Explanation:

Lung cancers are classed as non-small cell carcinoma lung cancer (80 percent) or small cell carcinoma (20 percent). Non-small cell carcinoma lung cancer (NSCLC) comprises 5 histological types: squamous cell (35- 45 percent), adenocarcinoma (15 percent), large cell carcinoma (10 percent), carcinoid (1%) and bronchoalveolar cell carcinoma (rare).

Small cell carcinoma behaves differently to the other forms of lung cancer in that it is chemosensitive, and is usually disseminated by the time of presentation and diagnosis.

Of the listed options, the most appropriate answer is NSCLCs as this is most common in smokers. Smoking increases the risk of lung cancer by 13-fold compared to aged matched individuals. It also depends on the symptoms and signs of the patient. In this case, we do not have enough information e.g.: blood tests to confirm metabolic and biochemical abnormality or a chest x-ray that demonstrates pleural plaques or occupation( which would steer the reader in the direction of malignant mesothelioma). The next most common form would be small cell lung carcinoma. Sarcomas develop in the soft tissue.

Early symptoms of lung cancer may be non-specific so it is important to adopt a high index of suspicion in individuals with risk factors, such as large number/long duration of cigarettes smoked, age, family history of lung cancer, previous history of other cancers and exposure to other carcinogens (e.g.: asbestos). Symptoms and signs in lung cancer can be divided into 3 groups: those related to local disease, extra-thoracic disease and paraneoplastic syndromes.

Local disease Extra-thoracic disease Paraneoplastic syndromes

Cough

Dyspnoea

Wheeze

- signs of localised airway obstruction

Haemoptysis

Dysphagia

Hoarseness

Chest pain

Bone pain ( due to bone mets)

Neurological: Epilepsy, Headache, Hemianopia, Hemiparesis ( due to brain mets)

Abdominal pain (due to liver mets)

Clubbing

Hypertrophic pulmonary osteoarthropathy (HPOA)

Systemic symptoms:

Anorexia

Cachexia/Weight loss

Hypercalcaemia

Hyponatraemia

Peripheral neuropathy

Lambert-Eaton syndrome

Anaemia

Thrombo-embolic disease

Paraneoplastic syndromes are more commonly associated with small cell lung cancer as it arises from endocrine cells in the lung and therefore secretes hormones which have systemic effects. Patients may develop SIADH secondary to ADH secretion and Cushing’s syndrome as a result of ectopic ACTH production. Patients may secrete parathyroid hormone-related peptide, or suffer bony metastases, both of which may produce hypercalcaemia.

Carcinoid tumours most commonly arise in the gastrointestinal tract where they may be asymptomatic as the hormones they produce are metabolized by the liver through the hepatic portal vein. However, if they metastasize to the liver, they may develop systemic symptoms such as flushing, wheezing due to release of serotonin and other hormones. Carcinoid can rarely arise in the large airways and lead to recurrent chest infections and persistent symptoms of cough, dyspnoea, wheeze and haemoptysis.

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Question:

A 45-year-old Asian man presented to Casualty with shortness of breath and left sided chest pain over the past 2 days. The chest pain was worse on inspiration and cough. He was productive of green sputum, which had flecks of blood. His exercise tolerance was normally about 200 metres but he found that he was now breathless after climbing up one flight of stairs at home. He smoked 15 cigarettes per day. On examination, his temperature was 37.8oC, blood pressure 110/80mmHg, pulse rate 100 bpm respiratory rate 32 breaths/min, oxygen saturation was 90% on air. Auscultation revealed bronchial breathing and crepitations over the left base. He was orientated to time, place and person. Bloods were normal except for a WCC 16 x 109/l (normal range: 4-11 x109/l) and CRP 28 mg/l (normal: < 3 mg/l); Urea 14 mmol/L (normal range: 2.5-8.0mmol/L). Chest x-ray demonstrated a homogenous opacity in the left lower lung zone.

Which one of the following is correct?

A) Bronchial carcinoma

B) Myocardial Infarction

C) Pneumonia

D) Pulmonary Embolus

E) Tuberculosis

Answer:C

Explanation:

This patient was hypoxic with tachypnoea and tachycardia. The hypoxia should be corrected as soon as possible. It is not known if this patient has type 1 or 2 respiratory failure without performing arterial blood gas analysis. Therefore, it is important to obtain an arterial blood gas as soon as possible, put the patient on high dose oxygen therapy (via high concentration reservoir mask or non-rebreathe mask) in the first instance. Oxygen should be prescribed to achieve a target saturation of 94–98% for most acutely ill patients or 88–92% for those at risk of hypercapnic respiratory failure.

In patients with pre-existing chronic obstructive pulmonary disease who may have carbon dioxide retention, it is vital to start with controlled oxygen concentrations and progressively titrate the oxygen on the basis of repeat ABGs, aiming to keep PaO2 >6.65 kPa without causing a fall in arterial pH below 7.25 This is because maximal oxygen therapy can reduce their hypoxic drive and increase ventilation-perfusion mismatching.

This clinical features and test results all point to a diagnosis of Community Acquired Pneumonia (CAP) i.e.: low grade fever, purulent sputum, raised inflammatory markers, chest findings and consolidation confirmed on radiology. His chest pain was pleuritic in nature – that is a sharp pain felt on inspriation, which is characteristic of lobar pneumonia. (Note: Pulmonary embolism, chest injuries, pneumothorax, tumours of the lung, pleural inflammation from viral infection or connective tissue disease can also give rise to pleuritic chest pain.)

The British Thoracic Society recommends the use of the CURB-65 score to risk stratify patients and administer appropriate management. The score is an acronym for each of the risk factors measured. Each risk factor scores one point, for a maximum score of 5:

(One point each for: New Confusion (AMTS score of 8 or less), Urea >7mmol/L, RR >30 breaths/min, Blood Pressure <90mmHg systolic or <60 mmHg diastolic, Age >65)

The risk of death increases as the score increases:

0 to 1 < 2% mortality (Low)

2 to 3 < 10% mortality (Moderate)

4 to 5 > 20% mortality (Severe)

This patient scores 2, which means he was at increased risk of death and requires admission and treatment with a broad spectrum penicillin which will cover many gram positive and gram negative microorganisms. Streptococcus pneumoniae is the most commonly isolated bacteria in CAP. Gram-negative bacteria implicated in CAP includes: Haemophilus Influenza, Escherichia coli and Klebsiella pneumonia. If the patient is allergic to penicillin, the alternative antibiotics would be a macrolide (clarithromycin or erythromycin).

This patient would need a repeat chest x-ray at six weeks to assess the homogenous opacity in the left lower lung zone present on his initial x-ray. If this opacity has not changed, a diagnosis of malignancy must be considered. This patient has a high risk of malignancy, due to smoking and his age.

Question:

A 65-year-old man was referred by his GP to the Respiratory Clinic to investigate the cause of his worsening shortness of breath over a period of 2 years. He was started on inhaled Salbutamol last year by his GP, which helped initially, but he still remained breathless. The patient says his breathlessness is worse following a cold or humid weather. He sleeps on one pillow at night and is a current smoker of 25-30 cigarettes per day for the past 40 years. His father died of emphysema. On examination, he had nicotine-stained fingers, pulse 84 beats/minute, jugular venous pressure (JVP) not elevated, blood pressure 110/70mmHg, oxygen saturation was 96% on air, normal heart sounds with no pitting oedema, vesicular breath sounds with bilateral expiratory wheeze. His chest x-ray showed hyperinflated lungs. His spirometry result showed: FEV1 1.3L (43% predicted), FVC 3.4L (70% predicted), FEV1/FVC ratio 43%.

Which one of the following is correct?

A) Asthma

B) Chronic Obstructive Pulmonary Disease

C) Congestive Cardiac Failure

D) Cor Pulmonale

E) Pulmonary fibrosis

Answer:B

Explanation:

The patient’s history and clinical findings point towards a degenerative respiratory disease such as COPD or pulmonary fibrosis. COPD is characterized by airflow obstruction that is usually caused by tobacco smoking, not fully reversible and is progressive. The diagnosis of COPD is confirmed by spirometry. FEV1 should normally be between 80-120% of predicted values. Predicted values are based on an individual’s age, height and gender from tables of normal values of healthy people. This patient has moderate airflow obstruction (30-49%). FEV1 is also expressed as a percentage of FVC. Normal FEV1 /FVC ratio should be equal or more than 70% of FVC.

In obstructive lung diseases such as COPD and asthma, diffuse airway obstruction reduces airflow- the proportion of air in the lungs that can be exhaled in 1 second is reduced. Hence, the ratio of the FEV1 to the FVC is lower. Therefore, the spirometry results favours the diagnosis of COPD rather than pulmonary fibrosis.

In restrictive lung diseases such as pulmonary fibrosis, sarcoidosis and pleural disease, the airways are not affected. All lung volumes are reduced, resulting in a normal or increased FEV1 /FVC ratio.

Airway obstruction caused by COPD is not fully reversible and does not change significantly over several months. Asthma can be differentiated from COPD in that airway obstruction is fully reversible, unless chronic scarring has occurred. Reversibility testing involves taking spirometry readings before and after inhalation of a short-acting bronchodilator (e.g.: salbutamoll). NICE guidelines define reversibility as an improvement in FEV1 of > 15% baseline value.

Cor pulmonale is most commonly caused by COPD. Pulmonary arterial vasoconstriction (caused by hypoxia secondary to COPD), causes pressure in the pulmonary arteries to increase. Therefore, the right heart has to pump harder to force the blood out of the right ventricle. This leads to right ventricular hypertrophy. Central venous pressure increases, causing liver engorgement, portal hypertension and ankle oedema.

Congestive cardiac failure (CCF) is an option in this question because left ventricular failure causes left atrial pressure to increase, causing pulmonary venous dilatation and increase fluid in the lung parenchyma.Pulmonary oedema compresses the small airways which causes a wheeze, known as “cardiac asthma”. In this patient, his chest x-ray did not show any specific features of CCF such as upper lobe diversion (redistribution of blood flow to pulmonary arteries in upper lobes) or cardiomegaly, Kerley’s B lines (sign of interstitial pulmonary oedema), bat’s wings (patchy alveolar oedema that radiates out from the perihilar region) or blunting of the costophrenic angles (pleura effusion).

Question:

A 68-year-old man’s chest x-ray was discussed at the weekly Lung Multidisciplinary meeting. The chest x-ray showed pleural plaques and a left-sided pleural effusion. CT scan shows irregular pleural thickening around the left lung and invasion of the chest wall. Pleural fluid was aspirated under CT guidance. Pleural fluid results show: pH 7.4, Protein 40g/L, Glucose 4 mmol/L, cytology negative. Pleural biopsy showed malignant mesothelioma.

Which one of the following is correct?

A) Asbestos exposure

B) Previous renal cell carcinoma

C) Exposure to Mycobacterium Tuberculosis

D) Strong family history

E) Tobacco smoking

Answer:A

Explanation:

Malignant mesothelioma is a condition strongly associated with asbestos exposure, which occurs in a wide range of occupational environments (such as mining, roofing, flooring, building/demolition, shipping etc). Asbestos is a naturally occurring fibrous silicate mineral which occurs in three forms (blue, brown and white). Its properties of resistance to heat, electricity and sound, make it useful for a variety of purposes, particularly brake linings and insulation. Hence, it has been widely used in the above industries. Asbestos was banned in several countries including the European Union in the late 1990s due to its toxicity. It is important both medically and legally to take a detailed occupational history to establish asbestos-related lung disease as the patient might be eligible for compensation. Asbestos fibers come in different shape and sizes deposit in different areas of the lung. Shorter fibers (less than 3 mm) can easily move into the pleura whereas long fibers (greater than 5 mm) remain in the lung parenchyma. Intra-pleural inoculation of asbestos in rats has shown that pleural contamination with asbestos leads to the development of malignant mesothelial plaques, solid white tumour ensheathing the lungs. This is due to asbestos acting as a tumour initiator and promoter. However, the exact mechanism is not yet known. Both pleural membranes are usually involved in the exudative effusion resulting from increased capillary permeability due to destroyed capillary endothelium and disrupted lymph drainage secondary to malignancy Therefore, the patient typically presents with dyspnoea and cough as the lungs cannot expand fully. Mesothelioma may also affect the pericardium, causing chest pain or in the peritoneum causing abdominal pain. The diagnosis is confirmed with VATs guided biopsy. The video assisted-thoracoscopy (VATs) technique has been proven in studies to provide sufficient tissue for histological diagnosis. As the patient gets recurrent effusion due to fluid collecting in the pleural space, pleurodesis (where talc is inserted into the space) or pleurectomy (removal of the pleura) can be carried out to eliminate the space between the pleura where fluid can collect. These procedures help alleviate symptoms in the patient. Radiotherapy has also been used in palliation to relieve symptoms. Chemotherapy has been proven to improve survival rates but the prognosis of malignant mesothelioma is poor in general (median survival approximately 9 months).

Question:

You are the FY1 Doctor on the respiratory ward and have been looking after a 53-year-old man with a restrictive respiratory problem. You know that he used to work on the shipyard in the 1960s and 1970s, and there is a clear history of asbestos exposure. The patient deteriorates and dies. Who should you report the death to?

Which one of the following is correct?

A) Consultant in communicable disease control

B) Coroner

C) General medical council

D) Health and safety executive

E) Strategic health authority

Answer:B

Explanation:

A death should be referred to the Coroner if the death may be due to an industrial disease or may be related to the deceased’s employment. Shipyard workers represent one of the largest groups at risk for developing asbestos-related diseases.

A death should be referred to the coroner if:

The cause of death is unknown

The deceased was not seen by the certifying doctor either after death or within 14 days of death

The death was violent, unnatural or suspicious

The death may be due to an accident (whenever it occurred)

The death may be due to self-neglect or neglect by others

The death may be due to an industrial disease or related to the deceased employment

The death may be due to an abortion

The death occurred during an operation or before recovery from the effects of an anaesthetic

The death may be due to suicide

The death occurred during or shortly after detention in police or prison custody

Notification of a number of specified infectious diseases is required under the Public Health (Infectious Diseases) 1988 Act and the Public Health (Control of Diseases) 1984 Act. Notifiable diseases such as Tuberculosis, Brucellosis, Anthrax and Legionnaires' disease are reported to the Consultant in communicable disease control.

The General Medical Council (GMC) is the independent regulator for doctors in the UK.

Health and Safety Executive (HSE) is the national independent regulator for work-related health, safety and illness.

Strategic health authorities (SHAs) manage the NHS locally and provide an important link between the Department of Health and the NHS.

Question:

A 23-year-old carpet fitter went to Casualty after developing intermittent shortness of breath after returning to work after a week. He had been on holiday in South America for the previous month. He also complained of a productive cough of clear sputum particularly at night. He had similar episodes in the past but felt fine on holiday. On examination, he was not able to complete his sentences. His heart rate was 97 bpm with a blood pressure of 142/85 mmHg and a respiratory rate of 23 breaths/min. Oxygen saturation was 94% on air. Further examination revealed widespread polyphonic wheeze on chest auscultation.

Which one of the following is correct?

A) Asthma

B) Emphysema

C) Extrinsic allergic alveolitis

D) Influenza A virus subtype H1N1

E) Pulmonary Embolism

Answer:A

Explanation:

This history is suggestive of occupational asthma as his symptoms are worsened by his occupation as a carpet fitter and remitted while he was on holiday. Textile dusts act as allergens which generate allergen-specific T cells (that migrate from lymph nodes to the lungs) and allergen-specific IgE, produced by B cells, which coats mast cels and dendritic cells in the lungs. Subsequent exposures will result in degranulation of mast cells which release histamine and prostaglandins (acute phase reaction). Their release produce vasodilatation, increased bronchial secretions and smooth muscle contraction. These processes narrow the airway lumen immediately after allergen exposure.

Activated T cells attract eosinophils which release leukotrienes and cationic proteins and cause bronchial hyperresponsiveness (late phase reaction).

The difference in atopic asthma (often childhood onset) and occupational asthma (adult onset) is that patients with atopic asthma have systemic IgE production and a positive response to allergy testing whereas patients with occupational asthma produce IgE locally at the bronchial mucosa.

Other key features of the history are: variable and recurrent episodes of dyspnoea (often nocturnal- likely due to low cortisol levels, impaired mucociliary clearance, diurnal variation in bronchomotor tone), clear sputum producing cough, and wheeze caused by reversible airways obstruction.

Occupational asthma may account for about 9-15% of adult onset asthma. The workers most commonly reported to occupational asthma surveillance schemes include paint sprayers, bakers and pastry makers, nurses, chemical workers, animal handlers, welders, food processing workers and timber workers.

The British Thoracic Society recommends an objective diagnosis of occupational asthma by serial peak flow measurements, with at least four readings per day.

Early diagnosis and early avoidance of further exposure, either by relocation of the worker or substitution of the hazard offer the best chance of complete recovery. Workers who remain in the same job and continue to be exposed to the same causative agent after diagnosis are unlikely to improve and symptoms may worsen.

Question:

A 55-year-old housewife of Afro-Carribean origin was referred to a respiratory physician with persistent shortness of breath and dry cough of 3 months duration. Her GP treated her with antibiotics without improvement. Her past medical history includes hypertension and 2 caesarian sections. She has no drug allergies and regularly took ibuprofen for joint pains in her hands. On examination she was a thin lady with a prominent BCG scar. Her temperature was 36.7oC, heart rate 70 bpm, blood pressure 135/90 mmHg, respiratory rate 18 breaths/min, oxygen saturation was 93% on RA. On chest auscultation she had fine inspiratory crackles throughout both lungs. No wheeze present. Chest radiograph showed bilateral hilar lymphadenopathy and patchy reticular shadowing throughout both lung fields. Her pulmonary lung function tests at the clinic were: FEV1 1.9L (60% predicted), FVC 2.1L (58% predicted), FEV1/FVC 90%.

Which one of the following is correct?

A) Emphysema

B) Extrinsic allergic alveolitis

C) Fibrosing alveolitis

D) Sarcoidosis

E) Tuberculosis

Answer:D

Explanation:

The diagnosis is Sarcoidosis. The clues in the vignette include: the ethnicity (Afro- Carribean, West Indians, Africans are prone to get sarcoidosis), history of chronic cough (TB less likely due to BCG scar present, although the vaccine does not confer 100% protection), hypertension (due to raised serum angiotensin converting enzyme level synthesized by lung granulomas), joint pains (sarcoidosis can cause cysts and swelling in bony joints).

Sarcoidosis is a multisystem granulomatous disease of unknown aetiology. Granulomas are small foci of chronic inflammation, involving collections of epitheloid cells, macrophages and T lymphocytes. The trigger for formation of granulomas is not known.

The commonest presentation is with respiratory symptoms or radiographic abnormalities. Extrapulmonary presentations include: erythema nodosum, anterior and posterior uveitis, metabolic manifestations ( abnormal macrophages increase activation of vitamin D causing hypercalcaemia), central nervous system and cardiac involvement are rarely involved. Non-caseating granulomas sampled by endobronchial (tissue samples taken with forceps directly from a large airway wall) or transbronchial (forceps are passed as deep as possible into the lung parenchyma to take samples) biopsy at fibreoptic bronschopy are diagnostic; the latter is more sensitive.

Her FEV1 is reduced below levels predicted for her age, gender and height. Her FVC is reduced by a similar amount to FEV1. Therefore, she has a restrictive defect in her lung function due to multiple small nodules of chronic inflammatory cells in the interstitium.

The mainstay of treatment is immunosuppression with corticosteroids. Steroid-sparing agents can also be used (azathioprine, methotrexate, cyclophosphamide, chlorambucil). Methotrexate may also cause pulmonary fibrosis, and this must be considered in this context.

Question:

One of the drugs used in the treatment of asthma is montelukast. What is the mechanism of action?

Which one of the following is correct?

A) Anti-histamine

B) Leukotriene receptor antagonist

C) Anti-cholinergic

D) Phosphodiesterase inhibitor

E) Glucocorticoid analogue

Answer:B

Explanation:

Leukotrienes are inflammatory mediators released by mast cells which cause bronchoconstriction and increased production of mucus in the bronchi and bronchioles Montelukast is a leukotriene receptor antagonist. The British Thoracic Society guidelines recommend this as an add-on therapy for management of chronic asthma in addition to inhaled short-acting β2 agonist (reliever) and inhaled steroids (preventer). [See Step 3 below]

The stepwise approach of chronic asthma management advocates starting treatment for the patient at the step most appropriate to the severity of asthma symptoms. Control of symptoms is achieved by stepping up treatment as necessary and stepping down when control is good for a prolonged period of time.

The steps are in brief below:

Step 1: mild intermittent asthma.

-Inhaled short-acting beta-2 agonists

Step 2: introduction of regular preventer therapy

-Inhaled steroids

Step 3: INITIAL add-on therapy

-inhaled long-acting ß2 agonist (LABA)

-Leukotriene receptor antagonists

-Theophyllines

-Slow-release ß2 agonist tablets

Step 4: POOR CONTROL ON MODERATE DOSE OF INHALED STEROID + ADD ON THERAPY: addition of fourth drug

Step 5: continuous or frequent use of oral steroids

For patients not controlled at step 4, titrate oral steroids to the lowest dose providing adequate control.

Corticosteroids inhibit phopholipase A2 which prevents the formation of inflammatory mediators which usually are metabolized from arachidonic acid resulting in blockade of the lipoxygenase pathway (which produces leukotrienes) and the cyclo-oxygenase pathway (which produces prostaglandins and thromboxanes). The reduction in production of these hormones reduces inflammation. Aspirin and Non-steroidals (NSAIDS) inhibit the cyclo-oxygenase pathway only, hence arachidonic acid is preferentially metabolised via the lipooxygenase pathway, resulting in the production of leukotrienes, which promotes smooth muscle contraction and can cause deterioration in asthmatic patients. This should be borne in mind before treating any patient with NSAIDs or aspirin.

Ipratropium bromide is an anti-cholinergic that blocks the muscarinic acetylcholine receptors in the smooth muscles of the bronchi in the lungs.

Methylxanthines (theophylline, aminophylline) inhibit phosphodiesterase (PDE), which increases intracellular cyclic adenine monophosphate (cAMP). Aminophylline also blocks adenosine receptors that mediate the constriction of airways. These actions cause bronchodilation, diuresis and stimulation of the central nervous: and cardiac systems - hence, side effects of methylxanthines include: seizures, tachycardia, and arrhythmias.

Question:

A 45-year-old motorcyclist presented to Accident and Emergency acutely short of breath following a road traffic collision. He had no history of respiratory disease. On examination, you noticed that he was using his accessory muscles and had tracheal deviation to the left-hand side with obvious dilation of neck veins, particularly on inspiration. On the right there was increased resonance to percussion, reduced breath sounds and reduced chest expansion. The nurse reported that his blood pressure was 105/55 mmHg, pulse rate 120 bpm, respiratory rate 35 breaths/min, oxygen saturation 82% on high flow oxygen.

Which one of the following is correct?

A) Urgent endotracheal intubation

B) Arterial blood gas

C) Chest X-ray

D) Insert chest drain into midaxillary line on the right-hand side

E) Insert large bore cannula into second intercostal space on right-hand side

Answer:E

Explanation:

This patient has suffered a tension pneumothorax - a medical emergency. There is no time to confirm the diagnosis with a chest x-ray. Unless the pleural air is rapidly decompressed, cardiorespiratory arrest will occur due to high intrathoracic pressures preventing venous return to the heart, and therefore cardiac output.The next step would be to insert a large-bore cannula into the second intercostal space in the mid-clavicular line on the side of the pneumothorax. This treatment is life-saving.

The diagnosis of tension pneumothorax is primarily a clinical diagnosis, based on detection of suspicion of a pneumothorax combined with haemodynamic compromise.

The clinical signs which suggest this diagnosis are:

Reduced breath sounds and reduced chest expansion on the affected side (on the right side in the patient)

Increased resonance to percussion on the affected side (right side in the patient)

Hypotension and other signs of shock (low blood pressure with compensatory tachycardia)

Jugular venous distension (dilated neck veins)

Tracheal deviation away from the affected side, hence this patient had tracheal deviation towards the left side. (late sign)

In a tension pneumothorax, air enters into the pleural space through a wound in the chest wall and parietal pleura which causes the intrapleural pressure to become less negative. Therefore, it is less able to oppose the elastic recoil of the lung and the lung starts to collapse. The hole in the lung acts as a one-way valve, opening on inspiration and allowing air into the pleural space but closing on expiration and trapping air in the pleural space. Thus, the volume of intrapleural air is expanding with every breath and the right-sided intrapleural pressure has increased above atmospheric pressure. The expanding right-sided pneumothorax reaches the point of ‘tension’ as it is now causing respiratory and haemodynamic compromise: the right pneumothorax is pushing this patient’s mediastinum to the left, this compresses major vessels in the mediastinum, reducing venous return and cardiac output, thus resulting in a fall in blood pressure, reduced ventilation (right lung collapse and compression of the left lung) and impaired pulmonary perfusion (mediastinal compression) cause hypoxia with compensatory tachypnoea.

Following decompression, this patient will need an intercostal chest drain.

General management for spontanoues pneumothoraces (primary- without underlying lung disease; secondary- with underlying lung disease such has pulmonary fibrosis, and emphysema)

For small (< 2cm visible rim of air on chest x-ray) primary and secondary pneumothoraces with minimal symptoms, no specific treatment is required but the patient needs a follow-up chest x-ray in 2 weeks to ensure resolution. It should be stressed before discharge that they should return directly to hospital in the event of developing breathlessness.

All other cases will require active intervention (aspiration or chest drain insertion). Large pneumothoraces (>2cm visible rim of air on chest x-ray) should be aspirated first. If they recur, the patient requires a chest drain. This may be removed when the lung has fully re-expanded and no air leak has occurred for at least 24 hours. If the lung does not re-expand within a few hours, then suction should be applied to the drain. If this fails, the patient will need to be referred to cardiothoracic surgeons for either open thoracotomy or pleurectomy.

Question:

An epidemiologist looks at the 2010 data in a Scottish town. The population of the town is estimated from the previous census to be 250,000. There are currently 20,000 people who suffer from a respiratory disease. There were 250 deaths in 2010 attributed to this disease and 500 new cases were diagnosed in the same period.

Which one of the following is correct?

A) 1.25%

B) 0.2%.

C) 2.5%

D) 8%

E) 0.1%.

Answer:D

Explanation:

The prevalence of disease is defined as the number of active cases at a single time point divided by the total population surveyed. The number of people with the disease is 20,000 people in 2010 with the total population in the same period being 250,000. Therefore, the calculation for prevalence is:

(20,000 x100%)/250,000 = 8%

Incidence is defined as the number of new cases of the disease per year divided by the population surveyed. The number of new cases diagnosed is 500. Therefore, the calculation for incidence is:

(500 x 100,000)/250,000 = 200/ 100,000 per year

Mortality rate is typically expressed in units of deaths per 100,000 individuals per year; thus, the mortality rate of this respiratory disease is:

(250 x 100,000)/250, 000 = 100 / 100, 000 per year

Other epidemiological measurements (not possible to carry out this calculation in this question as we do not have enough information) are:

Age-specific death rates, which can be calculated for each age-group and these are defined as the number of deaths in the age group per 100,000 population in the same age-group

Sex-specific death rates are defined as the number of deaths in the female population per 100000 individuals per year.

Question:

“Tumour less than 3 cm diameter in a lobar bronchus with ipsilateral subcarinal lymph node involvement and no metastases”.

Which one of the following is correct?

A) T1 N1 M0

B) T1 N2 M0

C) T3 N1 M0

D) T3 N3 M0

E) T4 N3 M0

Answer:B

Explanation:

Small cell lung cancer has a rapid rate of growth and is almost always too extensive for surgery by the time patients present to medical attention. As the mainstay of management is systemic treatment with chemotherapy, staging is simply classified limited stage or extensive stage. Limited stage small cell lung cancers are confined to the ipsilateral hemithorax and supraclavicular lymph nodes. Extensive stage means that the tumour has either metastasised to other sites, or is too widespread to be considered limited.

Staging of non-small cell lung cancers:

The Tumour, Nodes and Metastasis (TNM) classification is a widely accepted nomenclauture to stage lung cancer. This system is primarily used in the management of non-small cell carcinoma lung cancer (NSCLC). It is not necessary to memorise the classification, however, it is important to recognise features to determine prognosis and management options.

T describes the size of the tumor and invasiveness. The T number can range from T1 to T4. T1 and T2 are differentiated primarily on size (<3 cm = T1, >3 cm = T2). T3 tumors involve the chest wall, but may be resectable. T4 tumors are not surgically resectable because they have invaded the mediastinum, heart, major vessels, trachea or oesophagus.

N describes the lymph nodes involved and is staged from N1 to N3.

M stands for the presence (1) or absence (0) of metastases.

Table showing how TNM subsets corresponds to Lung Cancer Staging.

Stage TNM Subsets

T N M

0 Carcinoma in Situ

IA

IB T1

T2 N0

N0 M0

M0

IIA

IIB

T1

T2

T3 N1

N1

N0 M0

M0

M0

IIIA

T3

T1-3 N1

N2 M0

M0

IIIB

AnyT

T4 N3

AnyN M0

M0

IV AnyT AnyM M1

Stages IA, IB, IIA, IIB are operable, while stages IIIB AND IV are unresectable. Radiotherapy is the mainstay of treatment for the majority of unresectable cancers. It may be given as a curative or palliative intent. The management of Stage IIIA is controversial as surgical opinions vary as to the respectability of T3 and N2 disease.

Question:

A 17-year-old girl with known asthma was admitted to the medical assessment unit. You are the FY1 on call. When you arrived, her respiratory rate was 12, oxygen saturation was 91% on 15L non-rebreathe mask. Her mother said she had been getting worse since yesterday. At this point, she had already been given back-to-back nebulisers (salbutamol) and oral prednisolone with little response. On examination, her breath sounds were quiet with not much audible wheeze. You perform an ABG, which showed:

pH 7.33 (normal range: 7.35 – 7.45)

pCO2 5.3 (normal range: 4.5 – 6.0 kPa)

pO2 8.4 (normal range: 12-16 kPa)

Base excess -3 (normal range: -2 to +2)

Bicarbonate 22 (normal range: 22-28)

Which one of the following is correct?

A) Start IV Aminophylline

B) Start IV Magnesium

C) Call the Intensive Therapy Unit (ITU)

D) Start Antibiotics

E) Order a chest x-ray

Answer:C

Explanation:

The immediate next step is to call for senior or ICU help as this patient has features of life-threatening asthma. This is a medical emergency. Features can include: SpO2<92%, silent chest, cyanosis, poor respiratory effort, arrhythmia, hypotension, exhaustion, altered consciousness.

The patient demonstrates severe hypoxia (despite being on oxygen) and is acidotic on the ABG, which are markers of severity. (Caution: Patients with severe or life threatening attacks may not be distressed and may not have all these abnormalities. The presence of any feature should alert the attending doctor.) A normal PCO2 in an acutely asthmatic patient is not “normal” – it is a sign of hypoventilation and exhaustion, and may signify life-threatening disease.

In the meantime, it is worthwhile trying ipratropium 0.5 mg by oxygen-driven nebuliser, giving IV magnesium sulphate (a smooth muscle relaxant, producing bronchodilation) 1.2-2 g over 20 minutes and ordering a portable chest X-ray (to exclude a pneumothorax or infection). Oxygen therapy should be continued to maintain an oxygen saturation of more than 90%. IV aminophylline are not first-line therapy in severe asthma but can be considered in individuals with severe exacerbations refractory to initial therapy.

Airways resistance in life-threatening asthma is dramatically increased by bronchoconstriction and mucus plugging. Increased airways resistance is most prominent on exhalation, which produces dynamic hyperinflation (air trapping and generation of intrinsic positive end-expiratory pressure-PEEP). The consequences include impaired gas exchange and increased work of breathing with respiratory muscle fatigue.

Question:

A 29-year-old female with a 10-year history of asthma returns to the UK from an extended holiday in Australia complaining of a two-day history of increasing dyspnoea. She said she uses a blue inhaler and is on the pill. She denied any allergies. On examination she was pyrexial at 37.8°C, pulse was 110/min, blood pressure was 106/74 mmHg, saturations of 93% on room air and her respiratory rate is 24/min. Auscultation of the chest revealed vesicular breath sounds and peak flow was 500 L/min.

Which one of the following is correct?

A) Chest x-ray

B) Computed Tomographic pulmonary angiography (CTPA)

C) D- Dimer

D) ECG

E) Ventilaton-pefusion scan

Answer:B

Explanation:

Pulmonary embolism (PE) can present as a triad of symptoms: dyspnoea, pleuritic chest pain, haemoptysis. Although this patient did not have the triad of symptoms, there are risk factors in this history which puts her at risk of developing PE. Long air travel is a risk factor for PE as immobility predisposes to venous stasis. She is on the pill (women on certain oral combined contraceptives especially ones which contain drospirenone has a 4-6 fold increased risk of PE).

The definitive investigation is CTPA as contrast is injected (via the brachial vein) and fills the pulmonary arteries to make it possible to visualise the clot by a series of images generated by the CT scanner. On CTPA, the pulmonary vessels are filled with contrast, and appear white. An embolus will cause a mass filling defect which appears darker. However, it is important to ascertain if the patient is pregnant before carrying out CTPA. Pregnancy is also a risk factor for PE so it is important to do a beta hCG test before exposing a patient to radiation (1 CTPA = 50 CXRs). Another contraindication to CTPA is if the patient is allergic to iodine (present in contrast) and has renal failure ( as the contrast would worsen the renal function – contrast nephropathy).

The ventilation-perfusion scan involves the inhalation (ventilation) and intravenous injection (perfusion) of radioactive technetium macro aggregated albumin (Tc99m-MAA). A gamma camera acquires the images for both phases of the study. If PE is present, there will be areas of lung that are ventilated but not perfused. However, clinical conditions such as pneumonia can cause ventilation-perfusion mismatch as well, which only makes this test useful if it is graded as high probability by a radiologist.

ECG and Chest x-ray are useful first line investigations in the A&E department and can reveal abnormalities consistent with PE.

The electrocardiographic features of acute pulmonary embolism depend on the size of the embolus and its haemodynamic effects and on the underlying cardiopulmonary reserve of the patient. Patients who present with a small pulmonary embolus are likely to have a normal electrocardiogram or a trace showing only sinus tachycardia.

If the embolus is large and associated with pulmonary artery obstruction, acute right ventricular strain may occur. This may produce an S wave in lead I and a Q wave in lead III. T wave inversion in lead III may also be present, producing the well known S1, Q3, T3 pattern (it must be noted that this pattern is seen in about 12% of patients with a massive pulmonary embolus) More commonly, the ECG might show a right axis deviation as the pulmonary artery occlusion causes the right ventricle to generate higher pressures to pump blood into the pulmonary artery. This results in greater electrical activity of the right ventricle hence shifting the axis.

Chest x-ray is done to exclude other diagnoses such as pneumothorax. In PE, the chest x-ray is often normal or it may show oligaemia (due to dilatation of the pulmonary arteries proximal to the embolus and collapse of the distal vasculature creating the appearance of a sharp cut off on chest radiography), pleural effusion (increased interstitial fluid in the lungs as a result of ischemia or the release of vasoactive cytokines) or linear atelectasis In pulmonary embolism due to loss of blood flow and lack of CO2, the alveoli collapse and become atelectatic).

D-Dimers are products of fibrin degradation. Fibrinolysis is activated when there is thrombosis present anywhere in the body. Hence D-dimer levels are not therefore a specific test for PE as it can be raised in many conditions (e.g.: malignancy, inflammatory disease, surgery, pregnancy). Therefore, done only in patients with suspected pulmonary embolus with a low pre-test probability of having a PE (ie, to exclude PE).

Wells Clinical Prediction Rule for Pulmonary Embolism (PE):

Clinical feature Points

Clinical symptoms of deep venous thrombosis. (DVT) 3

Other diagnosis less likely than PE(DVT) 3

Heart rate greater than 100 beats per minute 1.5

Immobilisation or surgery within past 4 weeks 1.5

Previous DVT or PE 1.5

Hemoptysis 1

Malignancy 1

Risk score interpretation (probability of PE):

>6 points: high risk (78.4%);

2 to 6 points: moderate risk (27.8%);

•

<2 points: low risk (3.4%)

The treatment for PE is immediate anticoagulant therapy with heparin to prevent further clots. This inactivates thrombin and clotting factor X and inhibits thrombosis, thereby inhibiting the formation of new thrombi. This patient needs 6 months of anticoagulant therapy with warfarin to minimise risk of recurrence.

Question:

A 60-year-old woman presents with a four month history of pain affecting both knees that is most severe at the end of the day. On examination, there are fixed flexion deformities bilaterally but no demonstrable swelling of the knee joints. There is mild pain on movement of the joint, limitation of movement with palpable and audible crepitus. Plain radiographs of the knee joints demonstrate narrowing of the joint spaces, osteophytes at the margin of the joints and sclerosis of the underlying bone.

Which one of the following is correct?

A) rheumatoid arthritis

B) osteoarthritis

C) gout

D) infective arthritis

E) polymyalgia rheumatica

Answer:B

Explanation:

The main feature in osteoarthritis (OA) is joint pain that is typically worse at the end of the day and made worse by movement. Joint stiffness in the morning that lasts more than 30 mins is more typical of inflammatory joint disease such as rheumatoid arthritis. Osteoarthritis, contrary to its name, is not an inflammatory disease of the joints and there is no clear benefit in using anti-inflammatory agents in osteoarthritis. The most commonly affected joints are distal interphalangeal joints (DIP), the first carpometacarpal joint, cervical and lumbar spine, hip and knee joints. Radiographic features that are suggestive of osteoarthritis are: 1. narrowing/loss of joint space 2. subchondral sclerosis 3. Subchondral cysts and 4. ‘lipping’ at joint margins (from osteophytes). There may also be evidence of joint deformity.

Question:

A 55-year-old female has a history of aggressive, erosive rheumatoid arthritis over three years. Her symptoms have improved over the course of the past four months after starting a medication that it was explained may reduce the disease activity. She presents to her rheumatology outpatient appointment complaining of severe fatigue. General and abdominal examination is unremarkable. Investigations show her haemoglobin concentration to be 7.2g/dl, MCV 86fl, the white cell count is 1.4 x 109/l, and the platelet count is 44 x 109/l.

Which one of the following is correct?

A) Acute lymphatic leukaemia

B) Acute overwhelming infection

C) Hypersplenism

D) Pernicious anaemia

E) Side effect of drugs

Answer:E

Explanation:

There are many causes of anaemia in the setting of rheumatoid arthritis and clinical history, examination and blood results are often sufficient to identify the cause. Acute lymphocytic leukaemia would likely present with an increased white cell count, but also typical symptoms relating to a reduction in the other formed elements produced in the bone marrow such as easy bruising from thrombocytopenia and frequent infections due to functionally defective white blood cells. Pernicious anaemia is an autoimmune disease that results in insufficient absorption of vitamin B12, and consequently, causes a macrocytic anaemia which is ruled out by a normal red blood cell MCV. Felty’s syndrome is the association of rheumatoid arthritis, splenomegaly and neutropenia and the normal abdominal examination makes this diagnosis less likely.

This patient has been initiated on a disease modifying anti-rheumatoid drug (DMARD) which can modify rheumatoid disease activity. These drugs can prevent the joint deformities of rheumatoid arthritis and are often started early to prevent this complication. These medications are carefully monitored as they can cause myelosuppression and other adverse effects specific to the particular agent.

Question:

A 69-year-old man presents to his general practitioner with a one-month history of pain and stiffness affecting both his thighs and upper arms. The stiffness is most marked in the morning and he reports difficulty dressing himself. He also complains of difficulty swallowing both liquids and solids of late. Investigations showed raised ESR of 58mm/hr, aspartate aminotransferase of 53IU/L, and creatine kinase raised at 430 IU/L.

Which one of the following is correct?

A) Dermatomyositis

B) Polymyositis

C) Polymyalgia rheumatica

D) Fibromyalgia

E) Systemic Sclerosis

Answer:B

Explanation:

Polymyositis is a condition which causes symmetrical, proximal muscle weakness. It is also associated with dysphagia, dysphonia, facial oedema and respiratory weakness. As a result of muscle inflammation, muscle enzymes (AST and CK) are released into the circulation and are elevated on biochemical blood tests. Other useful investigations are electromyography (which shows fibrillation potentials) and a positive muscle biopsy. Up to 20% of cases are associated with malignancy and there should be a low threshold for investigation

Question:

A 45-year-old woman presents with swelling and stiffness of her fingers over the past three months. She takes regular omeprazole for symptoms of indigestion. On examination, she has sausage-like fingers with flexion deformities affecting both hands and a beaked nose. Plain x-rays of her hands reveal deposits of calcium around the fingers and erosion of the tufts of the distal phalanges.

Which one of the following is correct?

A) Anti-centromere antibodies

B) Barium swalllow

C) Chest x-ray

D) FBC

E) Rheumatoid factor

Answer:A

Explanation:

This patient has features of the CREST (calcinosis, Raynaud’s, oesophageal and gut dysmotility, sclerodactyly, telangiectasia) syndrome. Note that she takes Omeprazole for dyspepsia suggesting gastro-oesophageal reflux disease. Anti-centromere antibodies are specific for the disease, which is also known as, limited cutaneous form of systemic sclerosis. Diffuse systemic sclerosis is associated with anti-Scl-70 antibodies and can cause pulmonary and renal complication which result in increased mortality in this patient group.

Question:

A 76-year-old woman who lives in a nursing home presents with a general deterioration, weakness in her lower legs and muscle pain. The patient’s family has expressed concern that she has not been eating and drinking normally. On examination, she has loose teeth and is noted to have ecchymoses of the lower limbs. She suffers from rheumatoid arthritis, which greatly limits her mobility.

Which one of the following is correct?

A) Anaemia of chronic disease

B) Myasthenia gravis

C) Polymyalgia rheumatica

D) Polymyositis

E) Scuvy

Answer:B

Explanation:

This patient has features of vitamin C deficiency- bleeding from mucous membranes and skin with loss of teeth and ecchymoses. This case serves as a reminder to take note of other pathology in patients presenting to rheumatology. The diagnosis may be confirmed by white blood cell vitamin C assays, although treatment is non-toxic and may be instituted without biochemical confirmation. Vitamin C toxicity is associated with kidney stones.

Question:

A 55-year-old woman with chronic rheumatoid arthritis attends outpatient clinic complaining of ulcers on both legs. She is otherwise well. On examination, there are multiple confluent areas of ulceration overlying both shins. There is minimal erythema and tenderness.

Which one of the following is correct?

A) Erythema nodosum

B) Erythema multiforme

C) Livedo reticularis

D) Pyoderma gangrenosum

E) Stevens Johnson Syndrome

Answer:D

Explanation:

Pyoderma gangrenosum is a non-infective complication of inflammatory disorders such as rheumatoid arthritis and inflammatory bowel disease. The exact pathogenesis is unknown. Two main variants of pyoderma gangrenosum exist: classic and atypical. Classic pyoderma gangrenosum, is characterized by a deep ulceration with a violaceous border that overhangs the ulcer bed and most commonly occur on the legs. Atypical pyoderma gangrenosum is more superficial, and most often occurs on the dorsal surface of the hands, the extensor parts of the forearms, or the face. Treatment is with prednisolone or cyclosporin.

Question:

A 65-year-old woman who has systemic lupus erythematous (SLE) has been on several medications for the last 25 years. She now complains of back pain in her lumbar area. An x-ray of her spine shows vertebral collapse at L2 and L3. The rheumatologist asks the medical student in clinic which medication is likely to have caused osteoporosis in this lady.

Which one of the following is correct?

A) Azathioprine

B) Corticosteroids

C) Cyclophosphamide

D) Hydroxychloroquine

E) Ibuprofen

Answer:B

Explanation:

Corticosteroids cause osteoporosis by decreasing the amount of calcium absorbed by the gut and increase calcium excretion through the kidneys. The decline in the calcium levels in the blood triggers the secretion of parathyroid hormone (PTH). Elevated PTH levels result in increased bone breakdown by releasing calcium from the bones into the blood. The risk of osteoporosis is increased in this patient as she is post-menopausal. Osteoporosis is reduced bone mineral density with increased susceptibility to pathological fractures, particularly of the hip, the wrist (Colles’ fracture) and lumbar spine. Prevention of at risk groups, such as those on long term steroids, early menopause, or those with gonadal failure is recommended.

Question:

A 32-year-old woman presents with a six-month history of pain and stiffness in her finger joints. She has no significant past medical history and is otherwise well. On examination, there is synovitis of the distal interphalangeal joints of the right index finger and the left middle finger and in the left wrist. ESR is 30mm/hr.

Which one of the following is correct?

A) osteoarthritis

B) psoriatic arthritis

C) rheumatoid arthritis

D) systemic lupus erythematous

E) viral arthritis

Answer:B

Explanation:

The diagnosis in this case is psoriatic arthritis. Despite the lack of any history or features of psoriasis, the key features is asymmetrical joint involvement. In 70% of cases, psoriasis precedes psoriatic arthritis, in 15% of cases the skin and joint conditions occur at the same time and in the remaining 15% psoriatic arthritis is present before the skin condition psoriasis appears (this patient belongs to the latter group). Psoriatic arthritis usually affects the joints that are closest to the nail (distal joints) in both the fingers and the toes. The lower back, wrists, knees and ankles, alongside the neck, shoulders and elbows may also be affected.

Question:

A 57-year-old man presents to casualty with skin colour changes and a tingling sensation in both upper and lower limbs. He admits to feeling tired for the past month. His past medical history includes hepatitis B that was diagnosed 15 years ago. On examination, his blood pressure is 150/90mmHg. His temperature was 36.5 °C. Hand examination revealed nailbed infarcts, cyanotic fingers and purpuric rash on the dorsal surface of his hands. A reticular purple rash was noted on both calves. Neurological examination was normal.

Which one of the following is correct?

A) Giant cell arteritis

B) Temporal arteritis

C) Polyarteritis nodosa

D) Takayasu’s arteritis

E) Wegener’s granulomatosa

Answer:C

Explanation:

Polyarteritis nodosa (PAN) is a systemic necrotizing vasculitis that affects medium-sized vessels, preferentially at vessel bifurcations, resulting in microaneurysm formation, aneurysmal rupture with haemorrhage, thrombosis and consequently organ ischaemia or infarction. The history demonstrates classical signs associated with PAN. PAN is sometimes associated with Hepatitis B infection (HBsAg Positive). Evidence of organ or extremity ischemia, including hypertension and mononeuritis mononeuropathy (due to ischaemia or infarction of the nerves) are further clues to the diagnosis in this patient. Systemic necrotizing vasculitis can be life-threatening, so early accurate diagnosis and treatment is vital.

Question:

A 46-year-old man presents to Accident and Emergency with pain in his right knee. He admits to drinking “more than usual” the night before and denies trauma. He says his general health is “not too bad”. Past medical history includes hypertension and gout. He is on bendroflumethiazide, which was started by his GP last week. On examination, his knee was swollen, erythematous and warm. Joint aspiration of the knee demonstrated a negative Gram stain, and many needle-like, negatively birefringent crystals.

Which one of the following is correct?

A) allopurinol

B) colchicine

C) indomethacin

D) intramuscular corticosteroids

E) oral corticosteroids

Answer:C

Explanation:

The result of the joint aspiration is consistent with acute gout. Gout flares can be due to underexcretion of urate via the kidney or increased levels of serum uric acid (e.g.: consumption of alcohol, overconsumption of foods with high purine content, trauma, hemorrhage, dehydration, or the use of medications that elevate levels of uric acid). NSAIDs (indomethacin) are the drugs of choice in most patients with gout who do not have underlying health problems. Colchicine, a mitotic spindle inhibitor, is an alternative in patients in whom NSAIDs are contra-indicated. Allopurinol, a xanthine oxidase inhibitor, is not effective in treating an acute attack and may prolong it indefinitely if started during the acute episode. However, if the patient is already on allupurinol during an acute gout flare, then continue allopurinol and treat the attack separately.

Question:

A patient’s audiogram shows bilateral 30db air bone gap with normal bone conduction. Which of the following is the most likely underlying cause?

Which one of the following is correct?

A) Vestibular schwannoma

B) Otitis media with effusion

C) Cholesteatoma

D) Presbycusis

E)

Answer:B

Explanation:

The audiogram shows a difference between air and bone conduction which indicates a conductive hearing loss. Both vesitubularschwannoma and presbycusis cause a sensorineural hearing loss. Cholesteatoma can cause either conductive or sensorineural hearing loss but often causes a mixed hearing loss. Having bilateral cholesteatomas would be unlikely. Otitis media with effusion is the only option that would cause a bilateral conductive hearing loss.

Question:

A patient’s audiogram shows a 30db sensorineural hearing loss in the left ear. There is no previous history of any hearing problems and otoscopy reveals no abnormality. What is the next most appropriate investigation?

Which one of the following is correct?

A) CT head

B) CT temporal bone

C) MRI head

D) MRI internal acoustic meatus

E) Vestibular function tests

Answer:D

Explanation:

An MRI scan of the internal acoustic meatus is needed to investigate if a lesion such as a vestibular schwannomais present at the cerebellopontine angle (CPA). This could be an underlying cause for the hearing loss.

Question:

A 45-year-old patient has an attack of Ramsay-Hunt syndrome. Which amongst the following is not true?

Which one of the following is correct?

A) Is characterised by intense pain and vesicles in the concha and external auditory canal

B) It is usually caused by herpes zoster virus

C) There are usually vesicles in the external auditory canal

D) First line treatment is with oral antibiotics

E) Ramsay Hunt is commonly seen in patients with AIDS

Answer:D

Explanation:

Ramsay-Hunt syndrome is characterised by intense pain and vesicles in the concha and external auditory canal. It is caused by the reactivation of herpes zoster virus (chicken-pox) affecting sensory afferent nerves. If the virus affects the efferent motor axons of the facial nerve thenfacial nerve palsy can develop. Sensorineural hearing loss develops in up to 40% of patients. Tinnitus and vertigo can also occur. Treatment includes steroids and antivirals. Herpes zoster infections are reported in 16% of patientswith AIDS.

Question:

A patient is suffering from Meniere’s disease. Which amongst the following is the symptom they are most unlikely to have?

Which one of the following is correct?

A) Otalgia

B) Tinnitus

C) Sensorineural hearing loss

D) Vertigo

E) Feeling of aural fullness

Answer:A

Explanation:

Meniere’s disease has a common triad of: fluctuating sensorineural hearing loss, fluctuating tinnitus and vertigo. A feeling of aural fullness is also commonly reported but otalgia is not commonly seen with this condition.

Question:

A patient is suffering from otosclerosis in both ears with the left being more affected. Which one of the following tuning fork test findings is likely to be true?

Which one of the following is correct?

A) Rinne test is positive bilaterally

B) Weber test lateralises to the right

C) Rinne test is negative bilaterally

D) Rinne tests is positive in the left ear and negative in the right ear

E)

Answer:C

Explanation:

Otosclerosis is a common disorder with a hereditary tendency which causes a conductive deafness. Rinne test is negative bilaterally as both ears are affected and bone conduction would be better than air. Weber test lateralises to the most affected side with a conductive hearing loss and this would lateralise to the left.

Question:

Which of the following arteries does not anastomose within the Little’s area?

Which one of the following is correct?

A) Anterior ethmoid artery

B) Sphenopalatine artery

C) Lateral nasal artery

D) Greater palatine artery

E) Superior labial artery

Answer:C

Explanation:

Little’s area, also called Kiesselbach's plexus, is a region in the antero-inferior part of the nasal septum. Ninety percent of epistaxis episodes originate from this area. Little’s area is formed from the anastomosis of four arteries: anterior ethmoid, sphenopalatine, greater palatine and the superior labial artery.

Question:

A patient is reviewed in clinic one week following a nasal bone fracture. He describes watery, clear fluid running from his left nostril as well as a severe headache since the injury. What is the most sensitive test to perform on the fluid to diagnose a CSF leak?

Which one of the following is correct?

A) Double ring sign

B) Glucose content

C) Beta-2 transferrin

D) Pledget study

E)

Answer:C

Explanation:

Although double ring sign and glucose content can be used to aid the diagnosis of CSF rhinorrhoea, Beta-2 tranferrin is highly sensitive and specific for diagnosis of a CSF leak. The double ring sign can be used when the fluid of asuspected CSF leak is contaminated with blood. The fluid is placed on filter paper. The blood and CSF spreadoutwards at different rates, creating a double ring. Glucose is found in CSF but not in nasal mucus and can be used to diagnose a CSF leak but it is unreliable.The pledget study, which involves placing pledgets into the nose, is used to confirm the presence of a CSF leak, although it cannot determine the exact location of the leak nor the precise nature of the fluid.

Question:

An infection originating from which sinus is the most common cause for orbital cellulitis?

Which one of the following is correct?

A) Frontal sinus

B) Maxillary sinus

C) Ethmoid sinus

D) Sphenoid sinus

E)

Answer:C

Explanation:

Approximately 85% of orbital cellulitis cases are thought to have been caused by infection from the ethmoid sinus. Patients often present with bulging of the eye (proptosis), painandrestricted eye movements. Red colour vision is lost first if compression of the optic nerve is occurring. Loss of vision can happen rapidly and is thus an ENT emergency. Treatment is with intravenous antibiotics, nasal decongestants and, if the patient is deteriorating or developing visual problems, then surgical intervention may be indicated.

Question:

A 40-year-old male is reviewed in the ENT clinic. He has been having increasing problems with bilateral nasal blockage. He suffers occasional discomfort on both sides of his face which is worse when he has coryzal symptoms. He suffers from asthma and has never been on any medications for his nasal symptoms. On examination, he has bilateral grey/yellow growths in both nostrils but still has reasonable nasal air flow. What would bethe best initial management option?

Which one of the following is correct?

A) Oral steriods

B) Nasal steroids

C) Oral leukotriene antagonist

D) Nasal polypectomy under general anaesthetic

E) Two course of oral antibiotics and nasal decongestants

Answer:B

Explanation:

This patient has typical symptoms of nasal polyps. All the options can be used in the management of nasal polyps but a trial course of nasal steroids would be the most appropriate initial management in this case. Nasal steroids reduce inflammation and result in the polyps shrinking. Oral steroids are useful when the nostrils are completely blocked.

Question:

A 16-year-old boy presents to the ENT outpatient clinic with left sided nasal obstruction and epistaxis. Which diagnosis is the most clinically significant?

Which one of the following is correct?

A) Foreign body

B) Juvenile angiofibroma

C) Nasal polyposis

D) Chronic Rhinosinusitis

E) Inverting papilloma

Answer:B

Explanation:

Unilateral nasal obstruction associated with epistaxis is suggestive of a tumour until proven otherwise. Juvenile angiofibromas (AKA juvenile nasopharyngeal angiofibroma), although rare, are more common in adolescent males. It is a histologically benign but locally aggressive vascular tumour.

Question:

A patient is reviewed in clinic with a 3-week history of hoarse voice and diagnosed with a left vocal cord palsy. What would bethe most appropriate initial investigation?

Which one of the following is correct?

A) CT neck

B) CT neck and chest

C) CT head

D) MRI neck

E) Chest X-ray

Answer:E

Explanation:

A chest X-ray is a quick investigation that could diagnose an underlying lung malignancy. A lung malignancy could affect the left recurrent laryngeal nerve and cause left vocal cord palsy. If the Chest X-ray is normal, a CT of the entire length of the left recurrent laryngeal nerve should be performed.

Question:

A patient is diagnosed with a squamous cell carcinoma of the left tonsil. Where is the most likely site for initial nodal spread?

Which one of the following is correct?

A) Submandibular nodes

B) Jugulodigastric nodes

C) Lateral cervical nodes

D) Supraclavicular nodes

E) Occipital nodes

Answer:B

Explanation:

Although there are exceptions, squamous cell carcinoma in the head and neck usually spreads in a stepwise fashion to particular lymph node groups depending on the primary site. Typically, nodal spread from the oral cavity will occur within the level 1 lymph nodes (sub-mandibular and sub-mental glands). Level 2 nodes such as the jugulodigastricnodes are often the first nodes to be affected by cancers from the oropharynx such as the tonsils. Nasopharyngeal malignancy can spread to the posterior triangle where the lateral cervical nodes are found. Supraclavicular lymphadenopathy on the left side can be a sign of intra-abdominal malignancy(Troisier's sign).

Question:

An 85-year-old man is reviewed in clinic with worsening dysphagia and weight loss. He describes regurgitating food upto 10 minutes after eating as well as suffering from halitosis. On examination, there is a lump in the neck which gurgles on palpation. What is the initial most appropriate investigation?

Which one of the following is correct?

A) CT neck and chest

B) Oesophago-Gastro-Duodenoscopy

C) Barium Swallow

D) Panendoscopy

E)

Answer:C

Explanation:

Zenker's diverticulum or pharyngeal pouch is a diverticulum of the mucosa just above the cricopharyngeal muscle. It is typically seen in patients over 70 years of age. Weight loss, regurgitation of food and halitosis are common symptoms. Rarely, the pouch is palpable in the neck and can gurgle on palpation. A barium swallow is the most appropriate initial investigation for diagnosing a Zenker’s diverticulum. Endoscopic examination can easily miss or damage the diverticulum.

Question:

A 51-year-old male is reviewed in the ENT clinic and is found to have a 3 cm left-sided parotid mass. What would be the most appropriate initial investigation?

Which one of the following is correct?

A) CT skull base to diaphragm

B) Ultrasound scan parotid +/- fine needle aspiration

C) Panendoscopy

D) MRI parotid gland

E) Excision biopsy of superficial parotid gland

Answer:B

Explanation:

An ultrasound and fine needle aspirationwould be the most appropriate initial investigation. If a malignancy is identified then a staging CT from skull base to diaphragm would also be required.

Question:

A patient undergoes a radical neck dissection for advanced squamous cell carcinoma in the head and neck region. Which structure is not typically removed?

Which one of the following is correct?

A) Sternocleidomastoid muscle

B) Internal jugular vein

C) Spinal accessory nerve

D) External carotid artery

E)

Answer:D

Explanation:

The external carotid artery is not typically removed in a radical neck dissection. Within a modified radical neck dissection all or some of the following threestructures maybe preserved: sternocleidomastoid muscle, internal jugular vein and spinal accessory nerve.

Question:

Which of the following is not a function of the facial nerve?

Which one of the following is correct?

A) Innervation of muscles of mastication

B) Innervation of the stapedius muscle

C) Innervation of the lacrimal gland

D) Innervation of the parotid gland

E) Innervation of the muscles of facial expression

Answer:A

Explanation:

The trigeminal nerve innervates the muscles of mastication, which are as follows: Masseter, Medial Pterygoid, Lateral Pterygoid and Temporalis.

Question:

Which one of the following is true regarding Kartagener’s syndrome?

Which one of the following is correct?

A) Absence of dynein causing immotile cilia

B) A genetic mutation causing interference in chloride channels

C) An autosomal dominant condition which is associated with disordered angiogenesis

D) A condition with bony sclerosis and fixation of the stapes footplate to the oval window.

E)

Answer:A

Explanation:

Kartagener’s syndrome or primary ciliary dyskinesia is an autosomal recessive disease thatis classically characterised by a triad of chronic rhinosinusitis, bronchiectasis and situsinversus. Cystic fibrosis is an autosomal recessive disease in which the cystic fibrosis transmembrane conductance regulator (CFTR) is affected. This regulates the movement of chloride and sodium ions across epithelial membranes. Individuals often suffer from nasal polyps and sinusitis. Hereditary hemorrhagic telangiectasia is an autosomal dominant condition which causes arteriovenous malformations in organs. Patients often suffer from recurrent episodes of epistaxis. Otosclerosis is often an autosomal dominant condition with an abnormal growth of bone on the stapes footplate and oval window, causing a conductive hearing loss.

Question:

A 3-year-old childhas rapidly become unwell and has developed fever, drooling and stridor. Mother says that the child is not up-to-date with immunisations. Which is the most likely causal organism?

Which one of the following is correct?

A) Streptococcus pneumonia

B) Staphylococcus aureus

C) Haemophilus influenzae type B

D) Streptococcus pyogenes

E) Streptococcus viridans

Answer:C

Explanation:

This child has likely developed epiglottitis which is most commonly caused by Haemophilus influenzae type B. Children are now immunised against this,resulting ina significant drop in the frequency of epiglottitis episodes.All the other organisms listed have also been implicated as potential pathogens causing epiglottitis but only on rare occasions.

Question:

In the House-Brackmann scale for facial palsy, “Moderate to severe dysfunction with incomplete eye closure and obvious asymmetry”describes:

Which one of the following is correct?

A) Grade 1

B) Grade 2

C) Grade 3

D) Grade 4

E) Grade 5

Answer:D

Explanation:

The House-Brackmann scale is used to describe the degree of damage to the facial nerve. Grade 1 is normal, while as in Grade 6 there is no movement of the muscles of facial expression on the affected side. The eye can fully close in grade 3 palsy whilstthere is incomplete closure in grade 4.

Question:

Which of the following is least likely to be part of the initial management of a patient diagnosed with Quinsy (peritonsillar abscess)?

Which one of the following is correct?

A) Intravenous antibiotics

B) Analgesia

C) Emergency tonsillectomy

D) Intravenous steroids

E) Aspiration of Quinsy with local anaesthetic

Answer:C

Explanation:

A large proportion of patients with Quinsy will be in severe discomfort and unable to swallow. They may also have trismus (limited mouth opening). Attempting to drain pus from the Quinsy by a needle inserted lateral to the tonsil often helps relieve these systems. Steroids help reduce inflammation within the area and antibiotics are needed to treat the underlying infection. A tonsillectomy while the Quinsy is present is very rarely performed as there is a significant risk of bleeding due to inflammation in the area. Patients often have a tonsillectomy at a later date to prevent recurrence of the Quinsy.

Question:

A 70 year old man presents to his GP accompanied by his wife. He reports feeling low in mood for 6 weeks and that he no longer enjoys following the football which, according to his wife, was a life-long passion of his. A mental state examination did not reveal any evidence of psychosis although the patient did report an inability to concentrate. Which from the following options would be the best way to treat this older man?

Which one of the following is correct?

A) Amitriptyline

B) Donepezil

C) Citalopram

D) Diazepam

E) Ketamine

Answer:C

Explanation:

This older patient has presented with the ‘cardinal’ symptoms of depressive illness namely low mood and anhedonia. A mental state examination ruled out a possible diagnosis of schizophrenia in later life. Although people with dementia have cognitive impairment which can result in poor concentration, people who have depression can also have poor concentration (also referred to as ‘pseudodementia’.) Both Tricyclic Anti-depressants (i.e., Amitriptyline) and SSRIs (i.e. Citalopram) are effective in treating depressive illness in older people however SSRIs are the first-line therapy in this group since people later on in life are at higher risk of developing suicidal behaviour and SSRIs are safer in higher dosages than TCAs are should an overdose occur.

Question:

Police officers receive a phone call from a member of the general public reporting that they are in conversation with a lady who is standing next to a bridge overlooking a highway and that she has expressed her intention to jump off it. At the scene, the policemen feel that she poses a risk to her own safety and place the lady under which of the following acts from the Mental Health Act?

Which one of the following is correct?

A) Section 135

B) Section 2

C) Section 3

D) Section 136

E) Section 5(2)

Answer:D

Explanation:

Section 135 of the MHA accords Police Officers with ‘Police powers’ in a community setting to take you to a safe place for 72 hours from a private place. Section 2 of the MHA is used to detain a patient (usually involuntarily) in hospital for assessment of their mental health and is valid for up 28 days. Section 3 of the MHA is used to detain a patient (usually involuntarily) in hospital for treatment purposes and is valid for up to 6 months. Section 136 of the MHA accords Police Officers with ‘Police Powers’ to take a patient to a safe place for up to 72 hours from a public place. Section 5(2) of the MHA is a doctor’s holding power. It can only be used to detain a person in hospital who has consented to admission on an informal basis (although not detained under the Act) but then changes their mind and wishes to leave the hospital.

Question:

Which option below is NOT a component of the mental state examination?

Which one of the following is correct?

A) Perception

B) Mood

C) Appearance

D) Imagination

E) Delusion of grandeur

Answer:D

Explanation:

The Mental State Examination is the ‘bedrock’ of psychiatric practice and its components are as follows:

Appearance

Behaviour

Speech

Mood

Thought (content and form)

Perception

Concentration

Although imagination is a product of thought, it is not, strictly speaking, a component of the MSE.

Question:

Which one of the following drugs is NOT associated with QT prolongation?

Which one of the following is correct?

A) Citalopram

B) Metronidazole

C) Lithium

D) Amiodarone

E) Amoxcillin

Answer:E

Explanation:

SSRIs (i.e. Citalopram) and the mood stabilizing drug Lithium are known to be associated with QT prolongation. The antibiotic Metronidazole and the anti-arrhythmic Amiodarone are also associated with QT prolongation. Amoxicillin is not known to be associated with QT prolongation.

Question:

A 66-year-old with confirmed ovarian cancer has had five cycles of chemotherapy. She presents to the out-patients unit with complaints of tingling sensation and numbness in her fingertips and toes. She has decreased sensation to touch, with no other neurological deficit or muscle cramps. Each chemotherapy cycle is associated with nausea and vomiting. What is the most likely cause of her symptoms?

Which one of the following is correct?

A) Hypocalcaemia

B) Cervical vertebrae metastasis

C) Spinal cord compression

D) Chemotherapy-related neuropathy

E) Normal disease progression

Answer:D

Explanation:

The presence of tingling sensation, finger and toe numbness and decreased sensation to touch, with no neurological deficit during a course of chemotherapy, is a diagnosis of chemotherapy-related neuropathy.

Spinal cord compression, tingling sensation and numbness are associated with neurological deficits.

Cervical vertebrae metastasis causes pathological fractures, which will present with neck pain and spinal cord compression at the cervical region. Hypocalcaemia symptoms include peri-oral numbness, muscle cramps, voice changes, irritability, carpopedal spasm and seizures.

The symptoms described cannot be classified as part of the normal progression of disease.

Question:

A 30-year-old woman presented to the GP two weeks ago for a routine cervical smear test. Histology report indicated inflammatory changes on the smear. She is due for follow-up today. What is the most appropriate action at a follow-up?

Which one of the following is correct?

A) Reassure

B) Repeat cervical test at follow-up

C) Repeat cervical test in six months

D) Do a colposcopy

E) Do a biopsy of the cervix

Answer:C

Explanation:

The National Health Service(NHS) offers cervical screening to all women aged 24-49 every three years and to all women aged 50-64 every five years in the UK.

The patient in question falls into the first category,i.e. 24-49 years, thus requiring screening every three years. However, with inflammatory changes on a smear taken a week prior to presentation, a repeat smear is required, albeit not urgently. Therefore, a repeat screening at six months is the most appropriate course of action in this instance. There is no indication for colposcopy or biopsy of the cervix.

Question:

A 15-year-old girl is brought by her parents to the A&E with severe colicky pain and bloating of the abdomen. Although she has had intermittent pain in the pelvis for two years, the pain has increased in intensity in the past 24 hours and is now restricted to the right iliac fossa. She also feels nauseous, but has no vomiting.She has no dysuria or frequency.She has a history of irregular periods since menarche.She is afebrile. Her pulse and blood pressure are normal and pregnancy test is negative. What is the most likely diagnosis?

Which one of the following is correct?

A) Appendicitis

B) Ectopic pregnancy

C) Twisted ovarian cyst

D) Ovarian torsion

E) Urinary tract infection

Answer:C

Explanation:

Twisted ovarian cyst presents as a sudden increase in colicky abdominal pain and frequency intensity of long-standing pelvic pain. It is associated with bloating and irregular periods. There are no other associated symptoms and patients are usually afebrile.

Appendicitis is associated with fever, tachycardia, colicky pain (usually right iliac fossa pain), nausea and vomiting. .

Ovarian torsion is most often of sudden onset following exercise or an agitated movement. More commonly, there is no history of long-standing pain. Pain is sharp, stabbing and not colicky. .

Urinary tract infection is associated with fever, dysuria and frequency of micturition. .

Ectopic pregnancy presents with abdominal pain following a period of amenorrhea.

Question:

A 28-year-old female presents to the GP to discuss her plans to get pregnant. She has a history of irregular periods which is being managed with combined oral contraceptive pills. She has a strong smoking history and is currently on nicotine patches. She was managed for chlamydial infection two years ago and had a miscarriage a year ago. Which of the below increases her risk of ectopic pregnancy?

Which one of the following is correct?

A) Smoking

B) Nicotine patches

C) Previous miscarriage

D) Chlamydial infection

E) Combined oral contraceptive pill

Answer:D

Explanation:

The risk of having an ectopic pregnancy is increased withchlamydial infection. Chlamydial trachomatis causes pelvic inflammatory disease. Fibrosis along the reproductive tract is a consequence of PID, which, in effect, increases the risk of developing ectopic pregnancies. Other risk factors of ectopic pregnancies include previous ectopic pregnancy, several induced abortions, the presence of an IUCD and endometriosis.

Question:

A 65-year-old female presents to the GP with recurrent urinary tract infection and minimal vaginal bleed. She also complains of burning sensation per vagina. What is the most appropriate management option?

Which one of the following is correct?

A) Hormonal replacement

B) Combined oral contraceptive pill

C) Vaginal lubricant

D) Vaginal oestrogen

E) Progesterone only pill

Answer:D

Explanation:

The diagnosis in this patient is atrophic vaginitis. Atrophic vaginitis is an inflammation of the vagina and the outer urinary tract due to the thinning and shrinking of vaginal tissues, as well as decreased lubrication. Lack of oestrogen is considered the cause of atrophic vaginitis. Patient also falls under the category of patients who are predisposed to this condition, i.e. menopausal women. Additional symptoms include dyspareunia and urinary incontinence. Treatment is use of topical oestrogen pessaries (vaginal oestrogen pills). Systemic oestrogens are not first line treatment options for atrophic vaginitis.

Question:

A 70-year-old woman presents to theA&E with shortness of breath. She was diagnosed with metastatic ovarian cancer three months ago. Which of the group of lymph nodes listed below is principally involved in the spread of the cancer?

Which one of the following is correct?

A) Deep inguinal lymph nodes

B) External iliac lymph nodes

C) Para aortic lymph nodes

D) Superficial inguinal lymph nodes

E) Internal iliac lymph nodes

Answer:C

Explanation:

The ovaries have three lymph drainage pathways – two major and one minor. The major drainage is via the infundibulopelvic ligament towards the para-aortic and para caval lymph nodes. The second pathway is drained via the ovarian ligament toward the lymph nodes in the obturator fossa and the internal iliac artery. The third (minor) pathway is through the round ligament to the inguinal lymph nodes.

Question:

A 32-year-old woman is rushed into the A&E by her work colleagues with sudden onset of left-sided iliac fossa pain. She has no vaginal bleed associated with the pain and no history of irregular periods. She has no dysuria, frequency of micturition or fever. Her last menstrual period was eight weeks ago. Urine dipstick is negative. What is the most likely diagnosis?

Which one of the following is correct?

A) Left ovarian cyst

B) Pelvic inflammatory disease

C) Miscarriage

D) Left ectopic pregnancy

E) Left renal colic

Answer:D

Explanation:

The most likely diagnosis is left ectopic pregnancy. There is a history of amenorrhea (usually between 6 to 10weeks amenorrhea) and sudden onset of localised iliac fossa pain is characteristic of ectopic pregnancy. Initial investigations include pregnancy test, complete blood count, blood grouping, liver function test and blood urea and electrolytes. Ectopic pregnancy is confirmed by a transvaginal ultrasound.

Ovarian cysts are associated with varying degrees of pain, ranging from dull aches to sharp pain during periods. Other symptoms include irregular periods, abdominal bloating and dyspareunia.

Pelvic inflammatory disease (PID) is associated with lower abdominal pain, abnormal vaginal discharge, dysuria, fever, nausea and vomiting. There may be dysmenorrhea or menorrhagia, but there is no amenorrhea associate with PID.

Torsion of the ovary is associated with sudden iliac fossa pain, nausea and vomiting. There is no amenorrhea associated with these symptoms.

Miscarriage is a defined as the spontaneous loss of a foetus before it is viable. There is a period of amenorrhea, abdominal pain and vaginal bleed. Degree of vaginal varies with the type of miscarriage.

Renal colic is characterised by sudden colicky flank pain which radiates into the groin. It may be associated with nausea and vomiting. This is a common presentation of renal calculi.

Question:

A 19-year-old presents to the A&E with severe right lower abdominal pain. She reports that her period is six weeks late. She has no complaints of abnormal vaginal discharge, dysuria or frequency. She was treated forchlamydial infection three years ago. She is afebrile. Urine dipstick is negative, however, pregnancy test is positive. She does not complain of excessive nausea or vomiting. What is the most appropriate investigation?

Which one of the following is correct?

A) Urine pregnancy test

B) Quantitative Serum beta HCG levels

C) Transvaginal ultrasound

D) Laparotomy

E) Laparoscopy

Answer:C

Explanation:

The probable diagnosis is right ectopic pregnancy. There is a period of amenorrhea, localised lower abdominal pain, history of chlamydial infection and a positive pregnancy test. The most appropriate investigation is transvaginal ultrasound.

Quantitative Serum beta HCG could be used to diagnose pregnancy. It is also utilised when investigating molar pregnancy, ovarian tumours and testicular tumours. It is not indicated in ectopic pregnancies.

Laparotomy is not an investigative modality for ectopic pregnancy. It is a treatment option for ruptured ectopic pregnancy of any size.

Diagnostic laparoscopy is done when transvaginal ultrasound is inconclusive.

Laparoscopy is a management option for ectopic pregnancies that are less than 5mm and threatening to rupture, as well as those greater than 5mm and intact.

Question:

A 43-year-old woman presents to the GP for a scheduled review with results of a routine cervical smear done two weeks ago. She has no history of vaginal bleed. Results showed a CIN 2 lesion. What is the most appropriate next step?

Which one of the following is correct?

A) Repeat smear

B) Biopsy of the cervix

C) Large loop excision of the transformation zone

D) Colposcopy

E) Transvaginal ultrasound

Answer:D

Explanation:

CIN 2 – Cervical intraepithelial neoplasia 2 – refers to moderately abnormal cells on cervical smear. Per the United Kingdom cervical screening guidelines, the presence of abnormal cells on a cervical smear is an indication for colposcopy. This procedure involves the direct visualisation of the cervix with the aid of a colposcope. Dyes are applied to the cervix to highlight abnormal areas. Tissue samples are taken from abnormal areas for histopathology. Confirmed dyskaryosis from tissue samples taken at colposcopy allows for large loop excision of the transformation zone where the precancerous lesions are mostly found.

Question:

A 30-year-old female presents to her GP for contraception. She has a history of deep vein thrombosis and pulmonary embolism. She has menorrhagia and dysmenorrhea. She has no history of uterine fibroids. She is a marketing manager and travels frequently for her duties. She has no short-term plans of getting pregnant.Which of the following is the best contraception option for her?

Which one of the following is correct?

A) Combined oral contraceptive pill

B) Progesterone only pill

C) Mirena coil

D) Barrier method

E) Depo provera

Answer:C

Explanation:

Mirena coil is the best option for this patient. History of deep vein thrombosis and pulmonary embolism means the oestrogen-containing pills are contraindicated.

Mirenacoil is a long term contraceptive option. It offers contraception for a period of 5 to 10 years with a failure rate of 2 in 1000.

Progesterone pills and depo provera can be used in this patient, however, it is not the best contraception option. This is a patient who is always travelling, hence she is likely to forget her pills.

Depo provera requires that she comes to hospital at three-monthly intervals for an injection. This schedule may be affected by her work lifestyle.

Barrier methods include male and female condoms. These are not classified as long-term contraceptives.

Question:

A 62-year-old woman, who is five years post-menopausal, presents to the A&E with a first episode of painless bleeding per vagina of three-day duration.She has no pain when she urinates and no blood in urine. Urine dipstick was normal. She had a cervical smear done three years ago which was reported as normal. There is no history of recent sexual activity or feeling of a lump per vagina. What is the most likely diagnosis?

Which one of the following is correct?

A) Cervical polyp

B) Vaginal cancer

C) Pelvic inflammatory disease

D) Endometrial cancer

E) Cervical cancer

Answer:D

Explanation:

Endometrial carcinoma is the most likely diagnosis in this patient. Endometrial carcinoma is the most common cause of abnormal uterine bleeding in post-menopausal women. It is characterised by unprovoked painless vaginal bleeding, which is usually the first symptom of disease. It may be associated with less common symptoms such as dysuria, haematuria and pelvic pain. Risk factors include oestrogen use, family history and obesity.

Cervical polyp is most commonly seen in pre-menopausal and post-menarche women. Although cervical polyps can be asymptomatic, it can be associated with intermenstrual bleeding and abnormal vaginal discharge.

Vaginal cancer, also known as primary vaginal cancer, is a rare type of cancer which affects the vaginal canal. It is associated with intermenstrual bleeding, post-menopausal bleeding, pelvic pain, vaginal itch or feeling of a lump per vagina. Extensive disease is associated with dysuria and haematuria.

Pelvic inflammatory disease (PID) is associated with abdominal pain, abnormal vaginal dischargeand fever. Vaginal bleed is not a common presentation of PID.

Cervical cancer can present as post-menopausal bleed. However, in this patient, her most recent cervical smear was normal. Hencecervical cancer is not a likely diagnosis.

Question:

A female presents to her GP wishing to know the risk factors of ectopic pregnancy. She has had two previous miscarriages. She smokes six cigarettes per day and drinks ten units of alcohol every week. She has an IUCD in-situ as a form of contraception. Prior to the IUCD insertion, she had a myomectomy for multiple uterine fibroids. Which of these is the most significant?

Which one of the following is correct?

A) Alcohol

B) Smoking

C) IUCD

D) Fibroids

E) No risk

Answer:C

Explanation:

Ectopic pregnancy occurs when the embryo attaches itself outside the uterine cavity. The fallopian tubes are the most common sites for ectopic pregnancies. Significant risk factors of ectopic pregnancy include previous history of ectopic pregnancies, several induced abortions, presence of an IUCD at conception, pelvic inflammatory disease and endometriosis.

Question:

A 24-year-old female presents to her GP with complaints of vaginal spotting of three-day duration. She was started on combined oral contraceptive pill three months ago. Abdominal and pelvic examination were normal. Vaginal examination showed mild cervical ectropion without contact bleeding. Her last cervical smear was three years ago and proved to be normal. What is the next appropriate investigation?

Which one of the following is correct?

A) Vaginal hysterectomy

B) Colposcopy

C) Cervical cryotherapy

D) Cervical smear

E) Reassure

Answer:D

Explanation:

The patient falls into the category of women who require cervical screening every three years and is due a screen at this visit. Cervical ectropion is not a contraindication for cervical smear. Contraindications include bleeding per vagina, presence of vaginal creams or pessaries and sexual intercourse 24 hours prior to cervical smear.

Cervical ectropion is a condition where the endocervical columnar epithelium protrudes through the external os of the cervix. This can undergo squamous metaplasia and transform to stratified squamous epithelium. This condition is a common complication of combined oral contraceptive pill. However, it may occur naturally in some women. Cervical ectropion is not a precancerous lesion. Management options of cervical ectropion include reassurance, cryotherapy and ablation therapy under local anaesthesia.

In this scenario, the patient may be suffering from the side effects of COCPs. Other side effects include nausea, vomiting, irregular periods, breast tenderness, weight gain, headaches and mood swings. Hence the next appropriate investigation is cervical smear.

Question:

A 26-year-old female presents to the gynaecology clinic with difficulty in conceiving. She has a 35-day menstrual cycle. What is the best test for check for ovulation?

Which one of the following is correct?

A) Follicle stimulating hormone and luteinising hormone levels

B) Oestrogen levels

C) Day 21 – progesterone

D) Day 28 – progesterone

E) Day 25 – progesterone

Answer:D

Explanation:

Progesterone level is used to determine ovulation. However, the day on which the sample is taken is dependent on the menstrual cycle of the patient. A quick mathematical estimate of the ideal day for taking sample for serum progesterone is N minus 7, where N is the total number of days of the menstrual cycle. For example, if a patient has a 28-day cycle, the best test is 21-day progesterone. If 32-day cycle, then the best test is 25-day progesterone.

Question:

A 17-year old girl presents to her GP requesting contraception. You will want to assess for capacity of the patient to make this decision. What is the reference age, for assumption that a child has the capacity to consent?

Which one of the following is correct?

A) 14 years

B) 15 years

C) 16 years

D) 17 years

E) 18 years

Answer:C

Explanation:

The Fraser guidelines pertaining to contraceptive advice directs a doctor to proceed to give advice and treatment, provided certain criteria are met:

a. That the girl (although under the age of 16 years) will understand contraceptive advice

b. That the doctor cannot persuade her to inform her parents or to allow him to inform the parents that she is seeking contraceptive advice

c. That she is very likely to continue having sexual intercourse with or without contraceptive treatment

d. That unless she receives contraceptive advice or treatment her physical or mental health or both are likely to suffer

e. That her best interests require him to give her contraceptive advice, treatment or both without the parental consent.

Question:

A 14-year old girl presents to the GP requesting contraceptive pills. She is in a sexual relationship with her male teacher. What is the most appropriate action?

Which one of the following is correct?

A) Give the contraception

B) Call the police

C) Tell her parents

D) No action required because she is competent

E) Explain to the girl that it is illegal and do not prescribe the contraception

Answer:B

Explanation:

This scenario presents an ethical dilemma. This patient is under-age (14). She may prove competence in making this decision for contraception. However, she is in a relationship with a male teacher. She may be sexually abused, considering the wide age disparity between the girl and the teacher. In this instance, the police must be involved to investigate the suspicion. Note that if she was in a relationship with another 14-year-old, and the doctor is convinced the Fraser guidelines are met, then contraception can be given.

Question:

A 22-year old female complains of nausea, indigestion and abdominal pain while on doxycycline for confirmed uncomplicated chlamydial infection. What advice will you give her?

Which one of the following is correct?

A) Add an antacid

B) Take doxycycline after meals

C) Add an antiemetic

D) Take doxycycline before meals

E) Reassure

Answer:B

Explanation:

Doxycycline is the drug of choice for treatment of uncomplicated chlamydial infection and uncomplicated pelvic inflammatory disease. Nausea, indigestion and abdominal pain are common gastrointestinal side effects of doxycycline. A patient who complains of these gastrointestinal side effects should refrain from taking the tablets on an empty stomach. It is advised that the drug is taken with or after meals.

Question:

A 32-year-old pregnant lady, 20-week gestation, presentsto the hospital with bleeding per vaginum. On examination, the cervical os is closed. Uterine size is estimated as normal for gestational age. What is the most likely diagnosis?

Which one of the following is correct?

A) Missed miscarriage

B) Incomplete miscarriage

C) Threatened miscarriage

D) Recurrent miscarriage

E) Inevitable miscarriage

Answer:C

Explanation:

Threatened miscarriage is the most likely diagnosis. There is bleeding per vaginum(PV). The uterine size corresponds to the gestational age of the foetus and the cervical os is closed.

In the case of a missed abortion, there may be bleeding PV. The uterus is small for gestational age and the cervical os closed.

An incomplete miscarriage causes profuse bleeding per vaginum (more bleeding than seen in threatened abortion). It is associated with severe lower abdominal pain and reduced uterus size for gestational age. The external cervical os is open. Products of conception is usually palpated on vaginal examination.

Severe abdominal pain, open internal cervical osand minimal bleeding PV suggests inevitable miscarriage. Products of conception are not expelled; however, intracervical contents can be palpated.

Recurrent miscarriageis a technical term, which refers to loss of three or more consecutive first trimester pregnancies.

Question:

A 29-year-old is pregnant and in her first trimester. She has had two previous first trimester miscarriages. What advice would you give her during her first trimester?

Which one of the following is correct?

A) Reassure

B) Give aspirin

C) Give low molecular weight heparin

D) Aspirin and low molecular weight heparin

E) Warfarin

Answer:A

Explanation:

The danger here is to assume that the previous two first trimester miscarriages are due to antiphospholipid syndrome. Note that antiphospholipid syndrome is suspected when there is recurrent miscarriage, which is defined as loss of three or more consecutive first trimester pregnancies. The first two miscarriages may be due to chromosomal anomalies. The correct option here is to reassure the patient. If there is recurrent miscarriage, then antiphospholipid syndrome could be suspected.

Question:

A 15-year-old girl presents to the GP requesting contraception. She complains of heavy, painful and irregular periods. She is sexually active and reports that her partner always uses condoms. She is in a stable relationship with a 16-year-oldboy. She has no history of migraine or photophobia. What is the most appropriate contraception?

Which one of the following is correct?

A) Combined oral contraceptive pill

B) Progesterone only pill

C) Mirena coil

D) Calendar method

E) Implant

Answer:A

Explanation:

This teenager has dysmenorrhea, menorrhagia and irregular periods. She is sexually active, but practices safe sex via condom use. In this situation, the most appropriate is combined oral contraceptive pill (COCP). This will regularise her periods, as well as control the dysmenorrhea and menorrhagia.

Progesterone contraceptive pills are commonly used when there is contraindication to the use of COCPs.

Mirena coil provides contraception via a combined hormonal and mechanical pathways. It is a long-term reversible contraceptive. Although it offers the additional benefit of tackling menorrhagia, it is inappropriate for a teenager.

The calendar method is another method of contraception. However, this will not treat the dysmenorrhea and menorrhagia the patient complains of.

The implant is a long-term contraceptive option, which is not appropriate for the age group of this patient.

Question:

A 30-year-old woman, who is eight weeks pregnant, asks for advice. She has hadthree previous, consecutive,early-pregnancy miscarriages. What is the single most appropriate management?

Which one of the following is correct?

A) Aspirin

B) Low molecular weight heparin

C) Aspirin and low molecular weight heparin

D) Aspirin and warfarin

E) Warfarin

Answer:C

Explanation:

This patient has a history of recurrent miscarriages. The most likely diagnosis is recurrent miscarriage due to antiphospholipid syndrome. Antiphospholipid syndrome (APS) is an autoimmune disorder, which clinically presents as recurrent venous or arterial thrombosis and/or foetal loss. Other manifestations of APS are consequences of venous and arterial thrombosis. These include deep vein thrombosis, pulmonary embolism, gangrene of distal extremities and avascular necrosis of bone, among others. The diagnosis of APS is the presence of antiphospholipid (aPL) antibodies in the blood. Medical treatment includes full anticoagulation with heparin and warfarin. Prophylactic therapy includes eliminating risk factors such as smoking, oral contraceptives and hyperlipiedmia. Although mono therapy with aspirin is widely used, a combination of aspirin and low molecular weight heparin has been shown to be more effective.

Question:

A 27-year-old woman, who takes combined oral contraceptive pill, has had painless vaginal spotting and discharge for three days. Her last menstrual period finished 12 days ago. Her last cervical smear, done two years ago, was normal. Abdominal and vaginal examinations are normal, apart from a mild ectropion with contact bleeding. What is the single most appropriate initial investigation?

Which one of the following is correct?

A) Cervical smear

B) Colposcopy

C) Pelvic ultrasound

D) Endometrial biopsy

E) Endo cervical swab

Answer:E

Explanation:

The most probable diagnosis here is cervicitis. Use of COCP predisposes to development of cervical ectropion. Ectropion results in the extension of the transformational zone of the cervix. This becomes a raw area for bacterial groups, especially after a menstrual cycle. Cervical smear done was two years ago and, considering her age, she is not due another smear. She has no indicators of cervical cancer. The most appropriate initial investigation is endo cervical swab to rule out an infection as a cause of the bleeding and vaginal discharge.

Question:

A 20-year-old woman presents to the A&E with complaints of progressive bilateral iliac fossa pain for five days. She has an offensive vaginal discharge with associated malaise and fever. Her temperature is 39oC. Urine dipstick was negative. Pregnancy test was negative. An initial antimicrobial regimen has been started. What single set of organisms are the most appropriate for the antimicrobial regimen to cover?

Which one of the following is correct?

A) Neisseria gonorrhoea and Candida albicans

B) Neisseria gonorrhoea, Candida albicans and Gardnerella vaginalis

C) Neisseria gonorrhoea and Chlamydia trachomatis

D) Neisseria gonorrhoea, Chlamydia trachomatis and Gardnerella vaginalis

E) Neisseria gonorrhoea, Chlamydia trachomatis and Candida albicans

Answer:C

Explanation:

Progressive iliac fossa pain and offensive vaginal discharge with fever are symptoms of pelvic inflammatory disease (PID). It is essential that initial microbial regimen covers the most commonly implicated microorganisms. Although multiple bacteria can be involved, Neisseria gonorrhoea and Chlamydial trachomatis are the most implicated bacteria in 75% to 90% of PID. Treatment is essential with antibiotic combination therapy. One such combination is doxycycline, metronidazole and ceftriaxone. For patients in whom doxycycline is contraindicated, erythromycin can be used. Another treatment regime used is metronidazole and ofloxacin.

Question:

A 34-year-oldobese receptionist reports to her GP with complaints of pelvic aches and pains spanning eight months. The pain worsens on standing and walking.She has post-coital ache and occasional pre-menstrual pains. She has no vaginal discharge. She has regular periods and she is not on any contraception.Select the most likely cause of her symptoms.

Which one of the following is correct?

A) Pelvic inflammatory disease

B) Pelvic congestion syndrome

C) Ovarian cyst

D) Endometriosis

E) Adenomyosis

Answer:B

Explanation:

Pelvic congestion syndrome aka pelvic vein incompetence is characterised by chronic pelvic pain which is aggravated by walking or standing in females, most often below 45 years. It is associated with deep dyspareunia, as well as other non-specific symptoms. The pain is occasionally pre-menstrual. It is a diagnosis of exclusion and may be associated with haemorrhoids, varicose veins of the perineum and lower extremities. Obesity and pregnancy are identified risk factors. Magnetic resonance imaging/MR venogram (MRI/MRV) is the primary imaging modality for pelvic congestion syndrome. Pelvic inflammatory disease is associated with fever, acute lower abdominal pain and abnormal vaginal discharge. These symptoms are not commonly aggravated by movement.

Ovarian cyst is associated with irregular periods and lower abdominal discomfort or pain. There may be symptoms of deep dyspareunia in some patients.

Endometriosis refers to the presence of endometrial tissue outside the uterine cavity. It is associated with pelvic pain, menorrhagia, dysmenorrhea and dyspareunia. The pelvic pain is not affected by standing or walking.

Adenomyosis is characterised by the presence of endometrial tissue within the wall of the uterine cavity. Symptoms include severe dysmenorrhea and menorrhagia as seen in endometriosis.

Question:

A 32-year-old woman presents to her GP with complaints ofpain during sexual intercourse, heavy menstrual bleed and severe pain during her menses for the past four years.She has a twin sister who is being managed for similar complaints. She has no fever or abnormal vaginal discharge associated with the symptoms. Abdominal examination revealed mild tenderness at the supra-pubic region. What is the most likely initial investigation the GP must consider?

Which one of the following is correct?

A) Abdominal x-ray

B) Laparoscopy

C) Transvaginal ultrasound scan

D) Vaginal swab

E) Hysteroscopy

Answer:C

Explanation:

The most probable diagnosis is endometriosis. Endometriosis refers to the presence of endometrial tissue outside the uterine cavity. It is commonly found on the ovaries.

Other sites include the fallopian tubes, uterine ligaments, posterior cul-de-sac of the uterus, urinary bladder and the recto-sigmoid colon. It is associated with dysmenorrhea, menorrhagia, pelvic pain, dyspareunia, bloating nausea and vomiting.There is familial association with endometriosis and monozygotic twins are highly concordant for the disease.

Initial radiological investigations include ultrasound scan (transvaginal or transrectal) and magnetic resonance imaging.The primary diagnostic modality for endometriosis is laparoscopy.

Question:

A 38-year-old woman presents to her GP with very painful sores on her vulva of one-week duration. The sores started as painful blistering lesions threedays prior to the appearance of the sores. She has no vaginal discharge. She reports having had a mild fever. She has recently changed sexual partner. What is the most likely cause of the ulcers?

Which one of the following is correct?

A) Syphilis

B) Herpes simplex virus

C) Herpes zoster

D) Erythema multiforme

E) Chlamydia infection

Answer:B

Explanation:

Herpes simplex virus presents with painful blisters and ulcers on the vulva. It heals within 2 to 4 weeks with treatment. It is not curable, but outbreaks can be treated. Risk factors include multiple sexual partners and unprotected sex.

Human Papilloma Virus (HPV) causes anogenital warts. These are benign growths which are soft on smooth skin and firm on hairy skin. They are usually painless. HPV also causes cervical cancer.

Treponema pallidum causes painless syphilitic sores. They resolve between 4 to 8 weeks with or without treatment.

Herpes zoster, also known as shingles, is a reactivation of dormant varicella-zoster virus in dorsal root ganglia. It is characterised by preherpetic neuralgia, an acute eruptive phase and a chronic post-herpetic neuralgic phase. The patchy erythema lesions are commonly dermatomal in distribution and very rarely affects the genital area.

Erythema multiforme is an acute self-limiting type-IV hypersensitivity reaction to certain infections, medications and other triggers. It presents as a localised papule which develops into target lesions within three days. In its severe form, it affects the mucosa of the genital tract rather than the vulva.

Chlamydia trachomatis infection is associated with abnormal vaginal discharge and lower abdominal pain. There are no genital ulcers associated with this infection.

Question:

A 28-year-old woman presents to her GP with growths on her vulva. She has multiple sexual partners and smokes six cigarettes per day. She has no vaginal discharge associated with her symptoms.Vaginal examination reveals multiple cauliflower-like lesions on the vulva. Her most recent cervical smear showed cervical intraepithelial lesion grade I. What is the most likely cause of the vaginal lesions?

Which one of the following is correct?

A) Smoking

B) Human Immunodeficiency Virus

C) Human papilloma virus

D) Chlamydia trachomatis

E) Herpes zoster

Answer:C

Explanation:

The diagnosis in this scenario is Condylomataacuminnata, simply known as anogenital warts. Anogenital warts are caused by Human Papilloma Virus (HPV). HPV is also implicated in cervical dyskaryosis, anal cancer and oral warts. Risk factors include multiple sexual partners and immune suppression. Diagnosis of anogenital warts is essentially clinical. Diagnostic confusion can occur with syphilitic chancroid. Treatment modalities of visible genital warts include use of topical agents and ablation therapy. Topical agents such as podophyllotoxin, imiquimod and trichloroacetic acid are used to treat small warts. Ablation therapy is reserved for multiple warts. The main methods are cryotherapy, excision, electro surgery and laser surgery.

Question:

A 34-year-old mother of three presents to herGP requesting long-term contraception. She wants to have more children in the future.She complains of occasional migraine and photophobia. She has uterine fibroidswhich has distorted the uterine cavity. Her periods are, however, regular. What is the best contraception choice for her?

Which one of the following is correct?

A) Endometrial ablation

B) Combined oral contraceptive pill

C) Mirena coil

D) Implanon

E) Depo progesterone

Answer:D

Explanation:

Implanon is the best option for this patient. Implanon is a progesterone-containing contraceptive implant that offers reversible, long-term contraception.

Migraine and photophobia indicate that oestrogen containing contraceptives such as the combined oral contraceptive pill is contraindicated.

The distortion of the uterine cavity by uterine fibroids is a contraindication for the insertion of the mirena coil.

Endometrial ablation is indicated in patients with abnormal uterine bleed. It is not a contraceptive option.

Depo progesterone is an option for use in this patient. However, it offers protection for three months. The patient in this scenario requestedlong-term contraception.

Question:

A 25-year-old woman presents to the A&Ewith sudden, severe, right-sided lower abdominal pain and mild vaginal bleed. She missed her period seven weeks ago. She has no fever. On abdominal examination, tenderness and rebound tenderness were elicited in the right iliac fossa. Vaginal examination reveals a right-sided cervical excitation tenderness. What is the most probable diagnosis?

Which one of the following is correct?

A) Endometriosis

B) Urinary calculi

C) Right ovarian torsion

D) Right ectopic pregnancy

E) Rightsalpingitis

Answer:D

Explanation:

The most probable diagnosis is right ectopic pregnancy.Symptoms include period of amenorrhea, vaginal bleed, one-sided lower abdominal pain. This is supported by signs of peritonism elicited on abdominal examination and cervical excitation tenderness, demonstrated on vaginal examination. Diagnosis is confirmed by transvaginal ultrasound. Ruptured ectopic pregnancy is characterised by hemodynamic instability (tachycardia and hypotension) and the cardinal symptoms and signs of ectopic pregnancy as indicated above.

Ruptured ectopic pregnancy is managed by open laparotomy. Medical treatment, laparoscopic salpingostomy and laparoscopic salpingectomy are treatment options for unruptured ectopic pregnancy.

Endometriosis is characterised by severe dysmenorrhea and menorrhagia which is absent in the scenario described above.

Urinary calculi are associated with colicky abdominal pain, which starts from the flank and radiates into the groin.

Salpingitis is associated with fever and, more commonly, unilateral abdominal pain.

There is associated nausea and vomiting. Amenorrhea is not an associated symptom.

Question:

What is the most appropriate antibiotic for uncomplicated chlamydial infection in a 21-year-old female who is not pregnant?

Which one of the following is correct?

A) Cefixime

B) Amoxicillin

C) Doxycycline

D) Metronidazole

E) Erythromycin

Answer:C

Explanation:

The patient is said to have uncomplicated chlamydial infection. Doxycycline is a bacteriostatic tetracycline. It is effective against anaerobic gram-positive and gram-negative bacteria. It is used to treat infections caused by Chlamydial trachomatis, sensitive strains of staphylococci, bacteroides spp., mycoplasma pneumonia, and plasmodium falciparum. Common side effects include nausea, vomiting, abdominal pain and diarrhoea. It is contraindicated in pregnant women, lactating mothers and children youngerthan eight yearsold.

Question:

A 60-year-old male presents to the GP with complaints of severe pain in his left ear of three-day duration. He complains of vertigo, nausea, vomiting and mild hearing lossin hisleft ear. On examination, he has blisters in and around the left ear. What is the most likely cause of his symptoms?

Which one of the following is correct?

A) Herpes simplex

B) Staphylococcus aureus

C) Pseudomonas aeruginosa

D) Herpes zosteroticus

E) Staphylococcus epidermidis

Answer:D

Explanation:

The most likely diagnosis is herpes zoster oticus. Herpes zoster oticus is characterised by severe otalgia with burning vesicular exanthema (blisters) in and around the ear. The blisters occur between hours and days post-otalgia. It may be associated with vertigo, unilateral sensorineural deafness, tinnitus, nausea and vomiting. There may be a previous history of chicken pox infection. Complications include Ramsay-Hunt syndrome(facial paralysis is involved), post herpetic neuralgia and herpes zoster encephalitis.

Herpes simplex infection is a blistering lesion that has a predilection for the oral and genital mucosae. It is also associated with severe pain at the affected site.

Staphylococcus aureus and pseudomonas aeruginosa are the main causative agents of acute otitis externa. This presents with mild to severe otalgia, ear itch, ear discharge and mild hearing loss.

Staphylococcus epidermidis is a normal flora of the external ear.

Question:

A 45-year old male presents to the A&E with confusion. He is reportedly a known alcoholic. On examination, he is noticed to have an ataxic gait and ophthalmoplegia. What is the most likely diagnosis?

Which one of the following is correct?

A) Korsakoff’s psychosis

B) Delirium tremens

C) Wernicke’s encephalopathy

D) Acute psychosis

E) Cerebellar dysfunction

Answer:C

Explanation:

Wernicke’s encephalopathy is a neurological disorder characterised by a triad of ataxic gait, oculomotor nerve dysfunction and confusion. This disorder is induced by deficiency of vitamin B1, thiamine. Thiamine deficiency and malnutritionare common in chronic alcoholics.

Korsakoff’s psychosis is associated with alcoholics. It is characterised by amnesia and some degree of cognitive deficits and confabulations.

Poorly managed Wernicke’s encephalopathy progresses to Wernicke-Korsakoff syndrome, which presents as a combination of the symptoms of both conditions. Delirium tremens is a severe form of alcohol withdrawal. This occurs afterthree to tendays of being alcohol-free. It is characterised by auditory hallucinations, body tremors, vomiting, autonomic deregulation manifesting as tachycardia, hypertension, diaphoresis and profound confusion.

Patients with acute psychosis present with hallucinations and delusions.

Signs of cerebellar disease include ataxia, intention tremor, nystagmus, dysarthria and dysdiadochokinesia.

Question:

A 22-year-old male was rushed into the A&E by his friends from a night club. The patient is noted to be commenting on the colour of his friend’s shirt as well as the doctor’s coat. On examination, he grinds his teeth intermittently and twitches his eyes. His pulse and blood pressure are 150bpm and 140/90 mmHg respectively. Which drug is most likely responsible for his symptoms?

Which one of the following is correct?

A) Cocaine

B) Ecstasy

C) Morphine

D) Heroin

E) Methadone

Answer:B

Explanation:

Ecstasy is a nickname for 3,4-Methylenedioxymethamphetamine. An overdose of this psychoactive drug presents with visual hallucinations, euphoria, eye twitching, teeth grinding (bruxism) and hypertension.

Cocaine overdose is associated with rhinorrhoea, nose bleeds, dilated pupils, paranoia, increased aggression and tachycardia.

Heroin, morphine and methadone are known as opiates. Opiate overdose is associated with pin-point pupils, depressed respiration, cold clammy skin, hypotension, increasing somnolence and vomiting.

Question:

A 55-year-old malewas transferred to the ward post-surgery following an acute abdomen. IV Ceftriaxone was administered pre-operatively and continued post-op for 72 hours. He developed a fever of 39.80C and profuse post-operative diarrhoea. What is the next step in management?

Which one of the following is correct?

A) Continue IV Ceftriaxone

B) Administer clindamycin

C) Give oral vancomycin

D) Intravenous vancomycin

E) Intravenous penicillin

Answer:C

Explanation:

The most probable diagnosis is pseudomembranous colitis. This is an antibiotic-induced inflammatory disease of the colon.Common antibiotics implicated in this condition include clindamycin, ampicillin, amoxicillin and cephalosporins. The use of the antibiotics can predispose to imbalance of the gut flora, allowing for overgrowth of Clostridium difficile. Symptoms of pseudomembranous colitis include profuse, watery or mucoid foul-smelling liquid stool, cramping abdominal pain, fever and, less commonly,extraintestinal symptoms of oligoarthritis and iridocyclitis. Important investigations include stool culture, full blood count, urea and electrolytes. Treatment involves rehydration, stopping the offending antibiotic and starting oral vancomycin. Other chemotherapy options include metronidazole and fidaxomicin.

Question:

A 70-year old male presents to the A&Ewith chest pain of onehour duration. An ECG done shows STelevation is V1-V5, lead I and aVL. GTN and aspirin has already been administered. What is the single most appropriate management?

Which one of the following is correct?

A) Streptokinase

B) Tissue plasminogen activator

C) Percutaneous Coronary Intervention

D) Low molecular weight heparin

E) Beta blocker

Answer:C

Explanation:

The diagnosis in this patient is anterior ST-elevation myocardial infarction (STEMI).

The NICE guidelines indicate that, upon clinical diagnosis of STEMI, it is essential to:

Administer sublingual or buccal glyceryl trinitrate for pain relief. This can also be achieved by giving IV morphine

Offer a single loading dose of 300mg of aspirin

Immediately assess eligibility for reperfusion therapy (this includesacute STEMI, non-ST elevation acute coronary syndrome and unstable angina)

If patient is eligible, symptoms of STEMI is less than 12 hours and reperfusion can be done in less than two hours of the time fibrinolysis could be given, then percutaneous coronary intervention pathway should be activated

If patient is not eligible for PCI, then offer medical therapy

If patient is eligible, but reperfusion cannot be done in less than two hours, consider fibrinolysis (egtissue plasminogen activator, urokinase and streptokinase) with ECG monitoring.

Refer to the NICE guideline Clinical Guideline (CG)167 for further reading.

Question:

A 28-year-old female presents to the GP with a molar rash on both sides of her cheeks. She has additional complaints of joint pains, easy fatigability and low-grade fever. There is no history of trauma and she is not on any medication. Which of the options below is the most appropriate antibody test?

Which one of the following is correct?

A) Antinuclear antibodies

B) Anti-ds DNA

C) Anti-Ro antibodies

D) Anti-Smith antibodies

E) Anti-RNP

Answer:B

Explanation:

The diagnosisof this patient is systemic lupus erythematosus (SLE). SLE is a multisystem chronic autoimmune disease. The classic presentation is a triad of fever, joint pain and rash in a woman of child-bearing age. Diagnosis is based on a combination of clinical findings and laboratory evidence. Diagnostic criteria, as developed by the American College of Rheumatology, indicate that the presence of four of the 11 criteria yields a high specificity for SLE. The criteria include:

Serositis

Oral ulcers

Arthritis

Photosensitivity

Blood disorders

Renal involvement

Antinuclear antibodies

Immunologic phenomena (e.g. dsDNA, anti-Smith antibodies)

Neurologic disorder

Malar rash

Discoid rash

Full blood count with differentials, serum creatinine and urinalysis with microscopy are useful in suspected cases of SLE. Antibody tests for SLE include:

Anti-dsDNA – high specificity, 70% sensitive for SLE

Antinuclear antibody (ANA) – screening test for SLE, not diagnostic

Anti-Ro antibodies – present in 15% of patients with SLE and other connective-tissue diseases, such as Sjogren syndrome

Anti-Smith(anti-sm) antibodies– most specific antibody for SLE, but only 40% sensitive

Anti-RNP – includes anti-Smith, SSA and SSB antibodies, which indicate mixed connectivetissue disease, overlapping with SLE, scleroderma and myositis.

Question:

A 40-year old patient presents to the A&E with shortness of breath and chest pain. He has a history of working in an asbestos company for 20 years. He has been treated three times for exacerbation of chronic obstructive airway disease. There is no fever associated and he has no history of cough. On examination, there was reduced air entry on the left. There were no signs of hypoxia. A chest x-ray done shows a left pleural effusion.What is the most appropriate step in management?

Which one of the following is correct?

A) Chest CT-scan

B) MRI of the chest

C) Pleural aspiration

D) Oxygen delivery

E) Antibiotic therapy

Answer:C

Explanation:

The diagnosis of this patient is pleural effusion secondary to lung cancer. The most appropriate step after diagnosis is to give the patient relief, as this is an emergency scenario. A pleural aspiration relieves the patient of the dyspnoea. The aspirate can be analysed for confirmation of diagnosis. Oxygen delivery is indicated in cases associated with hypoxia.

MRI and CT-scan of the chest can be employed to confirm diagnosis, however it is not the most appropriate in this scenario.

Antibiotic therapy is not the most appropriate, because this is not a diagnosis of pneumonia.

Question:

A 30-year-old male presents to the A&E with a flank pain that radiates into the scrotum. This is associated with fever, chills, pain during urination, frequent urination and scrotal swelling. He has no urethral discharge. He is sexually active. Urine dipstick is positive for nitrites and leucocytes. However, gram stain shows no pus cells. What is the most likely cause of the symptoms?

Which one of the following is correct?

A) E. coli

B) Chlamydia

C) Gonorrhoea

D) Proteus

E) Klebsiella

Answer:A

Explanation:

The most likely diagnosis in the patient is urinary tract infection (UTI). The symptoms of UTI include flank pain which radiates into the groin, fever, chills, frequency, dysuria, and, less commonly, complaints of rectal pain. In males, scrotal swellings may be present. Investigations include urine dipstick and urine culture. The presence of leucocytes on urine dipstick is pathognomonic of UTI. A positive nitrite test is not sensitive, but highly specific for UTI. Organisms that cause UTI include E. coli (85% of cases), Staphylococcus saprophyticus, Pseudomonas aeruginosa and Klebsiella pneumonia.

The absence of a discharge rules out chlamydia and gonorrhoea. Proteus species are generally not associated with UTIs.

Question:

A 60-year-old male presents to the A&E with abdominal distension. On examination, he has moderate ascites. A laboratory examination of the ascetic fluid obtained via a tap showed low glucose, protein level of 32g/l and a high red blood cell count. What is the most likely cause of the ascites?

Which one of the following is correct?

A) Liver cirrhosis

B) Liver failure

C) Heart failure

D) Tuberculosis

E) Peritonei carcinomatosis

Answer:E

Explanation:

Ascitic fluid could either be a transudate or an exudate. Transudates are a consequence of increased hydrostatic pressure or decreased oncotic pressure, whereas exudates occur due to increased capillary permeability or decreased lymphatic resorption.

The Light’s criterion is used to differentiate between transudates and exudates:

Transudate Exudate

Appearance Clear, pale yellow or straw Turbid or cloudy

Fluid total protein <3.0 g/dl ≥3.0 g/dl

Fluid/serum protein <0.5 >0.5

Fluid Lactose Dehydrogenase (LD) <2/3 upper limit of normal serum LD >2/3 upper limit of normal serum LD

Cholesterol <45 mg/dl ≥45 mg/dl

Fluid/serum cholesterol ratio <0.30 ≥0.30

Serum-fluid albumin gradient >1.2 g/dl 1.2 g/dl

Fluid/serum bilirubin ratio <0.60 ≥0.60

Specific gravity <1.015 ≥1.015

Fluid/serum LD <0.6 ≥0.6

Common causes of transudative ascites include liver cirrhosis, liver failure, heart failure and nephrotic syndrome. Exudative ascites is caused by infections such as tuberculosis, cancers and non-infectious inflammatory diseases, such as SLE, trauma and pancreatitis.

The difference between exudates from neoplasm and other causes is made at cytology. Neoplasia presents with high red blood cell counts and malignant cells on ascitic fluid cytology.

Question:

A 19-year-old student was rushed into the A&E by her flatmates with painful generalised body rash and blisters. She had started some antibiotics five days ago for an upper respiratory tract infection. She has a fever of 390C. She is tolerating food and has no frequency and dysuria. On examination, the blisters were noted to have basal necrosis. Oral and genital mucosae were spared. What is the most likely diagnosis?

Which one of the following is correct?

A) Erythema nodosum

B) Erythema marginatum

C) Erythema multiforme

D) Bullous Impetigo

E) Steven-Johnson syndrome

Answer:C

Explanation:

Erythema multiforme is an acute self-limiting type-IV hypersensitivity reaction to certain infections, medications (most commonly antibiotics) and other triggers. It presents as a skin rash or localised papule, which develop into target lesions within three days. Target lesions are blisters with basal necrosis. Fever is a commonly associated symptom. Erythema multiforme spares the oral and genital mucosa.

Steven-Johnson syndrome is a severe form of erythema multiforme, which involves the oral and genital mucosae.

Bullous impetigo is a blistering lesion of the superficial layers of the skin caused by Streptococcus pyogenes or Staphylococcus aureus. It is a common infection seen in children. It is not antibiotic-associated.

The classic presentation of erythema nodosum is red, tender nodules or swelling on the anterior shin. The lesions become tense and painful. They subsequently become soft, but do not suppurate or ulcerate. Streptococcal infections are common causes of erythema nodosum. Some fungi are thought to be associated with the disease. Drugs associated with erythema nodosum include sulphonamides, gold, sulfonylureas. It is also associated with ulcerative colitis, Crohn’s disease, sarcoidosis, Bechet disease and non-Hodgkin lymphoma.

Erythema marginatum is characterised as a skin rash that occurs on the trunk and proximal extremities. It is associated with rheumatic fever and appears as rings which last for months. The lesions are painless and itchy and can go unreported.

Question:

A 24-year-old patient presents to the GP with complaints of intermittent yellowing of the eye since birth. She also complains of intermittent dizziness and palpitations. She had laparoscopic cholecystectomy two years ago for gall stones. On examination, the spleen was enlarged, but the liver was normal. Full blood count and a peripheral blood film showed a picture of anaemia with spherocytosis. What is the next investigative step?

Which one of the following is correct?

A) Bone marrow examination

B) Serum Iron studies

C) Total bilirubin levels

D) Direct Coomb’s test

E) Indirect Coomb’s test

Answer:D

Explanation:

The diagnosis in this patient is hereditary spherocytosis. Hereditary spherocytosis is an autosomal dominant condition whose hallmark is microspherocyte. Microspherocytes occur due to defects in red cell membrane proteins. Abnormalities in the erythrocyte membrane could be due to spectrin deficiency, combined spectrin and ankyrin deficiency, protein 4,2 defects or band 3 deficiency. Presentation include neonatal jaundice, anaemia, splenomegaly and cholelithiasis.

Investigations include full blood count with differentials, direct Coomb’s test and a more sensitive osmotic fragility test.

Direct Coomb’s test is also used to investigate haemolytic transfusion reactions, haemolytic disease of the newborn and drug-induced immune haemolysis. The mechanism of this test is detection of erythrocytes coated with immunoglobulins, complements or both.

Question:

A 44-year-old female presents to the Ophthalmology clinic with redness on side of the right eye. The vision is reportedly normal. She is noted to have some nodules on the fingers and elbow. She is on medication for rheumatoid arthritis. What is the most likely diagnosis for the red eye?

Which one of the following is correct?

A) Cataracts

B) Glaucoma

C) Uveitis

D) Central retinal vein occlusion

E) Central retinal artery occlusion

Answer:C

Explanation:

This patient has a known diagnosis of rheumatoid arthritis. Ocular manifestations of the disease include keratoconjunctivitis sicca, uveitis, episcleritis and nodular scleritis.

Cataract is associated with systemic diseases such as diabetes mellitus, Wilson’s disease, Cohen Syndrome, Degos disease and Dubowitz syndrome. Patients with cataracts have a reduction in vision.

Glaucoma is associated with systemic hypertension, Sturge-Weber syndrome, von Recklinhausen’s neurofibromatosis, Axenfeld-Reigner syndrome, Marfan syndrome and homocysteinuria. Glaucoma is commonly associated with loss of vision.

Central retinal artery occlusion (CRAO) is commonly seen in patients with diabetes mellitus, systemic hypertension and in patients with cardiac vulvular disease and Behcet’s disease.CRAO presents as suddenpainful loss of vision.

Central retinal vein occlusion (CRVO) is associated with systemic hypertension, diabetes mellitus, bleeding disorders and patients with glaucoma. Loss of vision is a presenting symptom of CRVO.

Question:

A 48-year-old female presents to the GP with complaints of increased thirst, increase in volume and frequency of urination and darkening of the skin. She was recently diagnosed with diabetes mellitus. There is no history of weight loss, but she is easily fatigued. Laboratory analysis of her blood shows high ferritin levels. Which of the under listed cancers is she predisposed to?

Which one of the following is correct?

A) Lung cancer

B) Renal cancer

C) Liver cancer

D) Pancreatic cancer

E) Adrenal cancer

Answer:C

Explanation:

The most likely diagnosis in this patient is hemochromatosis. Clinical manifestations of hemochromatosis include skin bronzing or hyperpigmentation, diabetes mellitus, liver disease, amenorrhea and cardiomyopathies. Laboratory investigations include transferritin saturation levels, serum ferritin levels and hepatic iron concentration. Patients with hemochromatosis are predisposed to developing liver cancers.

Question:

A 60-year-old, who is a hypertensive, goes to the GP for a scheduled review. He is on bendroflumethzide for control of the high blood pressure. What electrolyte changes is he predisposed to?

Which one of the following is correct?

A) Hypokalemia

B) Hyponatremia

C) Hypocalcemia

D) Hypokalemia and hyponatremia

E) Hypocalcemia and hyonatremia

Answer:D

Explanation:

Bendroflumethazide is a thiazide diuretic that treats hypertension by inhibiting sodium reabsorption at the distal convoluted tubule. Electrolyte imbalances caused by thiazide diuretics include hyponatremia, hypokalemia and hypercalcemia. Other side effects include impaired glucose tolerance, gout, Addison’s disease and impaired renal function.

Question:

A 45-year-old femalewas noted to be have depressed consciousness, pin-point pupils and a respiratory rate of 7 breaths per minute while in the recovery ward post opencholecystectomy. What is the next best step in management?

Which one of the following is correct?

A) Morphine

B) IV fluids

C) IV antibiotics

D) Naloxone

E) Diazepam

Answer:D

Explanation:

The most likely diagnosis is opiate toxicity. This patient might have received morphine for relief of pain post opencholecystectomy. Reduced consciousness, pin-point pupils and depressed respiratory rate is characteristic of morphine toxicity. Emergency treatment for morphine and other opiate toxicity is naloxone.

Question:

A 44-year-old male,who was found wandering in the park, was brought into the A&E by a group of young men. His clothes were soaked in alcohol and urine. He has strong alcohol breath, an ataxic gait and ophthalmoplegia. His blood glucose level is 3.5mmol/L. What is the next appropriate management step?

Which one of the following is correct?

A) IV bolus of dextrose solution

B) IV furosemide

C) IV thiamine

D) CT scan of the brain

E) Psychiatric evaluation

Answer:C

Explanation:

This patient has characteristic features of Wernicke’s encephalopathy i.e. confusion (manifested by wandering in the park), ataxic gait and ophthalmoplegia. In addition, this patient is hypoglycemic. The next appropriate step is to administer intravenous thiamine. The introduction of dextrose solution in a patient with Wernicke’s encephalopathy, prior to administration of thiamine, worsens the features of this complication of alcohol use. It is essential to administer thiamine before starting dextrose solution.

Question:

A 68-year-old malewith lung cancer was brought into the A&E by his children, with reports of confusion and disorientation of three-day duration. There is associated nausea and vomiting. On examination, he appears lethargic but responsive. All other findings were normal. Urea and electrolytes reveal low levels of sodium. What is the most likely diagnosis?

Which one of the following is correct?

A) Cushings syndrome

B) Phaeochromocytoma

C) Syndrome Inappropriate Anti-Diuretic Hormone

D) Water intoxication

E) Brain metastasis

Answer:C

Explanation:

The symptoms exhibited by the patient correlates with hyponatremia. Causes of hyponatremia can be broadly categorised under increase in water retained by the body or increase excretion of sodium. Heart failure, water intoxication, renal failure and syndrome of inappropriate anti-diuretic hormone retain water in the body.

On the other hand, diuretics, severe vomiting or diarrhoea, hormonal changes such as hypothyroidism and Addison’s disease and drugs like ectasy increase excretion of sodium. The most likely cause of hyponatremia in this patient is Syndrome of Inappropriate Anti-Diuretic Hormone (SIADH). SIADH is a common complication of pulmonary tumours.

Question:

A 22-year-old male was rushed into the emergency room having been involved in a road traffic accident. He suddenly develops chest pain, tightness in the chest and shortness of breath. The pulse rate is rapidly increasing and oxygen sats are dropping. His trachea is deviated to the right and the veins in his neck are bulging. What is the immediate management step?

Which one of the following is correct?

A) Right chest drain

B) Right needle decompression

C) Left chest drain

D) Left needle decompression

E) Chest x-ray

Answer:D

Explanation:

The most likely diagnosis in this patient is a left tension pneumothorax. The presence of trauma history, sudden chest pain, chest tightness, shortness of breath, tachycardia, hypoxia and tracheal shift is classical of tension pneumothorax. The trachea is deviated to the opposite side of the tension pneumothorax. Immediate management is the use of a 14-16G needle to decompress the chest. This procedure is the needle decompression. In effect, in this patient, a left needle decompression is the immediate management step.

Question:

A 24-year-old cyclist presents to the A&E with chest pain, tightness in the chest and sudden shortness of breath after being involved in a crash. On examination, his pulse was 150 beats per minute, oxygen saturation was 92% and was noticed to be dropping throughout the examination. He has distended neck veins and reduced air entry on the right. The trachea is noticed to be deviated to the left. What is the most definitive treatment for this patient?

Which one of the following is correct?

A) Right chest drain

B) Right needle thoracostomy

C) Left chest drain

D) Left needle thoracostomy

E) Chest x-ray

Answer:A

Explanation:

The most likely diagnosis in this patient is a right tension pneumothorax. The history of trauma, sudden chest pain, chest tightness and shortness of breath, as well as clinical signs of tachycardia, hypoxia and tracheal shift, is classical of tension pneumothorax. The trachea is deviated to the opposite side of the tension pneumothorax. Emergency management of tension pneumothorax is needle thoracostomy. However, definitive treatment is insertion of a chest drain. In this patient, a right chest drain is the correct answer.

Question:

A 74-year-old femalepresents to the A&E with repeated morning falls over the past week. She is a known diabetic and hypertensive who is on medication. Her blood sugar levels have been well controlled per her diary. Her GP recently added bendroflumethazide to her hypertensive drugs to help control her blood pressure. Examination findings are normal. Resting ECG and troponins were normal.What is the next appropriate investigation?

Which one of the following is correct?

A) Ambulatory ECG

B) Echocardiogram

C) Tilt table blood pressure

D) Standing and lying blood pressure

E) Carotid angiography

Answer:D

Explanation:

The most likely explanation ispostural hypotension. This could be due to the addition of bendroflumethazide to her medication. The blood sugar diary rules out the possibility ofhypoglycaemia as a cause of her falls. The most appropriate investigation will be to monitor her blood pressure.

A tilt table blood pressure monitoring is not appropriate, because of her age and risk of injury. Hence, a standing and lying blood pressure measurement is the most appropriate.

Ambulatory ECG is indicated in patients with suspected arrhythmia, patients at risk of arrhythmia and patient’s responses to anti-arrhythmic drugs and monitoring of pace makers.

Echocardiogram is indicated in suspected cardiac structural abnormalities, such as valve stenosis, valve prolapse and great vessel anatomical abnormalities.

Carotid angiography is used to evaluate the patency of carotid arteries. This is utilised in patients with ischaemic strokes.

Question:

An80-year-old is breathless and suffering from mesothelioma. She has massive pleural effusion. She has been told that she has just two weeks to live.What is the most appropriate treatment for her?

Which one of the following is correct?

A) Pleural aspiration and pleurodesis

B) Continuous negative pressure drainage

C) Pleural biopsy

D) Pleural aspiration

E) Thoracotomy

Answer:D

Explanation:

The patient described above has terminal lung cancer. She has limited survival expectancy (i.e. two weeks) and a poor performance status. Per the British Thoracic Society’s pleural disease guidelines on the management of a malignant pleural effusion, the appropriate management of this patient is repeated therapeutic pleural aspiration. Treatment of pleural effusion by aspiration only has a high risk of recurrence at one month post aspiration.

Pleural aspiration and pleurodesis is done in patients with a longer life expectancy.

Pleural biopsy is a diagnostic procedure for suspected pleural malignancy, including metastatic lung cancer, mesothelioma and lymphoma.

Continuous negative pressure drainage is a tool used for wound management. This is not indicated in this patient.

Question:

A 22-year-old male presents to the A&E with difficulty in breathing. He is diagnosed as having severe asthma. Which of the following is a criterion for severe asthma?

Which one of the following is correct?

A) Silent chest

B) Increasing symptoms

C) Hypotension

D) Inability to make full sentences in one breath

E) PaO2 < 8 kPa

Answer:D

Explanation:

Per the British guidelines on the management of asthma, asthma is classified as severe in an adult if any of the under listedis present:

Peak expiratory flow reading of 33-50% best or predicted

Respiratory rate ≥ 25/min

Heart rate ≥ 110/min

An episode of asthma is defined as life-threatening in an adult if he/she presents with the following:

Peak expiratory flow reading <33% best or predicted

Sp02 <92%

PaO2 < 8 kPa

Normal PaCO2 (4.0-6.0 kPa)

Silent chest

Cyanosis

Poor respiratory effort

Arrhythmia

Exhaustion

Altered consciousness level

Hypotension

Question:

A 40-year-oldfemalepresents to the A&E with intermittent chest pain and cough of three-day duration. She recently travelled from Brazil to the United Kingdom. The cough, which was dry on day one, turned productive with blood stained sputum. On examination, her temperature was 37.50C. All other findings were normal. What is the single most appropriate investigation?

Which one of the following is correct?

A) D-dimer

B) Ventilation-perfusion scan

C) Chest x-ray

D) Computed tomographic scan of the chest

E) Computed tomographic pulmonary angiogram

Answer:E

Explanation:

The most likely diagnosis in this patient is pulmonary embolism. Assessment for probability of pulmonary embolism is done using the Wells score. Investigations include d-dimer test, arterial blood gases, chest x-ray, ventilation-perfusion scan or perfusion scintigraphy, echocardiography and computed tomographic pulmonary angiogram. Per the NICE guidelines, the investigation of choice for most people with high clinical probability of pulmonary embolism is computedtomographic pulmonary angiogram.

Question:

A 33-year-old femalepresents to the A&E with severe headache, nausea and vomiting. She reports it is the worst headache of her life. She has a long-standing history of migraine. Examination findings are normal. What is the most appropriate management?

Which one of the following is correct?

A) Reassure

B) Observe in emergency department

C) CT scan of the head

D) Give analgesia

E) Admit for 24 hours

Answer:C

Explanation:

The most likely diagnosis is sub-arachnoid haemorrhage (SAH). The classical presentation of SAH includes sudden onset of headache (often described as the worst headache ever felt), nausea, vomiting and photophobia. It may also present with symptoms of meningeal irritation, focal neurological deficits, sudden loss of consciousness and seizures. Diagnosis of SAH depends on high index of clinical suspicion and radiological confirmation via urgent non-contrast CT head scan.

Question:

A 78-year-old, who is a known chronic obstructive pulmonary disease patient, is on salbutamol inhalers, salmeterol, inhaled steroids and oral steroids. She still gets shortness of breath at rest and she is unable to sleep. Her Pa02 is at rest is 7.0 kPa. What is the most appropriate treatment of her symptoms?

Which one of the following is correct?

A) Short-term oxygen therapy

B) Long-term oxygen therapy

C) Non-invasive ventilation

D) Respiratory physiotherapy

E) Continue treatment

Answer:B

Explanation:

The above patient is most likely in Stage 4 COPD. She is receiving optimal treatment for the condition but still has symptoms. Her breathlessness at rest may be due to hypoxemia at rest. She therefore qualifies for long-term oxygen therapy.

Short term oxygen therapy is used in mild and moderate exacerbations of COPD.

Patients on optimal treatment, who are in persistent hypercapnic ventilatory failure, qualify for non-invasive ventilation therapy.

Respiratory physiotherapy, with positive expiratory pressure masks, is considered in some exacerbations of COPD to help clear sputum.

Question:

A 20-year-old boy, who collapsed during a football match, was rushed into the A&E. On examination, he is pale and sweaty. His airway is patent. He opens his eyes to pain, localises painful stimuli and speaks inappropriate words. His blood pressure is 120/70mmHg, pulse rate is 105bpm and the capillary refill is less than 2 seconds. What is the most appropriate initial investigation?

Which one of the following is correct?

A) Blood alcohol level

B) CT scan of the head

C) Drug screen

D) Capillary blood glucose

E) Serum urea and electrolytes

Answer:D

Explanation:

The most likely cause of collapse in this patient is hypoglycaemia. The symptoms and signs (sweaty skin, altered consciousness, mild tachycardia, normal blood pressure, normal capillary refill time) are features of hypoglycaemia. The most appropriate investigation is a capillary glucose check to confirm low blood sugar levels.

There is no history of trauma, hence conditions like epidural and subdural haemorrhage are highly unlikely. The absence of brain bleed rules out CT scan of the head as an investigative tool.

There is no clinical evidence of dehydration, which can be a cause of collapse. The absence of dehydration rules out serum urea and electrolytes as the investigation of choice.

The history does indicate alcohol or drug use, hence these options are not applicable in this case.

Question:

A 25-year-old rushes to the A&Ewith complaints of having swallowed some medication. She presents with vomiting, ringing in herears, double vision and profuse sweating. Her temperature is 39.50C and her respiratory rate is 30 breaths per minute. What drug do you suspect is causing her symptoms?

Which one of the following is correct?

A) Paracetamol

B) Aspirin

C) Amoxicillin

D) Thyroxine

E) Lithium

Answer:B

Explanation:

The symptoms and signs described in this patient is consistent with aspirin overdose. Paracetamol overdose is associated with abdominal pain, nausea or fatigue in the first 24 hours. Symptoms subsequently progress to hypoglycaemia, jaundice, confusion, bleeding from orifices, renal failure, pancreatitis and lactic acidosis.

Amoxicillin overdose is characterised by nausea, vomiting, diarrhoea, generalised skin itch, hives, stained teeth and acute kidney injury. .

Symptoms of thyroxine overdose include agitation, sweating, diarrhoea, vomiting, tachycardia and hypertension. .

Lithium overdose symptoms include diarrhoea, dizziness, nausea, vomiting, general bodily weakness and abdominal pain.

Question:

A 65-year-old male presents to the A&E with cotton wool in both nostrils. He was started on warfarin a week ago after being diagnosed with atrial fibrillation. Application of nasal pressure does not stop the bleed. INR measured was reported as 11. What is the initial step in the management of this patient?

Which one of the following is correct?

A) Vitamin K

B) Fresh frozen plasma

C) Protamine sulphate

D) Prothrombin factor concentrate

E) Whole blood transfusion

Answer:A

Explanation:

The patient is bleeding because of warfarin toxicity. One of the complications of warfarin is unprovoked bleeding from orifices. The reversal of this complication of warfarin is by administration of vitamin K. The initial step in managing this patient is vitamin K administration.

Warfarin toxicity can be associated with major bleeding episodes. In such situations, prothrombin factor concentrates should be administered in addition to intravenous vitamin K.

Fresh frozen plasma can be used in combination with intravenous vitamin K, however complete and rapid reversal of over-anticoagulation is readily achieved with prothrombin factor concentrates than fresh frozen plasma.

Protamine sulphate is used to reverse the effects of heparin.

Question:

A 58-year-old male presents to the Respiratory Clinic with weight loss, difficulty in breathing, coughing up blood and occasional wheezing. He smokes 30 cigarettes a day. Investigations confirm a squamous cell carcinoma of the right bronchus. What is the single most likely biochemical abnormality?

Which one of the following is correct?

A) Hypernatremia

B) Hypercalcemia

C) Hyperkalemia

D) Hypomagnesemia

E) Hyponatremia

Answer:B

Explanation:

Squamous cell lung cancer is a form of non-small cell lung cancers. They are usually located centrally. They are strongly linked to smoking. They are slow growing tumours. Symptoms include persistent cough, weight loss, hemoptysis and wheezing. Squamous cell carcinoma of the lung is associated with a paraneoplastic syndrome, which causes ectopic production of parathyroid hormone-related protein, resulting in hypercalcemia.

Question:

A 45-year-old male presents to the A&E with facial and leg swelling of one-week duration. He was previously healthy. On examination, he has ankle and facial oedema. Blood pressure is 130/90mmHg. Urine dipstick shows 3+ proteins and no blood. Renal biopsy done showed immune complexes in the subepithelium of the glomerulus. What is the diagnosis in this patient?

Which one of the following is correct?

A) Post-streptococcal glomerulonephritis

B) Minimal change glomerulonephritis

C) Membranous glomerulonephritis

D) Focal segmental glomerulonephritis

E) IgA nephropathy

Answer:C

Explanation:

Membranous glomerulonephritis is the most common forms of nephrotic syndrome in adults. Its peak occurrence is in the fourth and fifth decade of life. Symptoms include pedal oedema, asymptomatic proteinuria and non-specific complaints of malaise, anorexia and fatigue. Hypertension may be present. Causes can be idiopathic or secondary to autoimmune diseases, infectious diseases, malignancy, drugs and in de novo renal allografts. Histologically, light microscopy shows normal mesangium, thickened patent capillary lumina and sub epithelial deposits with spikes on trichrome stain. Immunofluorescence shows IgG with C3 kappa and lambda light chains. Focal segmental glomerulonephritis is associated with anarsaca, massive proteinuria, hypoalbuminemia and hyperlipidaemia. Patients may present with pleural effusion, ascites, ulcerations and infections in dependent areas and severe hypertension. The classical histologic lesion in segmental solidification of the glomerular tuft on light microscopy. Tubular atrophy and interstitial fibrosis could be present.

Minimal change disease is the most common form of nephrotic syndrome in children. It presents first with facial oedema. Weight gain is an additional feature. Patients may also present with hypovolemia, hypertension, thromboembolism and infection. Causes include drugs, infections, Hodgkin lymphoma and hematopoietic stem cell transplantation. Histologically, the glomerulus may be normal. However, it may show protein and lipid droplets in the epithelial cells. Electron microscopy shows foot-process fusion, a description of epithelial cell structure with withdrawal of dendritic process.

IgA nephropathy is associated with haematuria, which is either microscopic or macroscopic. The haematuria is preceded by an upper respiratory tract infection, or, less commonly, gastroenteritis in children. Haematuria usually appears simultaneously or within the first 48-72 hours after the infection begins. It is associated with loin pain. Examination findings are usually unremarkable. Proteinuria is rare, however if it occurs, it is mild. Urinalysis shows red blood cell casts in urine. Light microscopy histologic findings include diffuse or focal mesangial proliferation and extracellular matrix expansion. In advanced disease, there is interstitial fibrosis, tubular atrophy and vascular sclerosis. Immunofluorescence shows IgA deposition in a diffuse granular pattern in the mesangium.

Post streptococcal glomerulonephritis presents ashaematuria, proteinuria, oedema, hypertension with or without oliguria, oedema and red blood cell casts in urine. There is a history suggestive of a preceding streptococcal infection such as tonsillitis or pharyngitis. There is a latent period between streptococcal infection (1-2 weeks for throat infection and 3-6 weeks after skin infection) and onset of symptoms of glomerulonephritis. Laboratory tests include ASO titres, streptozyme test (tests antibodies to ASO, anti-DNAsa B, AHase and anti-NAD). Histologic findings on light microscopy include diffuse hypercellularityof the glomeruli. Polymorphonuclear leukocytes and monocytes are present. Immunofluorescence may show IgG and C3 in diffuse granular pattern along the capillary and mesangium. IgM may be present.

Question:

A 16-year-old boy is brought to the A&E by his parents with complaints of fever while on a journey from New Jersey to the United Kingdom. The fever is associated with chills, night sweats, poor appetite and complaints of feeling tired. On examination, his temperature is 39.40C. Abdominal examination reveals splenomegaly and palpable lymph nodes in the neck. What is the most likely diagnosis?

Which one of the following is correct?

A) Tuberculosis

B) Brucellosis

C) Sarcoidosis

D) Hodgkin Lymphoma

E) Malaria

Answer:D

Explanation:

The most likely diagnosis is Hodgkin lymphoma. The disease has an initial peak between 15 – 34 years and then in adults >55 years. Although the symptoms appear constitutional (and could be the same as other options given above), the presence of lymphadenopathy, splenomegaly and no history of travel to any disease-endemic area makes Hodgkin lymphoma the most likely diagnosis.

The most common presenting feature of a lymphoma is a painless swelling in the neck, armpit or groin. Other symptoms include fever, chills, heavy night sweats, exhaustion, unexplained weight loss, decreased appetite, pruritus and abdominal pain. Positive examination findings include palpable cervical, axillary or inguinal lymph nodes and splenomegaly.There is an association between the Epstein Barr virus and Hodgkin Lymphoma. Diagnosis of Hodgkin lymphoma is based on histology. Samples are obtained from enlarged lymph nodes; either through fine needle aspiration or excision biopsies. Bone marrow biopsies may prove essential in some patients. Treatment options include radiation therapy, induction chemotherapy, salvage chemotherapy or hematopoietic stem cell transplantation.

Tuberculosis is a multisystem disease with varied presentations and manifestations. The symptoms of pulmonary tuberculosis include cough, weight loss, fever, night sweats, haemoptysis and chest pain. Tuberculous meningitis is associated with headache, mental state changes and low-grade fever. Back pain and stiffness, lower extremity paralysis and arthritis are associated with skeletal tuberculosis.Risk factors for tuberculosis include HIV infection, history of tuberculosis, exposure to tuberculosis, travel to or emigration to atuberculosis-endemic area and homelessness or shelter-living.

Brucellosis is a zoonotic infection caused by the ingestion of unpasteurised milk and undercooked meat of infected animals, or close contact with their fluids. Farmers are the most at-risk groups for contracting this infection. Sarcoidosis is a granulomatous disease that usually affects the lungs and skin. Skin manifestations include erythema nodosum, lupus pernio and violaceous rash on the cheek or nose.

Question:

A 3-month-old girl collapsed and was rushed into the A&E by her parents. She is resuscitated and managed. Prior to discharge, her parents ask about how to do CPR, in case it happens again. Which of the following resuscitation options is appropriate for compressions to breath ratio?

Which one of the following is correct?

A) 5:1 with mouth and nose

B) 5:1 with just mouth and nose pinched

C) 15:2 with mouth and nose

D) 15:2 with just mouth and nose pinched

E) 30:2 with only one hand

Answer:C

Explanation:

The algorithm for paediatric basic life support is:

Shout for help

Open airway

Give 5 rescue breaths (if there is abnormal breathing)

15 chest compressions (if there are no signs of life)

Alternate 2 rescue breaths with 15 chest compressions

Continue until help arrives.

In an infant, when giving rescue breaths:

Ensure a neutral position of the head and apply chin lift

Take a deep breath and cover the mouth and nasal apertures of the infant, making sure you have a good seal

Blow steadily into the infant’s mouth and nose for 1 second

Watch for chest movement and repeat.

In a child over one year, rescue breaths follow the same process, however, the mouth is covered and the nose is pinched.

Question:

An 8-year-old was rushed into the A&Ehaving fallen and fainted at morning assembly. She recovered within 30 seconds of the event. She reportedly complained of light-headedness and went pale before fainting. There is no essential family history. On examination, all systems are normal. What is the most likely diagnosis?

Which one of the following is correct?

A) Decreased blood sugar

B) Vasovagal syncope

C) Anxiety

D) Arrhythmia

E) Heat stroke

Answer:B

Explanation:

Individuals with vasovagal syncope experience some of the following:

Pale skin

Light-headedness

Tunnel vision

Blurred vision

Nausea

Feeling warm

During the episode, onlookers may observe abnormal movements. Pulse may be weak or slow and pupils may be dilated. Triggers for vasovagal syncope include standing for long periods of time, heat exposure, seeing blood, having blood drawn, fear of bodily harm and straining.

Hypoglycaemia is characterised by dizziness, sweating, irritability, cold clammy skin, palpitations and headache, amongst others. It is commonly caused by anti-diabetes medications. However, Addison’s disease and sepsis can result in hypoglycaemia. The patient described above does not fall into either category.

Symptoms of anxiety include palpitations, sweating, smothering, chest tightness, nausea and trembling, all of which were not exhibited by the patient described above. Fainting secondary to arrhythmia may be preceded by abnormal heartbeat, slow heartbeat, fluttering in the chest, shortness of breath, light-headedness or sweating. Heat stroke symptoms include dizziness, nausea, headaches, weakness, shortness of breath and altered mental state. Victims must have been exposed to temperature 104 degrees F or higher for the symptoms to be classified as due to heatstroke.

Question:

A 10-year-old boy, who was diagnosedwithepilepsy three months ago, is admitted to hospital for management of a prolonged episode. He has recently been switched tosodium valproate. His seizure chart shows he recorded a seizure in the night. Which of these will be your initial investigation?

Which one of the following is correct?

A) Check drug level

B) CT scan of the head

C) Electroencephalogram

D) Video electroencephalogram

E) MRI scan of the brain

Answer:A

Explanation:

The most likely diagnosis in this child is status epilepticus. This is a life-threatening condition, which is commonly caused by change in anticonvulsant therapy. It may be the first presentation of a seizure disorder in some patients. Initial investigations, irrespective of clinical setting, include anticonvulsant drug levels, toxicology screening, glucose, complete blood counts and electrolyte levels. Other tests such as electroencephalogram, blood cultures, urinalysis and CT/MRI imaging are considered, depending on the clinical picture or setting.

Question:

A 3-year-old boy is brought to the A&Eby his parents with complaints of passing dark-coloured urine. On further questioning, he had a bout of pharyngitis, for which he was managed, two weeks ago. On examination, he has ankle oedema. Urine dipstick reveals the presence of blood and proteins in urine. What is the most likely diagnosis?

Which one of the following is correct?

A) IgA nephropathy

B) Nephrotic syndrome

C) Post-streptococcal glomerulonephritis

D) Urinary tract infection

E) Membranous glomerulonephritis

Answer:C

Explanation:

Post-streptococcal glomerulonephritis presents as haematuria, proteinuria, oedema, hypertension with or without oliguria, oedema and red blood cell casts in urine. There is a history suggestive of a preceding streptococcal infection such as tonsillitis or pharyngitis. There is a latent period between streptococcal infection (1-2 weeks after throat infection and 3-6 weeks after skin infection) and onset of symptoms of glomerulonephritis. Laboratory tests include ASO titres, streptozyme test (tests antibodies to ASO, anti-DNAsa B, AHase and anti-NAD). Histologic findings include diffuse hypercellularityof the glomeruli, polymorphonuclear leukocytes and monocytes. Immunofluorescence may show IgG and C3 in diffuse granular pattern along the capillary and mesangium. IgM may be present.

IgA nephropathy is associated with haematuria, which is either microscopic or macroscopic. The haematuria is preceded by an upper respiratory tract infection, or, less often, gastroenteritis in children. Haematuria usually appears simultaneously or within the first 48-72 hours after the infection begins. Proteinuria is rare. Histological findings includediffuse or focal mesangial proliferation and extracellular matrix expansion, interstitial fibrosis, tubular atrophy and vascular sclerosis. IgA deposition is seen on immunofluorescence.

Nephrotic syndrome is common in children. It presents with facial oedema, weight gain, hypovolemia, hypertension, thromboembolism and infection.

Symptoms of urinary tract infection in children include frequency of urination, fever, irritability, poor appetite, crying during urination, foul-smelling urine, vomiting, diarrhoea, poor weight gain, pain during urination (which is associated with deliberate holding of urine), bed-wetting and cloudy urine.

Membranous glomerulonephritis is the most common form of nephrotic syndrome in adults. Its peak occurrence is in the fourth and fifth decade of life. Symptoms include pedal oedema, asymptomatic proteinuria and non-specific complaints of malaise, anorexia and fatigue. Hypertension may be present.

Question:

A 6-week-old child is brought in by her parents with complaints of being irritable, no tears when she cries and appearing limp. The mother reports that she has been having repeated vomiting after feeding over the past three days. On examination, the child was dehydrated. She was resuscitated and certain investigations requested. Which of the following is the most appropriate radiological investigation?

Which one of the following is correct?

A) Computer tomography scan of the abdomen

B) Abdominal ultrasound

C) Upper GI endoscopy

D) Barium enema

E) Abdominal x-ray

Answer:B

Explanation:

The diagnosis in this child is dehydration secondary to pyloric stenosis. Pyloric stenosis presents as vomiting after feeding, persistent hunger, changes in bowel movements, poor weight gain and dehydration. Investigations include routine blood tests such as urea and electrolytes, complete blood count and liver enzymes. Diagnostic radiological investigation is abdominal ultrasound while baby is feeding. Management is surgical, a procedure known as pyloromyotomy.

Question:

An 18-month-old boy was being managed for a urinary tract infection. He weighs 10kg. He was prescribed 4mg/kg twice a day. The parents were given a bottle of trimethoprim 50mg/5ml. Which of the following is the most appropriate dose?

Which one of the following is correct?

A) 2ml once a day

B) 0.8ml twice a day

C) 8ml twice a day

D) 8ml once a day at night

E) 4ml twice a day

Answer:E

Explanation:

Dose: 4mg/kg twice a day

Weight: 10kg

Total dose for the day: 40mg/kg twice a day

Concentration of medication: 50mg/5ml

Dose for the child: (5ml x 40mg)/50mg= 4ml twice a day.

Question:

A new born baby, born three hours ago at thirty-six-weeks gestation, has nasal flaring, intercostal recession and normal bodily temperature. Forty-eight hours prior to delivery,the child’s mother was diagnosed with premature rupture of membranes. What is the single most likely investigation that should be done before commencing treatment?

Which one of the following is correct?

A) Chest x-ray

B) Blood glucose

C) Blood culture

D) Echocardiogram

E) Electrocardiogram

Answer:C

Explanation:

The most likely diagnosis is neonatal sepsis secondary to premature rupture of membranes. Symptoms include body temperature changes, breathing abnormalities, diarrhoea, poor sucking, lethargy and seizures. Risk factors include maternal group B streptococcus infection, premature rupture of membranes, preterm rupture of membranes, prolonged rupture of membranes, maternal urinary tract infection and chorioamnionitis. Initial investigations include blood cultures, complete blood count and c-reactive protein. Choice of antibiotics is guided by blood culture results.

Question:

A 3-year-old boy presents to the A&Ewith burns on his shoulder and upper arm covering 3% of the total body surface area. He is in pain and screaming. What is the most appropriate management step?

Which one of the following is correct?

A) Analgesia

B) IV fluid

C) Dress the wound

D) Antibiotics

E) Refer to the burns team

Answer:A

Explanation:

It is essential to address the pressing concern, which is pain. Analgesia is the most appropriate management step in this child. IV fluids resuscitation is indicated in children with ? 10% total body surface area.

The acute management of the burn victim involves:

Assess ABC of the patient

Immobilise the cervical spine

Assess for other injuries

Obtain IV access and take samples for full blood count, urea and electrolytes, creatinine kinase, glucose, group and save and clotting profile

Titrate IV morphine as necessary

Start IV fluids

Maintain core temperature at >360C.

Question:

A 4-year-old child presents to the GP with complaints of right foot pain following a fall. He is a known asthmatic and has had recurrent admissions to the hospital for severe asthmatic episodes. A diagnosis of a right ankle sprain was made. What is the most appropriate analgesia for this boy?

Which one of the following is correct?

A) Ibuprofen

B) Codeine

C) Diclofenac

D) Paracetamol

E) Morphine

Answer:D

Explanation:

This patient requires pain relief medication for right ankle sprain. He has a history of asthma hence certain medications cannot be used, as they trigger asthmatic attacks. Pain relief medications such as aspirin, ibuprofen, naproxen and other non-steroidal anti-inflammatory drugs (NSAIDs) are contraindicated in asthma patients. Pain relief medications that are safe to use include acetaminophen (the active ingredient in paracetamol), propoxyphene and prescribed narcotics (for example codeine). Although codeine and morphine can be used, paracetamol is the first on the pain management ladder.

Question:

A 2-year-old boy is brought in to see the GP by his grandmother. He has a reddish, blistering rash on the face especially around the nose and the mouth. There is crusting over the rash and there are no skin involutions. What is the most likely diagnosis?

Which one of the following is correct?

A) Impetigo

B) Shingles

C) Chicken pox

D) Measles

E) Herpes simplex

Answer:A

Explanation:

Impetigo is a contagious cutaneous infection mainly caused by Staphylococcus aureus. It presents with a vesicular or pustular rash that appears most often on the face with honey crusting over the lesions. It spreads by contiguous extension or by inoculation through scratching. Lesions are usually asymptomatic with occasional pruritus. Living under unhygienic conditions and hot humid weather encourage skin contamination by the bacteria implicated in impetigo. Immunosuppression increases susceptibility, especially in the adult population. Apart from the rash, there are usually no significant examination findings. Treatment of localised infection is by use of topical fusidic acid. Extensive impetigo is treated by oral flucloxacillin or clindamycin. Shingles is a reactivation of varicella-zoster virus infection. It is characterised by patchy erythema, occasionally accompanied by skin induration, regional lymphadenopathy, scarring and severe pre- and post-herpetic pain. It is usually dermatomal in distribution.

Chicken pox is caused by varicella-zoster infection. It presents with a prodromal phase, which may be characterised by pain, paraesthesia, itching, flu-like symptoms. Vesicular rash develops and eventually crusts and resolves.

Measles, also known as rubeola,is a contagious infectious disease caused by a paramyxovirus. Symptoms include Koplik spots in the mouth, erythematous macules and papules which blanch on touching. The lesions coalesce into patches and plaques that spread in a cephalocaudal fashion. The rash lasts for about a week and then fade into coppery-brown hyperpigmented patches and then desquamate. Symptoms appear between 10-14 days after exposure to the virus.

Herpes simplex virus presents with a painful vesicular rash, usually on the lips, ears and genitals. A child is likely to suffer from herpes if his/her mother got a herpes infection while pregnant. This may be associated with congenital anomalies.

Question:

A 10-year-old child presents to the GP with a severe headache and swelling around the right eye of three-day duration. The size of the swelling has increased over the three days. He had an upper respiratory tract infection a week prior to the onset of the eye symptoms. On examination, the child has proptosis, blurred vison and conjunctival injection. Which radiological investigation is most appropriate?

Which one of the following is correct?

A) Facial x-ray of the orbit

B) CT scan of the orbit

C) Ultrasound of the orbit

D) CT scan of the brain

E) MRI of the brain

Answer:D

Explanation:

The diagnosis in this patient is orbital cellulitis. This is a complication of upper respiratory tract infection. It occurs via three mechanisms:

Extension of an infection from the paranasal sinuses or other periorbital structures such as the face or lacrimal sac

Direct inoculation from the orbit

Haematogenous spread from bacteraemia.

It presents asfever, malaise, a history of recent sinusitis, upper respiratory tract infection or facial trauma.Facial surgery or dental work is essential. Cardinal signs of orbital cellulitis include proptosis and ophthalmoplegia. These may be accompanied by conjunctival chemosis, decreased vison, pain on eye movement, orbital oedema and purulent nasal discharge. Laboratory investigations include complete blood count, blood cultures and swabs of purulent nasal discharge. High resolution contrast CT scan of the orbit is very useful in making a diagnosis. MRI may be helpful in defining abscess and evaluating the involvement of the cavernous sinus. Management involves both antibiotic therapy and surgical drainage. This is carried out by a multidisciplinary team, involving the ENT surgeon, ophthalmologist and paediatrician, among others. Facial x-ray and ultrasound of the orbit are not recommended in orbital cellulitis. Where meningitis occurs as a further complication, a lumbar puncture is recommended.

Question:

A 2-year-old, who is being prepared for discharge, is noticed to have difficulty in breathing. Mother reports she has just given him some food. Which of the following steps will you take first?

Which one of the following is correct?

A) Heimlich’s manoeuvre

B) Five rescue breaths

C) Chest compression on mother’s lap

D) Back blows with child on mother’s lap

E) Induce vomiting

Answer:D

Explanation:

This is a presentation of airway block by food (a foreign body). In a child, the initial step in making the airway patent is to attempt removal by giving back blows using the palm of the hand and hitting between the scapulae. Once the foreign body is out, but there is no sign of life, then you will need to start CPR and call for the crash team and ENT specialist for further management.Inducing vomiting is not recommended under any circumstance. Heimlich’s manoeuvre is done in adults choking due to a foreign body.

Question:

A 12-year-old boy is rushed into the A&E with decreased level of consciousness. He has been vomiting and passing loose stool for the past 24 hours. He has no essential medical history. On examination, he has cold peripheries. Blood pressure and pulse are 70/40mmHg and 160bpm. His blood sugar is 14mmol/L. What is the first step in management?

Which one of the following is correct?

A) Give IV insulin

B) Give SC insulin

C) Give 0.9% normal saline

D) Give 9% normal saline

E) Give gelafusine

Answer:C

Explanation:

The diagnosis in this patient is hypovolemic shock. The NICE guidelines recommend the use of glucose-free crystalloids, containg sodium in the range of 131 – 154 mmol/L with a bolus of 20ml/kg over 10 mins. The fluid that gives the recommended amount of sodium is 0.9% normal saline. Colloids such as gelafusine, dextrans and hydroxyl starches are not recommended for fluid resuscitation.

In cases of diabetic ketoacidosis (note: this is not the case in this patient), fluid resuscitation is started before insulin is administered. In general, bolus fluid resuscitation is not routinely done in diabetic ketoacidosis (DKA) in the paediatric population. In paediatric patients with severe DKA, only one bolus fluid is recommended prior to discussion with a senior paediatrician.

Question:

A 7-year-old child was involved in a road traffic accident with her parents. She was rushed in by onlookers. She has a compound fracture of the left fibula and noisy breathing. What is the next appropriate management step?

Which one of the following is correct?

A) X-ray of the left leg

B) CT scan of the head

C) Chest x-ray

D) Secure airway

E) Give IV fluids

Answer:D

Explanation:

This patienthas been involved in a road traffic accident. Primary survey shows noisy breathing. It is essential to do the ABCs of resuscitation, hence securing the airway is the next appropriate step. In securing the airway, a common airway adjunct used is the nasopharyngeal airway. It is a flexible endotracheal tube designed to open the channel between the nostril and the nasopharynx (NPA). It can be used in an emergency or for long-term use. In emergency situations, the required length of the NPA is obtained by measuring from the tip of the nose to the tragus of the ear. The appropriate tube width/size can be estimated by matching its diameter against the opening of the child’s nostril.

The size and length of the NPA in non-emergency situations can be determined by:

Clinical assessment

Obtaining the child’s crown to heel length as there is a positive correlation between this and the length of the NPA

Referring to the lateral neck x-ray if appropriate.

Once the airway is secured, further management options such as CPR, fluid resuscitation and secondary survey can be implemented where necessary.

Question:

A 5-year-old child presents to the GP with a skin rash. A diagnosis of chicken pox is made and supportive treatment is given. Mother requests to know when the child can return to school. Which of the following is the correct?

Which one of the following is correct?

A) After two days

B) Intermittently

C) Immediately

D) After rash is crusted over

E) After a week

Answer:D

Explanation:

Chicken pox is caused by varicella-zoster virus. It is characterised by a prodromal stage, an acute disease phase and a resolution phase. The prodromal stage is characterised by pain, itching and paraesthesia. Symptoms associated with the acute phase include pain, flu-like symptoms, helplessness, irritability and depression. The rash develops between the acute phase and the resolution phase. The patient is contagious during these phases. However, once all the rash is crusted over, the patient is no longer contagious. This usually occurs between five to seven days after the rash has appeared.

Question:

A 6-year-old girl was brought into the A&E by a guardian, who reported that she had collapsed this morning. Prior to the collapse episode, she had complained of feeling dizzy, high bodily temperature, vomiting and passing loose stools. After examination, a diagnosis of severe dehydration secondary to infective gastroenteritis was made. An intravenous line was attempted, but not successful. What is the most appropriate management step?

Which one of the following is correct?

A) Nasogastric tube insertion

B) Intravenous central line

C) Intraosseous assess

D) Oral fluid intake

E) Venous cut-down

Answer:C

Explanation:

In resuscitation of a dehydrated child, a failed peripheral intravenous line necessitates an intraosseous assess. Common sites for intraosseous needle insertion include the medial aspect of the tibial tuberosity and the proximal humerus. Intraosseous access can be obtained via the sternum. However, this can be an obstruction to CPR. A failed intraosseous access prompts either a central venous access or a venous cut down. These IV accesses are done by anaesthetist and paediatric surgeons respectively.

Question:

A healthy baby boy is born at term to a woman who was unwell with confirmed acute hepatitis B during pregnancy. The mother is concerned she may have infected her baby with the virus. What single preventative intervention should be given to the baby?

Which one of the following is correct?

A) Hepatitis B immunoglobulin only

B) Full course of hepatitis vaccine

C) Single dose of hepatitis B vaccine

D) Hepatitis B vaccine and hepatitis B immunoglobulin

E) Do nothing until the baby’s hepatitis B status is confirmed

Answer:D

Explanation:

Recommendations for management of a new born and hepatitis B are as follows:

A healthy baby born to a mother who is hepatitis B positive should receive hepatitis B vaccine and hepatitis B immunoglobulin within 12 hours of birth

A healthy baby born to a mother whose mother’s hepatitis status is unknown should receive hepatitis B vaccine within 12 hours of birth. The mother’s hepatitis B status must be checked immediately. If she is positive, the infant should receive the hepatitis B immunoglobulin as soon as possible (no later than age 1 week)

Full-term infants who weigh more than 2kg born to hepatitis B negative mothers should receive single-antigen hepatitis B vaccine before hospital discharge.

Preterm infants weighing less than 2kg born to hepatitis B negative mothers should receive the first dose of vaccine one month after birth or at hospital discharge

All infants should complete the hepatitis B vaccine series with either a single-antigen vaccine or combination vaccine per recommended vaccination schedule

Infants born to hepatitis B positive mothers should be tested for Hepatitis B surface antigen and antibody to hepatitis B surface antigen after completion of the hepatitis B vaccine series.

Question:

An 8-year-old girl reports to the GP with complaints of left earache of two-day duration. Her mother confirms this and further indicates that the earache subsided three hours ago. However, a foul-smelling discharge was seen dripping from the left ear after the pain subsided. On examination, the girl’s temperature is 38.70C. What is thesingle most appropriate antibiotic to prescribe tothis patient?

Which one of the following is correct?

A) Ciprofloxacin

B) Clindamycin

C) Flucloxacillin

D) Erythromycin

E) Amoxicillin

Answer:E

Explanation:

The diagnosis in this scenario is left otitis media with perforation. It presents with ear ache and hearing loss. The ear pain is relieved when perforation of the tympanic membrane occurs. Perforation is associated with relief of otalgia and the presence of a discharge. The discharge could be purulent, bloody or thin and watery. Spontaneous healing of the perforation occurs within 24 – 48 hours after perforation. The most common cause of acute otitis media in children of all age groups is Streptococcus pneumoniae. Other possible organisms include Haemophilus influenza, Moraxella catarrhalis and Streptococcus pyogenes. Some viruses are implicated in acute otitis media. Treatment is by use of antibiotics. The first line of treatment is amoxicillin.

Question:

A 5-year-old girl presents to the A&E with a high bodily temperature of three-day duration. She is reportedly refusing meals because swallowing is painful. On examination, she is febrile. Oral examination reveals small ulcers in her mouth. She has blisters in the palms of her hands and the soles of her feet. The blisters are painful but not itchy. Which of the following is the single most likely underlying cause of her

Which one of the following is correct?

A) Herpes simplex virus

B) Staphylococcus epidermidis

C) Streptococcus pyogenes

D) Varicella zoster virus

E) Coxsackie virus

Answer:E

Explanation:

The diagnosis in this patient is Hand-Foot-Mouth disease. This is caused by coxsackie virus, particularly group A coxsackievirus. Patients, particularly children, present with sore throat and mouth. Vesicles coalesceform bullae and proceed to ulcerate in the oral mucosa and tongue. Cutaneous lesions are found in the palms of the hands and on the soles of the feet at approximately the same time as oral ulcers. The vesicles are painful but not itchy. Definitive diagnosis is done by isolation of virus in cell culture of samples obtained from the oropharynx. The disease is self-limiting; hence treatment is supportive.

Question:

A 2-year-old boy fell from his tricycle, hurting his arm. He got up and started to cry. Within seconds, there was no sound. He went pale, unconscious and rigid. He recovered after a minute but remained pale. After an hour, he was back to normal. His mother reports he had the same episode two months ago when he fell down some steps. She was afraid he was going to die on both occasions. Examination findings are normal. What is the single investigation indicated?

Which one of the following is correct?

A) CT scan of the head

B) Electroencephalogram

C) Skeletal survey

D) Video telemetry

E) Do nothing and reassure the mother

Answer:E

Explanation:

The diagnosis in this patient is reflex anoxic seizures, a type of breath-holding spells. The main features of reflex anoxic seizures are:

There is a background of sudden, unexpected fright or pain. This may not always be obvious

Child may or may not cry or sob

Child looks pale and collapses

They go stiff, then sloppy and then gasp when returning to consciousness. The whole process lasts less than a minute.

Blue breath-holding spells, the more common type, often occurs during vigorous crying and sobbing triggered by pain, frustration, anger or fear. Children will appear blue, particularly on the lips and lose consciousness. In this type, the child is either floppy or stiff and episodes last less than a minute.

The episodes are involuntary. Generally, breath-holding spells stop by four or five years, although, in some children,will continue into adulthood. During the episode, parents should ensure the following:

Stay calm

Do not pick up the child but lay child on the side

Keep an eye on child until the spell ends

Ensure safety around them. If there are jerky movements, cushion the head, arms and legs

Do not shake or hit them

Do not splash water on them

Avoid mouth to mouth resuscitation

Question:

A baby born at 34 weeks was noticed to have a heart murmur at birth. He was admitted to the neonatal intensive care unit where he was managed in an incubator. While on admission, he did not have any blue-spells. The infant gained weight and was well. At discharge, there was no murmur. What is the most likely diagnosis?

Which one of the following is correct?

A) Tetralogy of Fallot

B) Sinus of Valsalva aneurysm

C) Atrial septal defect

D) Patent ductus arteriosus

E) Ventricular septal defect

Answer:D

Explanation:

The most likely diagnosis is patent ductus arteriosus (PDA).Factors involved in PDA in a premature infant include immaturity of the smooth muscle within the structure or the inability of the immature lungs to clear the circulating prostaglandins that remain from gestation. Functional closure occurs within 15 hours of life in healthy infants. In this infant, the period spent in NICU plus the gestation at delivery means the infant is 40 weeks; equivalent to the gestation of a term baby. The absence of the murmur at 40 weeks is most likely due to the functional closure of the PDA.

Tetralogy of Fallot is a cyanotic heart disease which is commonly seen in premature infants or a healthy baby. It is characterised by peripheral and central cyanosis. This was absent in the patient above.

Aneurysm of the sinus of Valsalva is a rare congenital abnormality, which is most often asymptomatic in children. Symptoms typically present in young adults, due to enlargement of the aortic and pressure on surrounding structures or manifestations of rupture of the aneurysm.

Atrial septal defect (ASD)malformations can go undiagnosed for decades, due to subtle physical examination findings and a lack of symptoms. ASD presents with a murmur, which does not usually disappear at term. Clinical deterioration occurs as the patient grows.

The symptoms of ventricular septal defects (VSD) depends on the size of the defect and the magnitude of the left to right shunt. Small VSDs may be asymptomatic. Moderate VSD in babies presents as excessive sweating, fatigue during feeding, tachypnoea at rest or during feeding and failure to thrive. Large VSDs have more severe symptoms and signs. The murmur of a VSD does not disappear at term.

Question:

A 6-week-old child is brought into the A&E looking very ill. On examination, she is dehydrated. Electrolytes done shows Na+=124mmol/L , K+= 3.0mmol/L. What will your choice of resuscitation fluid be?

Which one of the following is correct?

A) 0.18% normal saline + 4% dextrose + 20mmol KCl

B) 0.9% normal saline

C) 0.45% normal saline

D) 0.45% normal saline + 5% dextrose

E) 0.45% normal saline +5% dextrose + 20mmol KCl

Answer:B

Explanation:

This patient is dehydrated with hyponatremia and hypokalemia. Use of isotonic fluid, such as 0.9% normal saline, is recommended for fluid resuscitation. Dextrose combination fluids are not recommended for resuscitations. However, they may be used for maintenance fluids. With respect to potassium level, serum potassium levels between 3.0mmol/L to 3.4mmol/L (normal range 3.5 – 5.5 mmol/L) will require monitoring post-resuscitation. However, K+ levels below 3.0 mmol/L will require replacement with ECG monitoring.

Question:

A 9-year-old girl presents to the A&E with dizziness and passing small amounts of bloody urine. She reports having bloody, loose stools five days prior to the onset of dizziness and bloody urine. On examination, she has conjunctival pallor, ankle oedema and mild facial puffiness. Urine dipstick showed red blood cells and protein in the urine. Serum urea and creatinine are elevated. Serum lipid levels were normal. Complete blood count showed anaemia and thrombocytopenia. What is the most likely diagnosis?

Which one of the following is correct?

A) Haemolytic uremic syndrome

B) Henoch Schönlein Purpura

C) Acute Renal Failure

D) Nephrotic syndrome

E) Thrombotic thrombocytopenic purpura

Answer:A

Explanation:

The most likely diagnosis in this patient is haemolytic uremic syndrome (HUS). The presence of haemolytic anaemia (evidenced by haematuria and anaemia on CBC), acute renal failure (as shown by oliguria, ankle oedema, facial puffiness and elevated urea and creatinine) and thrombocytopenia is classical of HUS. HUS predominantly occurs in children and infants, for two to seven days, after a prodromal diarrhoea. Implicating organisms include E. coli, Salmonella typhi, S. dysenteriae. Management is mainly by comprehensive supportive therapy. In cases of severe acute renal failure, renal transplantation may be an option.

Henoch-Schönleinpurpura (HSP) is an acute IgA mediated condition characterised by vasculitis involving small vessels of the skin, gastrointestinal tract, kidneys, joints and rarely the lungs and the central nervous system. It is more common in children than in adults.There is a prodrome of headache, anorexia and fever. Symptoms include a rash on the legs (hallmark of the disease), abdominal pain and vomiting, joint pain and bloody stools. Infections that precede HSP include group A streptococcus, Mycoplasma infections and Epstein Barr Virus. Treatment is supportive.

Symptoms and signs of acute renal failure include oliguria, pedal oedema, fatigue, dyspnoea, confusion and, in more severe cases, seizures and coma. It is associated with elevated urea and electrolyte. This patient had symptoms of acute renal failure, which is part of the triad for diagnosing HUS.

Nephrotic syndrome is characterised by facial and ankle oedema, proteinuria, haematuria, hyperlipidemia, hypoalbuminemia and increased complement levels in serum.

Thrombotic thrombocytopenic purpura is a rare blood disorder characterised by thrombosis in small vessels. It consists of microangiopathic haemolytic anaemia, thrombocytopenic purpura, neurologic abnormalities, fever and renal disease.TTP is less common in children and its renal disease is less severe compared with HUS.

Question:

A 3-year-old boy presents to the A&E with his parents, who noticed gradual swelling of the boy’s feet and passing of dark urine. He has gained weight, despite poor feeding. On examination, he has facial puffiness, ankle and sacral oedema. His blood pressure is borderline normal for his age. Which of the following is the single most appropriate investigation?

Which one of the following is correct?

A) Serum albumin

B) Serum calcium

C) Urea and electrolytes

D) 24-hour urinary protein

E) 24-hour urinary glucose

Answer:D

Explanation:

The most likely diagnosis in this patient is nephrotic syndrome. This is characterised by haematuria (dark urine), weight gain, anasarca, hypoalbuminemia, proteinuria, hyperlipidaemia and increased complement levels. In investigating nephrotic syndrome, urinalysis is the first test used. A timed collection of a 24-hour urine sample is done to estimate the amount and type of proteins in the urine. An output of 3gor more of protein in urine is a hallmark for nephrotic syndrome. Consequences of proteinuria seen in nephrotic syndrome include hypoalbuminemia, hyperlipidaemia, hypercoagulability, hypocalcaemia and high levels of complements seen in serum.

Question:

A young couple whose three-month-old baby died of cot death request to know how best to prevent future occurrences. What advice will you give them?

Which one of the following is correct?

A) Lay child on the back with the feet towards the head end of the cot

B) Lay child on the back with the feet towards the foot end of the cot

C) Lay child on the side

D) Lay child on the stomach with the feet towards the head end of the cot

E) Lay child on the stomach with the feet towards the foot end of the cot

Answer:B

Explanation:

Cot death is also known as Sudden Infant Death Syndrome (SIDS). Most deaths occur within the first six months of a baby’s life. Premature infants and low birth weight babies are at a higher risk of SIDS. The cause of SIDS is unknown. Steps to take to avoid cot death include:

Place the baby on their back to sleep

Place your baby in the “feet to foot” position (with the feet of the baby touching the end of the foot of the cot, pram or Moses basket)

Keep baby’s head uncovered. Blankets should be tucked in no higher than their shoulders

Let your baby sleep in a cot or Moses basket in the same room as you for the next six months

Use a mattress that is firm, flat, waterproof and in good condition

A room temperature of 16-200C, with light bedding will provide a comfortable sleeping environment for the baby.

Things to avoid include:

Avoid smoking during pregnancy. Do not allow anyone smoke in the same room as your baby (both before and after birth)

Do not sleep on a bed, sofa or armchair with your baby

Do not share a bed with your baby if you or your partner smoke or take drugs or if you’ve been drinking alcohol

Do not let your baby get too hot or too cold.

Question:

A 6-year-old child is suspected of having tuberculosis. His parents object to taking a bronchoalveolar lavage. What other sample will show growth of the organism?

Which one of the following is correct?

A) Blood test

B) Throat swab

C) CSF sample

D) Gastric washing

E) Mantoux test

Answer:D

Explanation:

Tuberculosis is a multisystem disease. It affects the pulmonary, skeletal, gastrointestinal, renal and gynaecological systems. The initial test for tuberculosis is the Tuberculin skin test. This involves intradermal injection of purified protein derivative into the arm and reaction to it measured. This test does not show growth of the organism. Specimen collection for isolation of mycobacterium include sputum specimen (from older children and adults), gastric aspirates and bronchial secretions.

Question:

A 3-year-old boy has four episodes of limb jerking. His teacher has noticed that he does not concentrate in class. What is the single most appropriate investigation?

Which one of the following is correct?

A) CT scan of the brain

B) Electrocardiogram

C) Electroencephalogram

D) Serum electrolytes

E) Liver function tests

Answer:C

Explanation:

The diagnosis in this child is absence seizures. This is also known as petit mal seizures. The hallmark of absence seizures is abrupt and sudden-onset impairment of consciousness, interruption of ongoing activities, a blank stare and a brief upward rotation of the eyes. There may be jerky movements, lip smacking, eyelid flutters, finger rubbing and small hand movements. They usually last 10 to 15 seconds, followed by full recovery. The primary diagnostic test for absence seizures is electroencephalogram.

Question:

A 6-year-old has had thirst, weight loss and urinary frequency for four weeks. Investigations done show:

Sodium 148mmol/L

Potassium 5.1mmol/L

Urea 14mmol/L

Glucose 30mmol/L

pH – 6.5

Urine dipstick – ketones positive

What is the single most appropriate management?

Which one of the following is correct?

A) a. IV normal saline and insulin

B) b. IV normal saline and potassium supplement

C) c. Plasma expanders

D) d. Dialysis

E) e. Oral potassium chloride

Answer:A

Explanation:

The diagnosis in this patient is diabetic ketoacidosis. This patient is prone to dehydration and subsequent acute renal failure. It is essential to resuscitate and correct the hyperglycemia and hyperkalemia in this patient. The most appropriate management option is the use of IV normal saline and insulin. Insulin will drive both glucose and potassium into the cells.

Question:

A 4-year-old boy was brought into the A&E by an ambulance. He has been unwell with a sore throat for 10 hours. He is sitting on his mother’s knee and is tolerating an oxygen mask, but looks unwell. He has constant noisy breathing and is dribbling saliva. He has a fever of 390C. What is the single most appropriate action?

Which one of the following is correct?

A) Examine the tonsils

B) Listen to the chest

C) Take blood culture

D) Give IV amoxicillin

E) Call an anaesthetist

Answer:E

Explanation:

The diagnosis in this patient is epiglottitis. The classical feature is a clinical triad of drooling, dysphagia and respiratory distress. Fever is usually associated with the symptoms. The patient is usually toxic, with marked restlessness, irritability and extreme anxiety. Child is seen with a hyperextended chin and body leaning forward to maximise air entry. Drooling is because the child cannot swallow. The most implicated organism is H. influenza. The bacteria infects and causes inflammation of structures above the insertion of the glottis. This is an emergency, as epiglottitis could lead to respiratory obstruction and subsequent death. It is essential to maintain airway control. Oral examination is contraindicated, hence the anaesthetist is required to create a surgical airway to relieve the respiratory distress.

Question:

A 32-year-old female presents to the GP with complaints of increased left leg swelling of five-day duration. She has no history of recognised trauma to the leg. She developed a fever three days ago and she is unable to bear weight on the leg. On examination, she is febrile. Her left leg is warm and swollen. There is no calf tenderness and pulses in the lower limbs are normal. A diagnosis of left leg cellulitis was made. Which of the following is the most likely antibiotic treatment?

Which one of the following is correct?

A) Ceftriaxone

B) Ceftriaxone and ciprofloxacin

C) Flucloxacillin and metronidazole

D) Amoxicillin and metronidazole

E) Amoxicillin and flucloxacillin

Answer:E

Explanation:

The patient has a diagnosis of left leg cellulitis. Most cases of cellulitis are caused by beta-hemolytic Streptococcus or Staphlycoccus aureus. Empirical treatment is targeted against these organisms. Per the NICE guidelines, oral antibiotics that can be used in treating cellulitis include flucloxacillin,amoxicillin, clindamycin (for patients with penicillin allergy) and co-amoksiclav. A combination of amoxicillin and flucloxacillin is the treatment of choice for cellulitis in patients with a history of lymphedema. As part of management, paracetamol or ibuprofen should be prescribed for pain and fever. Patients should be advised to drink adequate fluids and elevate the legs for comfort and to relieve oedema (where applicable).

Question:

A22-year-old mother presents to the GP with her 15-day-old son. She has noticed a slow growing swelling on the right side of the child’s neck with a head tilt to the right. Child was delivered by forceps extraction. On examination, child has mild torticollis. A 2cm x 1cm mass is palpated in the right anterior triangle. It is firm and not attached to overlying skin. There is no discharge associated. The swelling is not fluctuant and does not transilluminate light. There is no bruit over the swelling.What is the most likely cause of the swelling?

Which one of the following is correct?

A) Cystic hygroma

B) Submandibular lymphadenopathy

C) Branchial cyst

D) Sternocleidomastoid tumour

E) Carotid body tumour

Answer:D

Explanation:

The diagnosis in this child is sternocleidomastoid tumour. This is a rare, slow growing,self-limiting benign lesion seen in children who were delivered via instrumental extraction. It develops between the second and sixth week of life. It is a firm, fibrous mass seen within the body of the sternocleidomastoid muscle in the anterior triangle of the neck. The child’s head tilts toward the affected side with associated torticollis. As the muscle grows, the mass may appear to grow. The mass is not fluctuant, does not transilluminate light and has no bruit. Management involves physiotherapy.

Submandibular lymphadenopathy is not associated with instrumental delivery and torticollis. It is a firm swelling of the submandibular lymph nodes. It is associated with infections, tumours and inflammatory conditions of the cheek, nose and lips. Branchial cyst is a congenital solitary mass seen in the anterior triangle of the neck. It is a fluctuant lesion which may become tender during an upper respiratory infection. Discharge may be reported if a sinus is present. The mass transilluminates light. Cystic hygroma is a congenital multicystic swelling, usually found in the posterior triangle of the neck. The cysts are not attached to overlying skin or underlying tissues. The skin over the lesion may appear blue or normal. The mass transilluminates light. Carotid body tumour commonly presents as a palpable slow growing neck mass commonly seen in the anterior triangle. Carotid body tumours are considered as a disease of the middle-aged. The mass is vertically fixed in the anterior triangle of the neck because of its attachment to the bifurcation of the common carotid.

Question:

A 17-year-old boy presents to the A&E with severe sudden testicular pain. It is associated with a low-grade fever, nausea and vomiting. There is no history of trauma to his scrotum. On examination, the right scrotum is elevated. What is the single most appropriate treatment?

Which one of the following is correct?

A) Reassurance

B) Give antibiotics

C) Give antivirals

D) Apply ice packs to the scrotum

E) Surgical exploration

Answer:E

Explanation:

The patient has testicular torsion. Testicular torsion is a surgical emergency. It occurs because of twisting of the spermatic cord. This cuts off blood supply to the testes. It is associated with sudden testicular pain and vomiting. Impending testicular infarction can produce low-grade fever. The affected testis may be higher than usual. The cremesteric reflex is either decreased or absent. Diagnosis is made based on history and examination. A Doppler ultrasound scan of the scrotum is employed in confirming the diagnosis. Treatment is by surgical exploration. During exploration, fixation of the contralateral testis is done to reduce the risk of torsion.

Question:

A 38-year-old female is brought into the A&E having been involved in a household fire. She is examined and diagnosed with full thickness burns of 15% total body surface area. What is the next appropriate step?

Which one of the following is correct?

A) Reassure

B) Give IV fluids

C) Restrict fluids

D) Give fresh frozen plasma

E) Give IV amino acids

Answer:B

Explanation:

The acute management of the burn victim involves:

Assess ABC of the patient

Immobilise the cervical spine

Assess for other injuries

Obtain IV access and take samples for full blood count, urea and electrolytes, creatinine kinase, glucose, group and save and clotting profile

Titrate IV morphine as necessary

Start IV fluids

Maintain core temperature at >360C

Note that IV fluid resuscitation is indicated in children with > 10% total body surface area burn.

Question:

A 20-year-oldfemale presents to the GP with complaints of unintentional weight loss. She eats three times a day. She is easily fatigued and has pale, greasy stools. She has recently been treated for anaemia. The skin on her buttock is flaccid. Which of the under listed tests is definitive in making a diagnosis?

Which one of the following is correct?

A) Anti-endomysial antibodies

B) Anti-gliadin antibodies

C) Duodenal biopsy

D) Anti-reticulin antibodies

E) Thyroid function tests

Answer:C

Explanation:

The diagnosis in this patient is coeliac disease. Coeliac disease is associated with steatorrhea and weight loss or failure to gain weight. It could present as anaemia, signs and symptoms of irritable bowel syndrome, as well as signs of vitamin and mineral deficiencies. It is caused by a reaction to gluten proteins. Serological tests are the first line investigations in Coeliac disease. These include anti-endomysial antibodies, anti-transglutaminase antibodies, anti-reticulin antibodies, anti-gliadin antibodies and anti-saccharomyces cerevisiae antibodies. Definitive diagnosis is made by taking multiple (4 to 8) duodenal or jejunal biopsies via upper GI endoscopy.

Question:

A 70-year-old male with known metastatic prostate cancer is brought to the A&E with worsening confusion over three days. Laboratory investigations show high levels of serum urea and creatinine. What is the next appropriate investigation?

Which one of the following is correct?

A) IVU

B) Mid-stream urine

C) Cystoscopy

D) Abdominal ultrasound scan

E) Abdominal x-ray

Answer:D

Explanation:

The confusion in this patient is due tohigh levels of urea, secondary to obstructive uropathy. Obstructive uropathy is a condition in which the outflow of urine is blocked. This causes the urine to back up and cause injury to the kidneys. Causes of obstructive uropathy includeurinary bladder stones, kidney stones, prostate cancer, benign prostatic hyperplasia and bladder tumours. Diagnostic investigations include abdominal ultrasound and non-contrast CT scan of the abdomen. Non-contrast CT is used because of the background renal failure that may be present in these patients.

Question:

A 45-year-oldfemale presents to the A&E with severe right upper quadrant pain. She also complains of increase in bodily temperature and vomiting. She has been having recurrent right upper quadrant pain over the past four years. She has four children and she is currently on oral contraceptives. On examination, she is obese and febrile. She has right upper quadrant tenderness. What is the most appropriate management?

Which one of the following is correct?

A) Abdominal x-ray

B) ERCP

C) Laparoscopy

D) Laparotomy

E) Oral antibiotics

Answer:B

Explanation:

The diagnosis in this patient is choleliathisis. The risks factors for developing cholelithiasis include the F’s (i.e. fair, fat, female, fertile and forty). The right upper quadrant pain is termed biliary colic.This can be sudden and severe or intermittent in nature. It may be associated with dyspepsia, indigestion, bloating, fever, vomiting and jaundice. Investigation of choice for cholelithiasis is Endoscopic Retrograde Cholangiopancreatography (ERCP). ERCP is also used to remove stones in the gall bladder. Complications of ERCP include bleeding, pancreatitis, damage to the duodenum and other forms of infection.

Question:

A 74-year-old male presents to the GP with regurgitation of stale food while lying down. He has associated hoarseness of voice and a chronic cough. He has no history of smoking. He complains of moderate weight loss, which is unintentional. Who does the GP refer this patient to?

Which one of the following is correct?

A) GIT surgeon

B) General surgeon

C) ENT surgeon

D) Cardiothoracic surgeon

E) Dental surgeon

Answer:C

Explanation:

The diagnosis in this patient is pharyngeal pouch. Pharyngeal pouches, also known as Zenker diverticula, occur more commonly in elderly patients. Symptoms include dysphagia, stale food regurgitation, chronic cough, aspiration, hoarseness of voice, halitosis and weight loss. The aetiology is unknown,however, theories are centred upon structural or physiological abnormality between thethyropharyngeus and the cricopharyngeus muscle. Investigation of choice is barium swallow with videoflouroscopy. Treatment is surgical via an endoscopic or external cervical approach. This is carried out by the ENT surgeon.

Question:

A 55-year-oldfemale presents to the GP with complaints of bloody discharge from the left nipple.On examination, there is no palpable breast lump. What is the most appropriate investigation?

Which one of the following is correct?

A) Mammography

B) Breast ultrasound

C) Ductography

D) Fine needle aspiration cytology

E) Core needle biopsy

Answer:C

Explanation:

Bloody nipple discharge is a sign of breast disease. Benign breast conditions that present with bloody nipple discharge include intraductal papilloma and duct ectasia. In addition, malignant breast tumours also present with bloody nipple discharge. In investigating the cause of this symptom of breast disease, a breast ductography (or galactography) is performed.This involves the use of a blunt-tipped needle and a contrast dye. Complications of the procedure include duct perforation, pain and infection.

Breast ultrasound is employed in patients with breast lumps who are 35 years and below. Mammography is a radiological investigative tool for breast lumps in women above 35 years of age.Fine needle aspiration cytology is done in patients with palpable breast lumps. Samples obtained are sent to histopathology for tissue diagnosis. Core needle biopsy involves the removal of breast tissue to better identify the lesion. Core needle biopsy provides more information about surrounding breast tissue, hence used when FNAC is inconclusive.

Question:

A 28-year-old was rushed into the A&E with reports of having been involved in an RTA. On examination, he is drowsy. Blood pressure is 60/30 mmHg, pulse rate 180bpm with a radio femoral delay. He is resuscitated and subsequently sent for a chest radiograph. The x-ray shows a widened mediastinum and NG-tube deviation to the right. What is the most likely diagnosis?

Which one of the following is correct?

A) Cardiac tamponade

B) Descending thoracic aortic rupture

C) Hemopneumothorax

D) Rib fracture

E) Boerhaave syndrome

Answer:B

Explanation:

This patient is a trauma victim. He is in hypovolemic shock, has altered consciousness level with a radio femoral delay. Although rupture of any thoracic or abdominal viscus is associated with shock and altered consciousness, the presence of a radiofemoral delay is highly suggestive of aortic rupture. Aortic rupture occurs secondary to trauma or an aortic aneurysm. Thoracic aortic rupture has an additional symptom of chest or mid-scapular whereas abdominal aortic rupture victims have bruising of the flank as an additional sign. Plain radiograph features of thoracic aortic rupture are consistent with mediastinal hematoma which include:

Widened mediastinum (>8cm when supine or >6cm when upright)

Indistinct or abnormal aortic contour

Deviation of trachea or NG-tube to the right

Widened paraspina/paratracheal l stripe.

Investigation of choice is CT angiography. Other modalities which are used in non-acute settings include MRI, transoesophageal echocardiograph and intravascular ultrasound. Definitive treatment is surgical repair or aortic stent grafting. However, mortality is very high.

Question:

A 28-year-old presents to the A&E with bleeding per rectum. A review of his notes shows he has a diagnosis of familial adenomatous polyposis. He is resuscitated and detained for surgical consult. If left untreated, which of the following is most likely to occur?

Which one of the following is correct?

A) Desmoid tumours

B) Rectal cancer

C) Colorectal cancer

D) Gastric cancer

E) Pancreatic cancer

Answer:C

Explanation:

Familial adenomatous polyposis(FAP) is an autosomal dominant inherited disorder characterised by numerous adenomatous polyps throughout the colon. It is a precursor lesion for colorectal cancers. Colorectal cancers develop in all patients in whom FAP is not treated. Other complications of FAP include desmoid tumours, duodenal or periampullary adenocarcinoma and less common cancers, such as hepatoblastoma, thyroid cancer, gastric cancer, pancreatic cancer and adrenal cancers.

Question:

A 68-year-old female is brought to the A&E by her daughter with complaints of lethargy, constipation, anorexia, confusion, increasing thirst and passing large volumes of urine for five days. She is not a known diabetic. However, she has breast cancer, which has spread to her lungs, liver and bones. Her blood sugar levels are normal. What is the most likely explanation for her symptoms?

Which one of the following is correct?

A) Cerebral metastases

B) Diabetes insipidus

C) Urinary tract infection

D) Hypercalcemia

E) Acute kidney disease

Answer:C

Explanation:

The above patient has metastatic breast cancer to the bone, liver and lung. She is at an increased risk of hypercalcemia. Hypercalcemia is characterised by central nervous system, gastrointestinal and renal manifestations. CNS manifestations include confusion, weakness, lethargy and coma. Gastrointestinal symptoms are constipation, nausea, anorexia, pancreatitis and gastric ulcer. Renal manifestations include polyuria, dehydration, nocturia, renal calculi and renal failure.

Cerebral metastases of breast cancer include headache, problems with vision and balance, slurred speech, memory problems, mood or personality changes, and seizures. Urinary tract infection is associated with dysuria, frequency and fever.

Acute kidney injury is associated with oliguria, pedal edema, fatigue, confusion, nausea and seizures, in severe cases.

Symptoms of diabetes insipidus include polydipsia, polyuria, frequency, dry skin, constipation, weakness and bed wetting.

Question:

A 44-year-old male is brought into the A&E with a stab wound on the left side of his chest. On examination, his systolic blood pressure and pulse rate are 60mmHg and 140bpm respectively. Heart sounds are diminished. He has engorged neck veins and his trachea is central. Respiratory effort is poor and breath sounds are reduced.Percussion note was resonant. Respiratory rate is 30cpm. What is the most likely diagnosis?

Which one of the following is correct?

A) Simple pneumothorax

B) bTension pneumothorax

C) Haemothorax

D) Cardiac tamponade

E) Aortic rupture

Answer:D

Explanation:

The most likely diagnosis is cardiac tamponade. Cardiac tamponade is a clinical syndrome caused by accumulation of fluid in the pericardial space. This results in reduced ventricular filling and subsequent hemodynamic compromise.A stab to the left side of the chest results in accumulation of blood in the pericardial space. This is manifested by hypotension, tachycardia, tachypnoea, dyspnoea and diminished heart sounds. Other symptoms and signs include elevated jugular venous pressure, pulsus paradoxus, decreased urine output, confusion and dysphoria. Cardiac tamponade is a clinical diagnosis. However, an echocardiograph provides relevant information. Pneumothorax refers the presence of air in the pleural cavity. Simple pneumothorax is usually symptom-free until a bleb ruptures. It typically presents as an acute onset of chest pain and dyspnoea. Tension pneumothorax presents with hypotension, hypoxia, chest pain, dyspnoea and distant breath sounds. Massive tension pneumothorax is associated with a tracheal shift.

Haemothorax refers to blood in the pleural space. Chest pain, tachypnoea and dyspnoea are common symptoms. There is diminished breath sounds and dull percussion note on the affected side.

Aortic rupture presents with hypotension, tachycardia, dyspnoea and radiofemoral delay.

Question:

A 6-week-old child is brought into the A&E by her parents with complaints of repeated vomiting after feeding. Child is reportedly always hungry. On examination, child is dehydrated, blood pressure and pulse were normal. Blood,urea, electrolytes and arterial blood gas were indicative of hypochloremic hypokalemic metabolic alkalosis. What is the most appropriate investigation?

Which one of the following is correct?

A) Barium enema

B) Upper GI endoscopy

C) Abdominal ultrasound

D) CT abdomen

E) No investigation required

Answer:C

Explanation:

The diagnosis in this patient is pyloric stenosis. It is also known as infantile hypertrophic pyloric stenosis (IHPS) and presents approximately between 2 to 8 weeks of life. IHPS is characterised by repeated vomiting after feeding, dehydration and hypochloremic hypokalemic metabolic alkalosis. It may be associated with jaundice and failure to thrive. An olive may be felt on abdominal examination. Imaging modality of choice in IHPS is abdominal ultrasound while the baby feeds. The presence of a thickened pyloric muscle on ultrasound is a hallmark for IHPS. Definitive treatment is surgical. The procedure is called pyloromyotomy.

Question:

A 30-year-old female presents to the A&E with one episode of fresh blood per rectum after defecation. She has been constipated for the past three months. She has no history of fever, diarrheal stools, abdominal pain or anal pain. What is the most likely diagnosis in this lady?

Which one of the following is correct?

A) Anal fissure

B) Rectal cancer

C) Haemorrhoids

D) Inflammatory bowel disease

E) Colorectal cancer

Answer:C

Explanation:

Bleeding per rectum is a symptom for bleeding peptic/duodenal ulcers, haemorrhoids, colorectal cancers, rectal cancers and anal cancers. Fresh rectal bleeding is more commonly restricted to the lower gastrointestinal tract. A recent history of constipation prior to rectal bleed in the absence of diarrhoea stools, abdominal pain and anal pain in a young woman is most likely rectal bleed due to haemorrhoids. Occasionally, haemorrhoids may present with a soft, reducible or non-reducible mass per rectum. Symptoms of anal fissure include severe anal pain, constipation, bleeding per rectum, anal irritation and a visible crack at the anal region.

Colorectal tumours present with symptoms such as change in bowel habits, alternating diarrhoea and constipation, bleeding per rectum, abdominal bloating, feeling of incomplete emptying of the bowel, anaemia that does not correlate with blood loss from rectal bleed, weight loss and a prior history of familial adenomatous polyposis, especially in a young person.

Inflammatory bowel disease (IBD) refers to Crohn’s disease and ulcerative colitis. The symptoms of IBD include blood in stool, fever, fatigue, abdominal pain, cramps and unintentional weight loss.

Question:

A 28-year-old presents to the A&E with intermittent abdominal pain which coincides with passage of loose, bloody stools for two weeks. She complains of having lost her appetite and being easily fatigued. She has lost some weight, which was unintentional.Lower GI endoscopy done showed uniform inflammation of the large bowel with rectal involvement. There were no strictures seen. Histology of biopsies taken showed increased polymorphs within the crypts. What is the most likely diagnosis?

Which one of the following is correct?

A) Crohn’s disease

B) Ulcerative colitis

C) Colonic cancer

D) Viral gastroenteritis

E) Abdominal migraine

Answer:B

Explanation:

The patient above has symptoms of ulcerative colitis. Although these symptoms may pass for Crohn’s disease, the abdominal pain seen in Crohn’s disease is continuous in contrast to the intermittent pain seen in ulcerative colitis. There is less rectal bleed in Crohn’s disease compared with ulcerative colitis. Perianal problems such as anal sores, anal skin tags and fistulae are common in Crohn’s disease, but uncommon in ulcerative colitis.Common endoscopic findings of Crohn’s include skip lesions affecting small and large bowel with sparing of the rectum, ‘cobblestoned’ appearance of the bowel and presence of strictures and fistulae. On the other hand, endoscopic findings in ulcerative colitis are continuous inflammatory lesions affecting the large bowel with involvement of the rectum and little to no strictures or fissures.

Histologically, the bowel wall of patients with Crohn’s disease shows granulomas, inflammation through the mucosa and muscle of the bowel and increase in lymphocytes within the crypts. In patients with ulcerative colitis, there are no granulomas, inflammation is confined to the mucosa and the crypts are filled with polymorphs. Colonic cancer is rare in this patient. The endoscopic findings do not fit colonic cancer, although the symptoms could pass for colon cancer. Viral gastroenteritis is associated with fever, abdominal pain and diarrhoea stool. Blood in stool is uncommon in viral gastroenteritis.

Abdominal migraines cause severe abdominal pain, nausea, abdominal cramps and vomiting.

Question:

A 77-year-old man collapses and dies at a bus stop. Post-mortem examination reveals a massive retroperitoneal hematoma secondary to a ruptured aneurysm. Which of the following options are NOT a risk factor for aortic aneurysm?

Which one of the following is correct?

A) Atherosclerosis

B) Hypertension

C) Male gender

D) Polyarteritis nodosa

E) Family history

Answer:D

Explanation:

The diagnosis in this patient is ruptured abdominal aortic aneurysm. Known risk factors include age (65 years and older), tobacco use, male gender, white race, family history, hypertension, atherosclerosis and presence of other aneurysms (such as in the knee or chest). Rare causes of abdominal aorta aneurysm include trauma and infections of aorta. In England, screening for abdominal aortic aneurysm is available to all men aged 65 and over.

Question:

A 64-year-old presents to the general outpatients with dyspepsia and epigastric pain of one-week duration. He has no history of Helicobacter pylori infection. What is the single most appropriate investigation?

Which one of the following is correct?

A) Abdominal ultrasound

B) Helicobacter pylori serology

C) Upper GI endoscopy

D) Urea breath tests

E) Barium swallow

Answer:C

Explanation:

Dyspepsia is a symptom of an upper gastrointestinal problem. This includes conditions such as Helicobacter infection, peptic ulcer disease, gastro-oesophageal reflux disease, duodenitis, cholelithiasis, drug-induced dyspepsia, pleurisy and cancers of the upper gastrointestinal tract.

Per the NICE guidelines, the most appropriate investigation for a patient aged 55 years and over with recent, unexplained dyspepsia or persistent dyspepsia is upper GI endoscopy. Urgent referral for upper GI endoscopy is required for any individual with dyspepsia as well as any of these symptoms/signs: chronic upper GI bleed, progressive unintentional weight loss, progressive difficulty in swallowing, persistent vomiting, iron deficiency anaemia and epigastric mass.

Urea breath tests and Helicobacter pylori serological tests are employed in suspected Helicobacter infection. Barium swallow is indicated in patients with dysphagia, assessment of hiatus hernia, globus hystericus and when the endoscope cannot be passed during upper GI endoscopy.

Question:

A 60-year-old presents to the A&E with complaints of constipation and subsequent diarrhoea. It is associated with blood mixed with the stools. He has abdominal cramps and bloating. On examination, he is pale. A barium enema shows an ulcerated swelling in the sigmoid colon. What is the most likely diagnosis?

Which one of the following is correct?

A) Crohn’s involvement of the colon

B) Ulcerative colitis

C) Sigmoid carcinoma

D) Diverticulitis

E) Viral gastroenteritis

Answer:C

Explanation:

The patient has symptoms suggestive of lower gastrointestinal disease. Alternating constipation and diarrhoea, blood mixed with stools, abdominal bloating and cramps in a 60-year-old man is suggestive of colon cancer. This is confirmed by the presence of an ulcerated lesion on barium enema.

Ulcerative colitis presents with similar symptoms, but it is associated with continuous inflammatory lesions on colonic mucosa, including the rectum.

Crohn’s disease is associated with strictures and fissures with skip lesions on radiology. Diverticular disease presents with left lower quadrant pain, change in bowel habit, nausea, vomiting, bloating and flatulence.Rectal bleed is rare, but can occur. Most common site is the sigmoid colon. Barium enema shows colonic outpouching. It may be associated with fistulae.

Question:

A 45-year-old smoker presents to the GP with a mass in the right groin. He had an appendectomy five years ago. He smokes two packs of cigarettes a day and has a persistent cough. On examination, the mass measures 5cm by 3cm. It is firm, has no differential warmth and is not pulsatile. It is neither reducible nor tender. However, the skin over the swelling has a scar. What is the most likely diagnosis?

Which one of the following is correct?

A) Right inguinal hernia

B) Right femoral hernia

C) Right femoral artery aneurysm

D) Right incisional hernia

E) Right inguinal lymphadenopathy

Answer:D

Explanation:

The mass is a protrusion of abdominal viscus through the abdominal wall. The patient has a chronic cough, which is associated with an increase in abdominal pressure. The history of appendectomy compromises the integrity and strength of the abdominal muscles (external oblique, internal oblique and transversalis fascia), creating a conduit for herniation. The presence of the scar on the mass makes right incisional hernia the most likely diagnosis.

Femoral hernia occurs in the femoral canal which is found in the inner aspect of the thigh. The femoral canal is bounded by the inguinal ligament anteriorly, pectineal ligament posteriorly, lacunar ligament medially and the femoral vein laterally. Inguinal hernia occurs through the inguinal canal. The anterior wall is made up of the aponeurosis of the external oblique and reinforced by the internal oblique internally. Posterior wall is formed by the transversalis fascia. The roof is formed by the transversalis fascia, internal oblique and transversus abdominis. The floor is formed by the inguinal ligament. Inguinal hernia can be direct or indirect.

Question:

A newborn is brought into neonatal intensive care with complaints of excessive drooling and cough. When breastfed, the milk returns through the nose and mouth. A plain x-ray done shows no stomach bubble. What is the diagnosis in the foetus?

Which one of the following is correct?

A) Tracheal atresia

B) Duodenal atresia

C) Oesophageal atresia

D) Tracheoesophageal fistula

E) Achalasia

Answer:C

Explanation:

Oesophageal atresia is a congenital anomaly of the gastrointestinal tract. This anomaly causes the oesophagus to end in a blind-ended pouch, rather than connecting to the stomach. It may be associated with other birth defects, most commonly VACTERL (vertebral column, anorectal, cardiac, tracheal, oesophageal, renal and limbs). Antenatal ultrasound findings in oesophageal atresia include polyhydramnios and absent or small stomach in the third trimester of pregnancy.Newborns present with cough, drooling of saliva, return of feeds, apnoea, tachypnoea and cyanosis. Oesophageal atresia may occur with a tracheoesophageal fistula. Definitive management is by surgical repair. Duodenal atresia is a congenital anomaly characterised by the absence or complete closure of a portion of the lumen of the duodenum. It is associated with polyhydramnios. The newborn presents with bilious vomiting on the first day of life. The classical sign on radiograph is a double-bubble sign. Definitive management is surgical repair.

Tracheal atresia is a rare and fatal. The trachea may be under-formed, causing a lack of communication between the larynx proximally and the alveoli of the lungs. Newborns with this condition will only survive if there is an alternate pathway for ventilation, such as a bronchoesophageal fistula.

Question:

A 32-year-oldfemale presents to the surgical out-patients with a breast lump in the outer quadrant of her right breast. FNAC was done and shows borderline benign changes. Which of the following is the single most appropriate next investigation?

Which one of the following is correct?

A) Mammography

B) Core biopsy

C) Ultrasound scan

D) Excisional biopsy

E) Repeat fine needle aspiration cytology

Answer:B

Explanation:

Fine needle aspiration cytology (FNAC) is done in patients with palpable breast lumps. Samples obtained are sent to histopathology for tissue diagnosis. Core needle biopsy involves the removal of breast tissue to better identify the lesion. Core needle biopsy provides more information about surrounding breast tissue, hence used when FNAC is inconclusive.

Question:

A 44-year-old mother of four presents to the A&E with colicky right upper quadrant pain of two-day duration. Examination and investigations point to a large gall stone. Which of the following is the most appropriate treatment?

Which one of the following is correct?

A) Reassure

B) Low-fat diet

C) Ursodeoxycholic acid

D) Laparoscopic cholecystectomy

E) Open cholecystectomy

Answer:D

Explanation:

Per the NICE guidelines, patients with symptomatic gallbladder stones must be offered laparoscopic cholecystectomy. For patients who are having the procedure as an elective planned procedure, the procedure may be done as a day-case, i.e. not necessitating inpatient stay unless circumstances or clinical condition requires it.For patients with acute cholecystitis with cholelithiasis, laparoscopic should be carried out within a week of diagnosis. Prior to the procedure, patients are advised to avoid food and drink that trigger symptoms such as high-fat diet.

Reassurance is reserved for patients with asymptomatic gallbladder stones found in a normal gallbladder and normal biliary tree.

Ursodeoxycholic acid can be used in dissolving gallstones that are mainly made up of cholesterol.

Question:

A 75-year-old male presents to the GP with unexplained weight loss, dizziness, easy fatigability, difficulty swallowing and vomiting. A palpable mass in the left supraclavicular area, as well as at the umbilicus, is found during examination. What is the most likely diagnosis?

Which one of the following is correct?

A) Pancoast tumour

B) Gastric carcinoma

C) Oesophageal carcinoma

D) Thyroid carcinoma

E) Pancreatic tumour

Answer:B

Explanation:

Most gastric cancer symptoms and signs reflect advance disease. Patients with gastric cancer present with weight loss, indigestion, nausea, vomiting, early satiety, loss of appetite, dysphagia and anaemia. Signs include succession splash Virchow nodes (i.e. left supraclavicular node), Sister Mary Joseph nodule (palpable nodule bulging in the umbilicus) and Irish nodule (palpable anterior axillary node). Late complications include jaundice, peritoneal and pleural effusions, as well as gastric outlet obstruction. Pancoast tumour is a malignant tumour of the superior sulcus of the lung. It is associated with Horner syndrome, compression of blood vessels with oedema, severe pain in the shoulder region, radiating toward the axilla and scapula, and atrophy of hand and arm muscles.

Oesophageal cancer presents with weight loss, upper gastrointestinal bleed, dysphagia, hoarseness of voice, persistent cough and recurrent pneumonia secondary to aspiration. Thyroid cancer presents as a painless, solitary neck swelling, which may be associated with heat intolerance, palpitations, hoarseness of voice and dysphagia. Pancreatic cancer presents with significant weight loss, midepigastric pain, pruritus, new onset diabetes mellitus, migratory thrombophlebitis (i.e. Trousseau sign) and palpable gallbladder (i.e. Courvoisier sign).

Question:

A 65-year-old male presents to the A&E with pain and discharge at the left side of his abdomen. He had a colostomy closure performed three days ago. He has no fever and is generally well. On examination, there is a tender, fluctuant swelling of 4cm diameter in the wound. What is the single most appropriate management?

Which one of the following is correct?

A) a. Abdominal support

B) b. Antibiotics

C) c. Laparotomy and re-suture wound

D) d. Local exploration of wound

E) e. Observation and reassurance.

Answer:D

Explanation:

Question:

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D) Local exploration of wound

E) Observation and reassurance.

Answer:D

Explanation:

This patient has local wound infection at the site of the colostomy. Complications associated with colostomy closure include pain, wound infection and anastomotic leak. The site of the colostomy is also prone to infection. In this patient, there are no symptoms and signs of any infection. The tender, fluctuant swelling must be explored locally in the absence of any systemic signs and symptoms.

Question:

A 70-year-old male,who is being investigated for anaemia, has been scheduled for a colonoscopy in 24 hours. What is the single most appropriate management the night before the procedure?

Which one of the following is correct?

A) Bisacodyl tablets

B) Glycerine suppository

C) Lactulose syrup

D) Senna tablets

E) Magnesium citrate

Answer:E

Explanation:

Bowel preparation is essential for a successful colonoscopy. Preparation starts four days prior to the procedure. Patients must stop any iron-containing medications four days before the procedure. Patients on codeine and loperamide must stop taking these medications three days before the procedure.Two days before the procedure, patients are to avoid high-fibre diets and drink plenty of fluids (about 2 litres a day). The fluids can include clear soups and fruit juices.On the penultimate day, patients are advised to have a light breakfast, avoid solid food, drink clear fluids only and avoid alcoholic drinks. Bulk-forming laxatives, such as methylcellulose, bran and sterculia should be stopped. In the evening of the penultimate day, magnesium citrate-containing laxatives are mixed with water and consumed. This is repeated on the morning of the procedure for a complete bowel prep.

Question:

A 60-year-old male had an anterior resection and end-to-end anastomosis as treatment for rectal carcinoma. While in the recovery ward, he complains of abdominal pain, nausea, vomiting and pain in the left shoulder. On examination, he is febrile. His pulse rate and blood pressure are 150 beats per minute and 100/60 mmHg. What is the most appropriate investigation to determine the cause of his complaints?

Which one of the following is correct?

A) Abdominal x-ray

B) Exploratory laparotomy

C) Exploratory laparoscopy

D) Abdominal ultrasound

E) Abdominal CT scan

Answer:E

Explanation:

The patient is suffering from a leak from the anastomosis. This is a common but manageable complication of bowel anastomosis. Symptoms include abdominal pain, nausea, vomiting, pain in the left shoulder region and abdominal distention. Signs of anastomotic leak include fever, tachycardia, hypotension and oliguria. The most appropriate investigation is an abdominal CT scan with a water-based contrast. A raised C-reactive protein may be a useful marker for anastomotic leak.

Question:

An 18-year-old woman presents to the GP with sudden loss of vision a day after she witnessed a fatal road traffic accident. She has no previous history of blurred vision. She has otherwise been normal prior to this complaint. All examinations and investigations are normal.What is the most likely diagnosis in this patient?

Which one of the following is correct?

A) Factitious disorder

B) Post-traumatic stress disorder

C) Conversion disorder

D) Hypochondriasis

E) Nihilism

Answer:C

Explanation:

Conversion disorder consists of neurologic symptoms or deficits that develop unconsciously and usually involves motor and sensory function. The symptoms are incompatible with known pathophysiologic mechanisms or anatomic pathways. Onset, exacerbation and maintenance is commonly due to stress, as seen in the patient above.

Factitious disorder is a falsification of physical or psychologic symptoms without an obvious external incentive. Patients move from doctor to doctor for treatment. Stress and severe personality disorder is often implicated in factitious disorder.

Post-traumatic stress disorder occurs after exposure to extreme events. It is characterised by disinterest in life, reliving past events, avoidance of similar events and sympathetic or hypervigilance occurring after one month of being exposed to extreme events. Most patients with post-traumatic stress disorder have high suicidal risks.

Hypochondriasis refers to the preoccupation of fears of having or the idea that one has a serious disease, based on the person’s misinterpretation of bodily symptoms. This preoccupation persists despite appropriate medical evaluation and reassurance.

Nihilism is also known as nihilistic delusion. This is an unshaken belief that things do not exist. In other words, it can be described as a belief that everything is unreal.

Question:

A 60-year-old man presents to the GP with low mood, loss of interest in daily activities and weight loss. These complaints started six months ago following a fatal road traffic accident. He has no suicidal ideas. He relates the symptoms to the road traffic accident and has flashbacks anytime he sits in a vehicle. His family supports him greatly. What is the most appropriate management step?

Which one of the following is correct?

A) Psychoanalysis

B) Antipsychotics

C) Benzodiazepines

D) Cognitive behavioural therapy

E) Self-help groups

Answer:D

Explanation:

The patient described above has post-traumatic stress disorder(PTSD). The patient exhibits depressive symptoms, which are linked to the fatal road traffic accident. He has flashbacks when he is in a similar environment. These features are characteristic of PTSD. Management options include starting with cognitive behavioural therapy(CBT). Failure of CBT will necessitate start of medication, such as Paroxetine.

Psychoanalysis is employed as a treatment option in patients with suspected repressed feelings and internal conflicts. It is conducted by use of free associations, dream interpretation and analysis of patient’s speech and personal experiences.

Antipsychotics are used in managing patients with acute psychosis and schizophrenia. Benzodiazepines are employed in managing seizure disorders and insomnia. Self-help groups are management options for substance abuse patients who are trying to quit.

Question:

A 28-year-old woman presents to the hospital with a two-year history of symptoms that range from abdominal pain, headache, chest pain, back pain, vomiting, dizziness and constipation. She also complains of heavy menstrual bleeds. She has had repeated investigations, which were reportedly normal. On examination, her vital signs are normal. Abdominal examination shows multiple laparoscopic scars on her abdomen. What is the most likely diagnosis?

Which one of the following is correct?

A) Borderline personality disorder

B) Somatisation

C) Fibromyalgia

D) Chronic fatigue syndrome

E) Munchausen syndrome by proxy

Answer:B

Explanation:

Somatisation is characterised by a pattern of many physical complaints that occur over several years and results in unnecessary medical treatment and/or causes significant impairment in function of the individual. The somatic symptoms are neither intentionally produced or feigned and appear to be unconscious to the individual. Diagnostic criteria include:

Four different pain sites (e.g. headache, abdominal pain, joint aches) or painful functions such as urination, menstruation and sex

Two gastrointestinal symptoms such as nausea, bloating, vomiting or intolerance to different foods

One sexual or reproductive symptom other than pain (e.g. erectile dysfunction, irregular menses or excessive menstrual bleeding)

One pseudoneurological symptom such as impaired balance, paralysis, aphonia and urinary retention.

Borderline personality disorder is a mood disorder whose symptoms are characterised by emotional instability, cognitive or perceptual distortions, impulsive behaviour and intense but unstable relationships with others.

The main symptoms of fibromyalgia include widespread pain, extreme tiredness and sleep disturbances. The pain appears to affect the whole body and fatigue is reportedly the worst symptom in individuals with the disease. It is a chronic condition that may have acute flare ups.

Chronic Fatigue syndrome is a diagnosis of exclusion in patients with tiredness. The condition is characterised by extreme tiredness, which doesn’t improve with rest. It is thought to be a functional disorder.

Munchausen syndrome by proxy is a condition where a caregiver makes up or causes illness or injury in a person under his or her care with the primary aim of gaining sympathy from others. This is a form of abuse as most victims implicated are vulnerable people such as children and the elderly

Question:

A 30-year-old woman is brought to the A&E by her relatives with complaints that she is hyperactive and has been seen to be shopping excessively. She is reported to have purchased two new cars. Prior to this, she complained of low mood, weight loss, low energy levels and lack of interest in daily activities after the death of her husband three years ago. What is the most likely diagnosis in this patient?

Which one of the following is correct?

A) Schizophrenia

B) Mania

C) Hypomania

D) Obsessive compulsive disorder

E) Bipolar affective disorder

Answer:E

Explanation:

Bipolar affective disorder is a disorder of mood characterised by periods of deep, prolonged and profound depression that alternate with periods of excessively elevated or irritable mood known as mania. In depressive states, individuals have low mood, feel guilty about events and may be suicidal. In the manic phase of the disease, hyperactivity, high spending, impulse buying and heightened sexual desires are commonly exhibited.

Schizophrenia is a mental health condition that is characterised by the presence of two or more symptoms such as hallucinations, delusions, thought disorder, disorganised speech, catatonic behaviour, apathy and lack of speech for at least 30 days.

Mania is a mood disorder that is characterised by elevated mood, inflated self-esteem, racing thoughts, decreased need for sleep, lack of concentration, increase in goal-directed activities and excessive involvement in pleasurable activities. An episode is characterised as manic if the symptoms last for at least a week.Psychotic symptoms are usually present during a manic episode. Manic episodes affect the life of the individual and require hospital admission.

The symptoms of hypomania arelike that of mania, however, they have little to no impact on the person’s daily function. There are no psychotic symptoms associated with hypomania. Hypomania usually lasts through four days. Hypomania can make an individual more productive or sociable than they normally are.

Obsessive compulsive disorder is a condition that is characterised by repetitive activities that are considered personal, persistent, intrusive, senseless and irresistible. This routine affects the person’s daily function.

Question:

A 35-year-old woman was brought into the A&E by her neighbours. She constantly complains that she is being controlled by outside forces. The forces tell her to do everything. She feels that her feelings belong to someone else and are not of her own.What is the best description of the symptoms she is exhibiting?

Which one of the following is correct?

A) Visual hallucination

B) Thought broadcasting

C) Thought insertion

D) Passivity phenomenon

E) Acute anxiety

Answer:D

Explanation:

Passivity phenomenon is belief that one’s feelings, actions and body is under the management of some external forces. The individual feels the urges, acts, motions or ideas are being forced on them and that they are experiencing actions of someone else other than themselves. Passivity is one of the symptoms of schizophrenia.

Visual hallucination is a condition where a person sees things that cannot be seen by others. This is feature of schizophrenia. However, it is also seen in recreational drug use, heavy alcohol consumption, Lewy body dementia, brain tumours and advanced stage dementia.

Thought broadcasting is a disorder of thought where the person has a conviction that his/her thoughts are being echoed to people around him. Though insertion describes the conviction that a person believes their thoughts do not belong to them, but are rather put into their head by someone else. Thought disorder is one of the symptoms of schizophrenia.

Acute anxiety is also known as panic attack. Individuals with panic attack experience sudden periods of fear, which may include palpitations, sweating, tremors, sensation of shortness of breath, perioral numbness and feeling of impending doom.

Question:

A 60-year old man with low mood,which alternates with periods of hyperactivity and lavish spending,presents with coarse tremors of the hand. He is hypertensive and being managed for hyperthyroidism. He has a lot of medication in his medication box. Which of the under listed drugs is the most likely cause of the tremors?

Which one of the following is correct?

A) Thyroxine

B) Amitriptyline

C) Carbimazole

D) Lithium

E) Lisinopril

Answer:D

Explanation:

The patient is being managed for hypertension and hyperthyroidism, as well as bipolar affective disorder. Lithium is the drug of choice for bipolar affective disorder. Some side effects of lithium include coarse tremors, muscle weakness, blurred vison, polyuria, diarrhoea and kidney damage.

Thyroxine is used to manage hypothyroidism. Side effects include headaches, insomnia, irritability, fever, hot flushes, palpitations and chest fluttering.

Amitriptyline is an antidepressant whose side effects include glaucoma, sleepiness, dry mouth, excessive sweating, constipation and difficulty passing urine.

Carbimazole is used in managing patients with hyperthyroidism. Side effects include sore throat, sores in the mouth, epigastric pain and itching.

Lisinopril is used for managing hypertension. Side effects include persistent dry cough, headaches, dizziness, rash and swelling of the tongue.

Question:

A 35-year-old man presents to the GP with complaints of insomnia, lack of interest in activities, low sex drive, low energy levels and low mood. He was diagnosed with depression and placed on a trial of fluoxetine. Six weeks after taking the medication as prescribed, the patient reports no change in his condition. What is the most likely step in managing this patient?

Which one of the following is correct?

A) Lithium

B) Electroconvulsive therapy

C) Benzodiazepines

D) Olanzapine

E) Mirtazapine

Answer:E

Explanation:

The patient in this scenario is being managed for depression. The first line of treatment is selective serotonin reuptake inhibitors (SSRIs), which include fluoxetine, citalopram, paroxetine and sertraline. Patients who are unable to take SSRIs or do not improve on SSRIs are given noradrenaline and specific serotonergic antidepressants (NASSAs). The main NASSA prescribed in the UK is mirtazapine.

Lithium is used to treat bipolar affective disorder. Benzodiazepines are used for management of insomnia and acute seizure disorder. Olanzapine is used in the management of schizophrenia.

Electroconvulsive therapy is used in managing patients with major depressive disorder, postpartum psychosis, schizophrenia, mania and catatonia, who have not improved with medical treatment.

Question:

A 44-year-old divorced man with major depressive disorder was brought into the A&E after swallowing 30 tablets of amitriptyline. His new partner has recently left him and he has begun drinking heavily. On assessment, he appears depressed, feels hopeless and is ambivalent about being alive. He has been medically managed and due for discharge from the medical ward. What is the single most appropriate next management step?

Which one of the following is correct?

A) Arrange psychiatric follow-up on outpatient basis

B) Admit to the psychiatric ward

C) Referral to local alcohol treatment team

D) Referral to clinical psychologist

E) Discharge to the care of the general practitioner

Answer:B

Explanation:

This patient has a history of major depressive illness. He took the tablets with the aim of committing suicide. His support system is weak and he has taken to drinking alcohol. He is ambivalent about life. All these features put him at a high risk of committing suicide or attempting suicide again. Although he has been medically managed, he must be evaluated by the psychiatrist. High suicidal risk warrants hospital admission under the psychiatry team for further evaluation.

Question:

A 32-year-old man has been having disturbing thoughts about his house being infested with germs. He is anxious about safety and checks the locks of his doors repeatedly before going to bed. He has started washing his hands every time he touches the locks, 15-25 times a day. He presents to the GP because he admits it is affecting his life and relationship with his girlfriend. What is the single most appropriate management?

Which one of the following is correct?

A) Antidepressant therapy

B) Anti-psychotic therapy

C) Anxiolytic therapy

D) Psychodynamic therapy

E) Cognitive therapy

Answer:E

Explanation:

This patient has intrusive thoughts causing him to pursue persistent, repetitive activities, which are affecting his life. The patient has obsessive compulsive disorder. Management of this condition starts with cognitive behavioural therapy (CBT), which is also known as cognitive therapy.This involves talking therapy aimed at modifying a patient’s thoughts, beliefs and attitudes to affect his or her behaviour. This mode of therapy combines the cognitive approach (examining your thoughts) with a behavioural approach (the things you do). In some instances,where CBT doesn’t work, some patients are started on selective serotonin reuptake inhibitors.

Question:

A 17-year-old boy has been brought to the GP by his mother for assessment. She reports that he has always been aloof and distant. He has poor social interaction skills and prefers solitary activities. He likes to collect model cars and now has 1000 of them. He is indifferent to praise or criticism by his mother. What is the single most likely diagnosis?

Which one of the following is correct?

A) Autistic spectrum disorder

B) Bipolar affective disorder

C) Borderline personality disorder

D) Dissocial personality disorder

E) Obsessive compulsive disorder

Answer:A

Explanation:

The patient described above fits into autism spectrum disorder. Autism spectrum disorder refers to a group of developmental disorders characterised by:

Ongoing social problems, which include difficulty communicating and interacting with others

Repetitive behaviours, as well as limited interest or activities

Varying levels of disability socially, academically or in other areas of life.

Diagnosis is made at different stages in life. Management includessocial services, support groups, paediatrician care and active management of common difficulties such as hyperactivity, attention problems and anxiety.

Bipolar affective disorder is a disorder of mood characterised by periods of deep, prolonged and profound depression that alternate with periods of excessively elevated or irritable mood known as mania. In depressive states, individuals have low mood, feel guilty about events and may be suicidal. In the manic phase of the disease, hyperactivity, high spending, impulse buying and heightened sexual desires are commonly exhibited.

Borderline personality disorder is a mood disorder whose symptoms are characterised by emotional instability, cognitive or perceptual distortions, impulsive behaviour and intense but unstable relationships with others.

Dissocial personality disorder is also known as antisocial personality disorder. It is characterised by impulsive, irresponsible and often criminal behaviour. They exhibit manipulative, deceitful and reckless behaviour with no consideration for the feelings of others.

Obsessive compulsive disorder is a condition that is characterised by repetitive activities that are considered personal, persistent, intrusive, senseless and irresistible. This routine affects the person’s daily function.

Question:

A 28-year-old businessman presented to the sexual health clinic with some concerns six months ago. He was worried about having contracted HIV infection. Three HIV tests were done over the past six months and all results were negative. He presents to the sexual clinic three months later and claims he has HIV. A spot test done is negative. What is the most likely diagnosis of this patient?

Which one of the following is correct?

A) Somatisation

B) Munchausen syndrome

C) Schizophrenia

D) Hypochondriasis

E) Obsessive compulsive disorder

Answer:D

Explanation:

The most likely diagnosis of this patient is hypochondriasis. He fears he has HIV despite all results showing otherwise. Hypochondriasis refers to the preoccupation of fears of having or the idea that one has a serious disease, based on the person’s misinterpretation of bodily symptoms. This preoccupation persists despite appropriate medical evaluation and reassurance.

Somatisation is characterised by a pattern of many physical complaints that occur over several years and results in unnecessary medical treatment and/or causes significant impairment in function of the individual. The somatic symptoms are neither intentionally produced or feigned and appear to be unconscious to the individual. There is a diagnostic criterion, including different pain sites, gastrointestinal symptoms and sexual or reproductive symptoms, as well as pseudoneurological symptoms.

Munchausen syndrome by proxy is a condition where a caregiver makes up or causes illness or injury in a person under his or her care with the primary aim of gaining sympathy from others. This is a form of abuse, as most victims implicated are vulnerable people such as children and the elderly.

Schizophrenia is a mental health condition that is characterised by the presence of two or more symptoms such as hallucinations, delusions, thought disorder, disorganised speech, catatonic behaviour, apathy and lack of speech for at least 30 days.

Obsessive compulsive disorder is a condition that is characterised by repetitive activities that are considered personal, persistent, intrusive, senseless and irresistible. This routine affects the person’s daily function.

Question:

A 35-year-old nurse in the obstetric department has reportedly attempted suicide 10 times. There is no history of psychiatric problems. All neurological examination is normal. What is the best management option for this nurse?

Which one of the following is correct?

A) Problem-focused treatment

B) Cognitive behavioural therapy

C) Antipsychotic therapy

D) Electroconvulsive therapy

E) Antidepressant therapy

Answer:A

Explanation:

This is a patient whose only history is multiple suicidal attempts. She has no prior history of any medical or psychiatric conditions. It is essential to take a full medical and psychiatric history to find the cause of the multiple suicide attempts. The best option in this scenario is problem-focused treatment. This approach allows you to determine the cause of the suicide attempts and to develop an appropriate management plan. The management plan could involve monotherapy therapy or combination therapy i.e. psychotherapy and chemotherapy.

Question:

A 35-year-old woman gave birth to a baby boy. On day four post-partum, she is worried that she will not be able to take good care of her baby and feels low. She frequently checks whether the baby is breathing while sleeping. She has no thoughts of harming her baby. What is the most probable diagnosis?

Which one of the following is correct?

A) Post-partum blues

B) Post-partum depression

C) Post-partum psychosis

D) Obsessive compulsive disorder

E) Schizophrenia

Answer:A

Explanation:

Post-partum mental health concerns, in an otherwise healthy woman, fall into three categories. These are post-partum blues, post-partum depression and post-partum psychosis. Post-partum blues and post-partum depression have similar symptoms, which include mood swings, sadness, crying jabs, worry, irritability and anxiety. The difference between post-partum blues and post-partum depression is the duration of symptoms. Post-partum blues last from day of delivery to 14days post-partum. Symptoms lasting more than two weeks post-partum are classified as post-partum depression. The presence of hallucinations, delusions (most often that the baby is evil) and/or attempts to harm the baby is the hallmark of post-partum psychosis. Treatment includes counselling and medication. The treatment for post-partum psychosis is electroconvulsive therapy.

Question:

A 30-year-old man was found drunk in the park. He was brought into the A&E by an ambulance. He recently lost his job and started drinking. His wife divorced him six weeks ago. He has low energy levels andhe describes his mood as very low since he lost his job. He is indifferent to what happens to him. He is convinced the nurses are plotting against him. He claims the hospital staff is responsible for all that happened to him. He complains about seeing his uncle who died 10 years ago. He is very agitated and refuses any form of examination. What is the most likely diagnosis?

Which one of the following is correct?

A) Schizoid personality

B) Borderline personality

C) Schizophrenia

D) Psychotic depression

E) Paranoid personality

Answer:D

Explanation:

The patient described above has depressive symptoms (low mood, low energy levels, lack of interest in daily activities) as well as delusions (belief that the nurses and hospital staff are behind what is happening to him) and visual hallucinations. The presence of these symptoms makes the diagnosis of psychotic depression most likely. These patients are most often admitted under the psychiatry team for further evaluation and management.

Schizoid personality disorder is a pattern of indifference to social relationships, with limited range of emotional expression and experience. It is characterised by social and emotional detachment that prevents people from forming close relationships. Individuals with schizoid personality disorder are typically loners who can function in their daily life.

Schizophrenia is a mental health condition that is characterised by the presence of two or more symptoms such as hallucinations, delusions, thought disorder, disorganised speech, catatonic behaviour, apathy and lack of speech for at least 30 days.

Borderline personality disorder is a mood disorder whose symptoms are characterised by emotional instability, cognitive or perceptual distortions, impulsive behaviour and intense but unstable relationships with others.

Paranoid personality disorder is one of a group of conditions called cluster A personality disorders. It is characterised by paranoia and a pervasive, long-standing suspiciousness and generalised mistrust of others.

Question:

A 20-year-old man presents to the A&E with a firm and unshaken belief that he is being followed by terrorists. These terrorists are plotting against him and making him feel responsible for their actions because he is a spy. All reassurances to convince him otherwise have proven futile. He has no history of recreational drug use or alcohol consumption. What is the single best term to describe the man’s condition?

Which one of the following is correct?

A) Delusion of grandeur

B) Delusion of control

C) Delusion of persecution

D) Delusion of reference

E) Delusion of nihilism

Answer:C

Explanation:

The characteristic exhibited is a delusion of persecution. This form of delusion involves the theme of being followed, harassed, poisoned, conspired against, or obstructed in pursuit of one’s goals. It may be isolated and fragmented (e.g. false belief of co-worker harassment) to complex systematic delusion such as government organisations and institutions conspiracy. The patient may ascribe all that happens to him or her to these delusions.

An individual with delusions of grandeur exaggerates his or her sense of self-importance and is convinced he or she has special abilities and powers. There is the belief that a great feat has been achieved, for which they have not been properly acknowledged.

Delusion of control is a false belief that external forces controls one’s thought, emotions, impulses and behaviour. Passivity phenomenon, thought broadcasting, thought insertion and thought withdrawal are examples of delusions of control.

Delusions of reference is when an individual falsely believes that remarks, events, or objects that are rather insignificant in the environment have personal meaning or significance.

Delusion of nihilism is a delusion whose theme is based on the nonexistence of self or parts of self, others or the world.

Question:

A 30-year-old woman presents to the A&E 10 days following childbirth. She has lost her appetite and has no feelings for the baby. She is unable to sleep and has intrusive and unpleasant thoughts of harming the baby. She has no prior history of any psychiatric conditions. What is the best treatment for this patient?

Which one of the following is correct?

A) Haloperidol

B) Paroxetine

C) Cognitive behavioural therapy

D) Electroconvulsive therapy

E) Reassurance

Answer:D

Explanation:

Post-partum mental health concerns, in an otherwise healthy woman, fall into three categories. These are post-partum blues, post-partum depression and post-partum psychosis. The presence of hallucinations, delusions (most often that the baby is evil) and/or attempts to harm the baby is the hallmark of post-partum psychosis.The treatment for post-partum psychosis is electroconvulsive therapy.

Post-partum blues and post-partum depression have similar symptoms, which include mood swings, sadness, crying jabs, worry, irritability and anxiety. The difference between post-partum blues and post-partum depression is the duration of symptoms. Post-partum blues last from day of delivery to 14days post-partum. Symptoms lasting more than two weekspost-partum are classified as post-partum depression. Treatment includes counselling and medication.

Question:

A 30-year-old man has been feeling low with poor concentration following the death of his mother two years ago.He feels lethargic and tends to have tremors and shortness of breath from time to time. He admits to consuming a lot of alcohol over the past month. He has become less productive at work and has received a query for missing work. What is the most likely diagnosis?

Which one of the following is correct?

A) Adjustment disorder

B) Post-traumatic stress disorder

C) Panic disorder

D) Generalised anxiety disorder

E) Bereavement

Answer:A

Explanation:

The most likely diagnosis in the patient is adjustment disorder. The death of his mother has triggered a series of responses that appear exaggerated in comparison to the stressful event. Adjustment disorder is an abnormal and excessive reaction to an identifiable life stressor. This reaction is more severe than would normally be expected and can result in significant impairment in social, occupational or academic functioning. The response is usually linked to a single or multiple stressful events. Adjustment disorder often occurs with one or more of the following: depressed mood, anxiety, mood disturbance and maladaptive reactions. Symptoms of adjustment disorder do not usually last longer than six months after the end of the stressor. Treatment includes individual psychotherapy, cognitive behavioural therapy and self-help groups.

Post-traumatic stress disorder occurs after exposure to extreme events. It is characterised by disinterest in life, reliving past events, avoidance of similar events and sympathetic or hypervigilance occurring after one month of being exposed to extreme events. Most patients with post-traumatic stress disorder have high suicidal risk.

Panic attack is also known as acute anxiety attack. Individuals with panic attack experience sudden periods of fear, which may include palpitations, sweating, tremors, sensation of shortness of breath, perioral numbness and feeling of impending doom.

General anxiety disorder is a chronic condition that is characterised by anxiety. Symptoms include restlessness, worry, poor concentration, sleep disturbance, dizziness and palpitations. Individuals with general anxiety disorder are often anxious about a wide range of situations, rather than one specific event.

Bereavement describes the period of grief and mourning that individuals go through following the loss of a loved one. The stages of bereavement include acceptance of loss, experiencing the pain that comes with the grief, adjusting to life without the loved one who died and moving on.

Question:

A 22-year-old man is being managed for schizophrenia by the psychiatrist. He presents for a follow up. He has lost his father a week prior to presentation. He was noted to be laughing while talking about his father’s death. He has no other complaints. What term best describes his reaction while talking about his father’s death?

Which one of the following is correct?

A) Restricted affect

B) Flat affect

C) Labile affect

D) Incongruent affect

E) Blunted affect

Answer:D

Explanation:

This patient’s reaction while talking about his father’s death is considered inappropriate. This type of affect is described as Incongruent or inappropriate affect. Affect generally refers to the external expression of emotion attached to ideas or mental representation of objects. Types of affect include:

Blunt affect: severe reduction in the intensity of affect, which is very common in schizophrenia

Flat affect: lack of emotional expression

Restricted affect: reduction in intensity of affect to a rather lesser degree than is characteristic of blunt affect

Labile affect: characterised by rapid changes in emotion unrelated to external events or stimuli

Incongruent affect: affect that is inappropriate to the situation or the content of the patient’s ideas or speech

Question:

A 75-year-old man was admitted and is being managed for severe urinary tract infection. He described his mood as very low and he says he feels unhappy, anxious and unable to sleep. He has lost interest in daily activities. The psych team have evaluated and made a diagnosis of moderate depression. Which treatment will be most effective for this patient?

Which one of the following is correct?

A) Amitriptyline

B) Citalopram

C) Cognitive behavioural therapy

D) Diazepam

E) Dosulepin

Answer:B

Explanation:

The patient in this scenario is being managed for moderate depression. The first line of treatment is selective serotonin reuptake inhibitors (SSRIs), which include fluoxetine, citalopram, paroxetine and sertraline. Patients who are unable to take SSRIs or do not improve on SSRIs are given noradrenaline and specific serotonergic antidepressants (NASSAs). The main NASSA prescribed in the UK is mirtazapine.

Amitriptyline and dosulepin belong to the group of antidepressants known as the tricyclic antidepressants (TCA). Use of TCAs has fallen out of favour because they have severe side effects.

There is a place for cognitive behavioural therapy in managing mild depression. For moderate depression, cognitive behavioural therapy may be used as part of a combination therapy rather than monotherapy.

Question:

A 24-year-old woman presents to the A&E in an agitated state. She complains that she hears everyone saying she is evil. She admits she is the only one hearing these voices. This has occurred on several occasions. She does not have any significant medical history. Upon evaluation, the psych team have managed to convince the patient she is having auditory hallucinations. What type of auditory hallucinations does this patient have?

Which one of the following is correct?

A) Second person hallucination

B) Third person hallucination

C) Gedankenlautwerden

D) Echo de la pensee

E) Thought broadcasting

Answer:B

Explanation:

Auditory hallucinations present in varying forms in patients with schizophrenia. Common types include:

Second person auditory hallucinations: the patient believes that someone is directly speaking to him or her. Hence the pronoun “YOU” is often heard by the patient

Third person auditory hallucinations: the theme centres around auditory hallucinations involving several people talking about the patient. The patient is often referred to in the third person, as in “she” or “he”. In some instances, the patient reports that the voices discuss or argue about him or her

Gedankenlautwerden: thoughts are perceived to be echoed to the individual at the time the thoughts have occurred to them

Echo de la pensee: the patient reports hearing their thoughts echoed just after the thoughts have occurred to the patient.

Question:

A 45-year-old man was admitted for percutaneous coronary intervention for a diagnosed myocardial infarction. The team performed a successful procedure. You are the FY2 in the department. The patient’s wife has approached you in order to gain further informationabout the procedure and his general health.You have not spoken to the patient since the procedure was performed. What is the single most appropriate action to take?

Which one of the following is correct?

A) Carefully explain the findings of the procedure since she is the patient’s wife

B) Refer her to the Consultant who performed the procedure

C) Tell her that you cannot provide any information without her husband’s consent

D) Reassure her that her husband will recover

E) Provide her with leaflets on percutaneous coronary intervention

Answer:C

Explanation:

Information regarding medical treatment for any procedure is considered confidential. In most cases where the patient has mental capacity, permission must be sort from the patient before any medical information concerning him or her can be offered to another person. The relationship between the third party (the person requesting the information) and the patient is superfluous when the patient has mental capacity. Once permission or consent has been granted, the doctor is permitted to give adequate information, but not necessarily all ofthe information. Ifthe patient does not have mental capacity, the decision on who to disclose the information to rests on the Consultant.

Question:

A 66-year-old woman was brought into hospital two weeks ago with confusion. Further assessment during admission indicated that she has colon cancer. At the time of diagnosis, the Consultant in charge communicated the findings to the patient’s daughter. The patient is no longer in a confused state and has been deemed mentally capable. Her daughter requests that you keep the diagnosis from her mother as she believes that her mother will not handle the news well. Which of the following actions is the most appropriate?

Which one of the following is correct?

A) Withhold the diagnosis from the patient

B) Use other words other than "cancer" to break the news to the patient

C) Inform the patient ofthe diagnosis since she is currently mentally capable

D) Seek advice from your Consultant

E) Discuss with the hospital’s legal team

Answer:C

Explanation:

It is imperative that the patient is informed of the diagnosis, especially as she is mentally capable. It is essential to note that the decision to initially inform the daughter of the diagnosis was due to the fact thatthe patient was not mentally capable. Once the patient is deemed to be mentally capable, it is vital that she is informed of the diagnosis. Further management of her condition will require her consent. Using other words that may misconstrue or misrepresent the diagnosis is not appropriate. It is important to break the news about cancer in a supportive environment. The information must be delivered in layers and in a sensitive manner. Patients should be offered support immediately after the news is delivered. In the case of cancer, Macmillan Nurses must be mentioned.

Question:

You are the FY2 in the Surgical Department. In the hospital cafeteria, you meet one of your colleagues who has a patient’s clinical notes. The patient’s clinical details are identifiable. Your colleague indicates that he took the notes so that he can prepare for an upcoming presentation. What is the most appropriate action to take?

Which one of the following is correct?

A) Take the notes from him and return the file to the ward

B) No action needs to be taken since the notes are being used for a clinical presentation

C) Inform the patient and, if relevant, any relatives

D) Inform him that he should not have done that and report him to his line manager

E) Help him with the presentation

Answer:D

Explanation:

Information protection is needed against both external threats, such as thefts, and internal threats, such as inappropriate access by staff. Computers, medical records and files must not be left unattended in the workplace. Health professionals should not normally take physical and electronic records, or devices that store these records, out of the workplace.Where appropriate, procedures for safeguarding patient information must be put in place.

If data must be taken out of the hospital, the amount of patient-identifiable information, such as name, date of birth, and postcode, must be minimised. If patient information needs to be transported, it must be kept in a sealed, non-transparent container and kept out of site during transport. Confidentiality policy breeches that must be reported to the line manager include, but are not limited to:

Sharing of passwords

Unauthorised access to NHS England systems by staff and third party

Unauthorised access to person-identifiable information where the member of staff does not have a need to know

Leaving person-identifiable or confidential information exposed in public areas

Sending person-identifiable or confidential information that breeches confidentiality

Question:

A 34-year-old single mother brought her 80-year-old mother to A&E following a fall. Hospital records revealthat the elderly woman has been treated multiple times for falls. On examination, it is noticed that she has multiple bruises of different ages. A fall risk assessment completed during previous visits indicate that she has a low fall risk. The medical team suspects that the elderly woman is being abused. On offering confidentiality, her daughter admits to abusing her. She explains that caring for her mother, as well as raising her two children, is too much. She regrets her actions. As the FY2, you advise that the abuse must be discussed with your seniors and with social services. The daughter refuses to consent for you to disclose the information. What is the next appropriate action to take?

Which one of the following is correct?

A) Empathise with the daughter

B) Criticise the daughter for abusing her mother

C) Do not tell your seniors and social services because you do not have consent from the daughter

D) Break confidentiality and proceed to inform your Consultant, who will discuss the situation with social services to further manage the issue of abuse

E) Treat the medical problem and discharge the elderly woman

Answer:D

Explanation:

The frequent hospital admissions for a fall, despite a low falls risk, and presence of multiple bruises of different ages should make the assessor suspect abuse. The daughter admits toabusing her mother when confidentiality is offered. However, she does not consent to disclosing the information to the appropriate team. In such cases, confidentiality must be broken and the information must be disclosed. The health of the elderly woman is at further risk, despite the remorse shown by her daughter.

Question:

You are the FY2 in A&E. A 22-year-oldfemale presents with severe abdominal pain which has been ongoing for two hours. She was kicked in the abdomen by her boyfriend who is 28 years old. On examination, she has multiple bruises of varying ages and characteristics all over her body. She admits to being abused by her boyfriend. She has not considered reporting him to the police. As part of your data gathering, you think pictures of the bruises will be essential. Which of these will be more appropriate?

Which one of the following is correct?

A) Consent is not required since pictures are being taken as part of data gathering

B) Talk to your Consultant before taking the pictures

C) Ask for the patient’s consent in order to take the pictures

D) Tell the patient to take the pictures herself and send them to the hospital

E) Ask a nurse to take the pictures

Answer:C

Explanation:

In a similar manner to clinical details, pictures for clinical management must be treated with confidentiality. Images showing parts of a patient’s body, or a patient’s entire body, can reflect a patient’s identity. It is essential that such information is gathered with consent from the patient and treated with the same level of confidentiality as other clinical records. If the patient is a child who is unable to give consent, it is vital that consent is provided by the person who has parental authority prior to the picture being taken. In the event that the patient does not have capacity, media recordings must be taken in the best interest of the patient and in consultation with the Consultant in charge of the patient. In cases where these images are to be used for teaching purposes, consent must be sort from the patient if he or she is identifiable.

Question:

You are the FY2 in the Genitourinary Medicine Clinic. A 35-year-old man presents with an infected penile ulcer. On review of his notes, you identify that he was on anti-retroviral drugs fifteen years ago. He indicates that he stopped taking the medicationthirteen years ago. He now has unprotected sex with multiple partners and he injects heroin. He does not participate in the NHS needle exchange programme. He came to the clinic with his girlfriend of ten years. She has been having unprotected sex with him and alsouses heroin. She does not know of her partner’s HIV status. What is the most appropriate step to take?

Which one of the following is correct?

A) Treat the penile ulcer and discharge

B) Treat the penile ulcer and advise him to restart the anti-retroviral treatment, as well as partake in the needle exchange programme

C) Advise him to tell his partner about his condition and modify his lifestyle

D) Breach confidentiality and inform the partner since there is evidence that the patient has not informed her and has not modified his lifestyle to reduce the risk of infecting her

E) Schedule a meeting between the patient and your Consultant

Answer:D

Explanation:

In this scenario, breach of confidentiality is justified under public interest. Disclosures in the public interest based on the common law is made where information given is essential to prevent a serious and imminent threat to public health, national security, the life of an individual or a third party, or detect crime. In this case, the patient has a serious communicable disease, HIV, but he has not demonstrated that he is taking steps to minimise the risk of transmission to others. This act threatens the life and health of his sexual partners and the people with whom he shares needles. The General Medical Council advises that, in cases such as that outlined above, confidentiality may be breached to inform a known sexual contact.

Question:

You are the FY2 in the Obstetrics and Gynaecology Department. A concerned and anxious 24-year-old woman presents to the unit. She has terminated her pregnancy and has now been told that the Chief Medical Officer must be informed of the procedure. She is refusing to give consent for the information to be disclosed What is the next appropriate step?

Which one of the following is correct?

A) Respect her wishes and do not disclose the information

B) Convince her to allow you to disclose the information

C) Ask your Consultant to convince her

D) Inform her that you are required by law to disclose the information and that she is being made aware to secure authority

E) Seek advice from the hospital legal team

Answer:D

Explanation:

Health professionals are mandated to disclose certain information, regardless of patient consent. Patients do not have the right to refuse. However, they should be informed about the disclosure. Such disclosures are statutory and include:

Public Health Act 1984 and Public Health Regulations 1988– notificationof local authorities of the identity, sex and address of any person suspected of having a notifiable disease, including food poisoning

Abortions Regulations 1991 – the Chief Medical Officer must be notified of any terminated pregnancy by the doctor who carried out the procedure. Information given include reference number, date of birth and postcode of the woman concerned

Reporting of Injuries, Diseases and Dangerous Occurrence Regulations 1985– deaths, major injuries and accidents resulting in more than three days off work, certain diseases, and dangerous events must be reported

Road Traffic Act 1988 –this mandates health professionals to provide the police, on request, any information which may identify a driver who alleges to having committed a traffic offence

Terrorism Act 2000- all citizens, including health professionals, must inform the police as soon as possible of any information that may help to prevent an act of terrorism or aid in apprehending or prosecuting a terrorist

The information Sharing Index(England) Regulations 2007 (ContactPoint)– mandateshealth professionals to provide basic identifiable information to the local authority for every child up to the age of 18

Question:

You are the FY2 in the Paediatric department. A 3-year-old boy has been brought in by his mother with complaints of rectal bleeding. She is the biological mother of the child. She is unemployed and lives with her boyfriend who supports her and her other three children. Examination of the child reveals traumatic lacerations in the anal region. Further probing indicates that the child is being sexually abused by his mother’s current boyfriend. The boy’s mother does not want you to disclose the information about the abuse to social services. She insists she is the mother of the child and holds the legal right to give consent. What will be the most appropriate action to take?

Which one of the following is correct?

A) Convince the child’s mother of the need to involve social services

B) You cannot disclose this information because the mother has not given consent

C) Consult with the legal team of the hospital

D) Breach confidentiality and, in consultation with your seniors, involve the social services department

E) Refer the patient to the psychiatric team

Answer:D

Explanation:

This is a case of sexual abuse in a child. The biological mother, as in this scenario, has the legal right to consent for the child. However, the decision she is making regarding the abuse of the child puts the child at significant risk and isis not in the best interest of the child. In certain instances, confidentiality is breached and disclosure is done based on public interest and without consent since the life and health of the child is threatened.

Question:

A 24-year-old nurse in the ICU suffered a needle stick injury while attending to a patient who is being treated for viral encephalitis. He is semi-conscious. The nurse is worried about contracting HIV from the injury. Samples have been taken from the nurse in order to screen for HIV and Hepatitis B. However, the nurse is requesting the patient’s sample to be taken for HIV testing as well. What is the most appropriate action to take?

Which one of the following is correct?

A) Take the blood sample from the patient for the test

B) Discuss with the legal team of the hospital

C) The blood sample cannot be taken because the patient cannot give consent

D) Discuss the situation with the Consultant

E) Refer the issue to Occupational Health

Answer:C

Explanation:

Needle stick injury is associated with a risk of transmission of blood-borne infections. The most significant are Hepatitis B and HIV. The steps involved following a needle stick injury include:

Wash the area under running water

Allow the area to bleed

Cover with a clean cloth or gauze

Take blood samples in order to screen for Hepatitis B and HIV

Conduct an instant test on all samples. Repeat the teston the same sample after 8 weeks for Hepatitis B and after twelve weeks for HIV due to the incubation period of the disease

Advise protected sexual intercourse during the wait period i.e. three months

Advise post-exposure prophylaxis

Give Hepatitis B immunoglobulin , if the last vaccine given was less than six months. If it

It is essential to note that consent is required for samples to be taken due to the implication associated with a positive Hepatitis B and HIV test. In this scenario, the patient is semi-conscious and cannot be deemed as mentally capable to give consent for the tests to be carried out. The most appropriate time to conduct these tests is when the patient is conscious and deemed mentally capable to agree.

Question:

A 45-year-old coal worker is diagnosed with lung cancer. His employer has sent a letter via the private health insurance officerto request access to the worker’smedical records for compensation purposes. The officer indicates that the patient’s employer has given a written assurance that the medical records will be kept confidential. What is the next appropriate step to take?

Which one of the following is correct?

A) Speak to the hospital’s legal team

B) Give the insurance officer the medical records because a written assurance has been offered

C) Give the insurance officer the medical records because there is compensation involved

D) Refuse to give the notes because the patient has not given consent

E) Call your Consultant

Answer:D

Explanation:

A third party request for medical information will only be given if there is a written consent from the patient or a person properly authorised to act on the patient’s behalf (e.g. lasting power of attorney or a deputy appointed by the court). The signed consent form (original or a copy) must be provided by the third party. An electronic copy of the signed form is sufficient, provided that the third party can prove that there are robust mechanisms in place to ensure that the form has not been tampered with. Doctors may accept written assurances from an officer of a government department (e.g. Benefits Agency or Housing Agency) that a patient has given written consent to disclosure.

Question:

A 45-year-old man presented to A&E two days ago with chest pain. An ECG was performed and the report was normal. He was discharged with pain relief medication, although troponin levels results were pending. The ECG was reviewed by the Cardiologist who diagnosed a myocardial infarction. This was confirmed with high troponin levels. What is the next appropriate step in the management of this patient?

Which one of the following is correct?

A) Nothing needs to be done since the patient has been discharged

B) Ask the patient to visit his GP in order to monitor his blood pressure and heart rate

C) Call the patient to apologise for the medical error and ask him to return to the hospital for further management

D) Give the patient another reason to come to the hospital

E) Arrange a follow-up appointment in 6 weeks’ time to repeat the ECG and test his troponin levels

Answer:C

Explanation:

Disclosure of medical errors is essential to maintain a good doctor-patient relationship. Medical errors must not be hidden from the patient. Full disclosure of a medical error includes:

Stating the nature of the error

Explaining why the error occurred, if the information is available

Explaining how the effects of the error will be minimised (this may include further management)

Highlighting steps that will be taken to prevent the recurrence of such errors

Acknowledging responsibility and offering an apology. No attempt should be made to cover up any misdiagnosis or mismanagement

Question:

A 5-year-old girl is brought to A&E by the school caretaker with a needle stick injury to the hand. She was playing in a park when she got injured. The needle reportedly looks like a hospital syringe needle. The child is said to be up-to-date with her vaccinations. She is at risk of tetanus, hepatitis B and HIV. Bloods are to be taken for these tests. The caretaker reports that the parents have spoken to the nurse over the telephone and have given their consent for any procedures to be performed on the child.The parents are on their way and will arrive at the hospital within an hour. What is the next step in management?

Which one of the following is correct?

A) Conduct the tests as recommended since consent has been given by the parents over the telephone

B) Take bloods for the tests and start HIV post-exposure prophylaxis and hepatitis B immunoglobulin

C) Take bloods for tests and give hepatitis B immunoglobulin only

D) Withhold all blood tests until the parents arrive but give hepatitis B immunoglobulin while waiting

E) Withhold all investigations until the parents arrive

Answer:D

Explanation:

Consent for management of a child must be given by a parent or an individual with parental responsibility over the child. This consent cannot be given over the telephone as the identity of the person on the telephone cannot be fully verified. In this case, the implication of HIV tests and complication of post-exposure prophylaxis must be fully explained in order to allow the parents to make the appropriate decision. It is, however, safe to give the hepatitis B immunoglobulin. Since it is reported that her vaccinations are up-to-date, the child is protected against tetanus. It is vital to note that consent should not be taken over the telephone.

Question:

You are the junior doctor in the Intensive Therapeutic Unit of the hospital. You arelooking after a patient who was involved in a road traffic accident and suffered severe trauma. He is now unconscious. His wife is enquiring about his condition. What is the simple most appropriate action?

Which one of the following is correct?

A) Explain that you cannot disclose the information without her husband’s consent

B) Explain what has happened and his current condition, treatment options, and likely prognosis

C) Inform that you cannot speak to her but will ask the Consultant to provide the information she requires

D) Provide her with a summary of the case notes

E) Inform her that an update can be provided only after the patient has been moved to the ward

Answer:B

Explanation:

In this scenario, the patient is unconscious and cannot give any information or consent. It is appropriate to inform the nearest verifiable relative or lasting power of attorney of the patient’s condition and further management options, as well as the prognosis. In unconscious patients, confidentiality and consent from the patient is not required in the disclosure of information.

Question:

A 78-year-old man has been admitted to the hospital for heart failure. He has a history of emphysema, myocardial infarction,hypertension and hyperlipidaemia. He regularly takes numerous medications. However, he indicates that he does not want to continue with his medication after the current batch is finished. He is aware of the consequences of his decision to refuse medication and the prognosis of his condition without medication. He has not discussed this with anyone. He has expressed a desire not to be resuscitated if he is to become unconscious. He has appointed his son as his lasting power of attorney and has made funeral plans. Having learntthis, what will your next step be as an FY2 doctor?

Which one of the following is correct?

A) Convince the patient to reconsider his decision

B) Ask the patient’s son to talk to himand convince him to change his mind

C) Ignore his instructions and continue to treat him

D) Respect his wishes and manage him as he desires

E) Refer the patient to the psychologistin order togain a comprehensive assessment

Answer:D

Explanation:

The patient in this scenario has indicatedthat he does not want further treatment. He has mental capacity that has been demonstrated by his knowledge of the consequences of refusing treatment. He has alsoadvised that he does not want to be resuscitated. This patient does not require psychiatrist or psychologist intervention because he holds capacity. Having demonstrated capacity, his son will not be required to make the decision on his behalf. Hence, as the doctor, you cannot ignore his wishes. Since the patient has indicated how he wishes to be treated, he should be managed accordingly.

Question:

You are the FY2 in the Surgical Department. A 32-year-old woman was admitted for a thyroidectomy. She has taken time off work in order to undergo the surgery. Unfortunately, the surgeon in charge has had to cancel the operation due to an emergency. You have been asked to see the patient. She is very upset and wants compensation. She is also requesting a new date for her surgery. What is the next appropriate step?

Which one of the following is correct?

A) Apologise for the inconvenience and reschedule her operation

B) Apologise for the inconvenience and arrange compensation for her

C) Apologise for the inconvenience, reschedule her operation, and provide the compensation she is requesting

D) Apologise for the inconvenience but do not commit to giving her a new date or discuss compensation

E) Apologise for the inconvenience only

Answer:D

Explanation:

In this scenario, there is a genuine reason for the cancellation of the surgery. However, the patient is still owed an apology. As an FY2 doctor, you are not able to negotiate compensation or schedule a new date for the surgery. The patient should be referred to the Patient Advisory and Liaison Services where she can lodge the complaints. If a patient insists on compensation, it is essential to refer her to the Consultant.

Question:

You are the FY2 doctor in the Acute Medical ward. You saw a fellow FY2 in your department drinking an excessive amount of alcohol at a party last night. He was also sniffing a white substance which you suspect to be cocaine. You meet him on the ward and he still smells of alcohol. The nurses are discussing the issue on the ward. How would you manage this situation?

Which one of the following is correct?

A) Undertake your colleague’s work and cover for him

B) Discourage the nurses from discussing the issue since they are undermining him

C) Talk to your colleague and insist that he speaks to the Consultant about the situation

D) Refer him to the substance abuse team

E) Report him to the General Medical Council

Answer:C

Explanation:

A colleague abusing alcohol and drugs must be reported to the Line Manager. As a doctor, he is the leader of the team and must lead with authority. Any activity thatwill compromise his ability to make decisions and jeopardise the safety of the patients must be dealt with promptly. In this case, the Consultant must be informed in order for further action to be taken. Necessary steps may include referral for counselling, management by the substance abuse team and, in theworst-case scenario,revoke of his license to practice by the General Medical Council. The first step, however, is to report to the Consultant.

Question:

You are the FY2 doctor in the Orthopaedic Department. A 77-year-old woman sustained a fracture to the left wrist following a fall. The Orthopaedic Surgeon has put her wrist in a cast and scheduled her for a review in two weeks. She has had a falls risk assessment, for which she was classified as low risk. She is due to be discharged. She has mental capacity and has had discussions with all the teams involved in her care. She is happy to go home. Her daughter is concerned and speaks to you in the corridor. She is worried that her mother will fall again and wants her to be taken into a nursing home.What would you do?

Which one of the following is correct?

A) Seek advice from the Consultant

B) Explain to the daughter that the course of treatment determined by the Consultants is the most appropriate, based on the evidence presented

C) Make appropriate arrangements to refer the patient to a nursing home

D) Keep the patient on the ward because her daughter does not agree with the decision to discharge her mother

E) Refer the issue to social services

Answer:B

Explanation:

The patient in this scenariohas mental capacity and has agreed to the treatment plan . Although the daughter appears concerned, her mother has the autonomy to make a decision regarding her own treatment. She cannot be forced or coerced into a nursing home when the results of her assessment do not recommend it. It is essential that the treatment plan is explained to the daughter, so she understands why her mother has agreed to be at home.

Question:

The mother of a 15-year-old girl arrives at the GP practice demanding to see a doctor. She has concerns about oral contraceptive pills that she found in her daughter’s room. She asked her daughter about the pills but she was not convinced by the answer she received. She believes her daughter got the pills from the practice and she demands to speak tothe doctor who saw her daughter. She also requests to see her daughter’s medical notes. How will you manage this situation?

Which one of the following is correct?

A) Confirm that her daughter was seen at the practice and she was prescribed the contraceptive pills

B) Inform the mother that her daughter was prescribed the pills at the practice but cannot see the doctor

C) Refuse to deny or confirm whether her daughter was seen at the practice

D) Give her a copy of her daughter’s notes, as she is requesting

E) Deny that her daughter was at the practice or prescribed the pills

Answer:C

Explanation:

Confidentiality is essential in cases such as these. It is vital not to deny or confirm whether the girl was seen at the practice. Disclosure of information to the mother without consent from the daughter is a breach of confidentiality. To allay the mother’s anxiety and fears, it is important to discuss what any doctor in the practice would do if a girl of her daughter’s age should come to the practice requesting contraception. Full description of the Gillick competenceis imperative in communication with and reassurance of the mother. Gillick competence is assessed using the Fraser guidelines. These guidelines clarify the issue of contraception, abortion and sexually transmitted infections in patients under 16 years of age. The guidelines indicate that it is lawful for a doctor to provide contraception, abortion, and treatment and advice for sexually transmitted infections to people below the age of 16 if:

They understand all aspects of the advice and its implications

You cannot persuade the young person to tell his or her parents, or allow you to inform them

The young person is likely to begin, or continue having, sexual intercourse with or without treatment

Their physical or mental health is likely to suffer unless they receive such advice or treatment

It is in the best interests of the young person to receive the advice and treatment without parental knowledge or consent

Question:

A 77-year-old man was seen at the Outpatient Department with a three-week history of difficulty swallowing and severe weight loss. He has been assessed by the Consultant and scheduled for an oesophagogastroduodenoscopy. As the FY2, you have been asked to consent the patient for the procedure. The patient has a history of schizophrenia, which has been managed with anti-psychotics for two decades. However, he has been off the medication for the past three weeks due to the dysphagia. He indicates that he has started hearing voices again during the past two weeks. During your pre-assessment, he appears distracted and complains of hearing voices.How will you proceed with this patient?

Which one of the following is correct?

A) Continue to book the patient for the procedure since the Consultant has determined it is the best next step in his management

B) Give the patient some anti-psychotics and continue to book him for the procedure on the same day that the assessment is being carried out

C) Assess the mental capacity of the patient and, if in doubt, discuss with your Consultant to cancel the procedure and refer the patient to the psychiatric team for further management

D) The history of schizophrenia does not seem to be impairing his judgement and therefore consent can be obtained for the procedure

E) Refer the patient to the Acute Medical Unit because he is having auditory hallucinations

Answer:C

Explanation:

The patient described above requires the upper gastrointestinal endoscopy in order to make a diagnosis. However, he is having auditory hallucinations which are likely to impair his ability to consent to the procedure. Psychiatric illness does not automatically imply a lack of capacity. Capacity must be assessed by evaluating the patient’s ability to:

Understand the procedure, the pre-procedure preparation, the post-procedure management, and the possible side effects

Retain the information

Use or weigh the information given as part of the process of making the decision Communicate his decision (whether by talking, using sign language or any other means)

If the patient is lacking capacity, consent cannot be obtained. Lack of capacity can be categorised as temporary or permanent. In the patient described in the scenario, the lack of capacity is most likely due to the break in medication break, caused by the dysphagia. It is expected that the recommencement of anti-psychotic treatment will improve his mental capacity. It is appropriate to treat his current symptoms and reassess him for the oesophagastroduodenoscopy at another appointment.

Question:

A 44-year-old woman was diagnosed with deep vein thrombosis. She was treated on the ward and is due for discharge. She has been prescribed oral warfarin. You are the FY2 doctor and started your rotation in the department today. You have been asked by the Consultant to explain the medication to the patient. This is your first encounter with the patient. In attempting to explain the medication to the patient, you identify that she is unable to understand medical terms. You notice that she has a moderate learning disability. She has indicated that she lives alone but her sister, who lives five miles away, visits her very often. Which of the options will be the most appropriateinitial approach to discussing the medication?

Which one of the following is correct?

A) Withhold all information about the medication until her sister is contacted

B) Discuss with the Consultant about prescribing alternatives to oral warfarin since the patient has a learning disability

C) Discuss with social services about getting help for her

D) Carefully explain the medication to the patient using simple words and providing aids to support the information

E) Discuss with the speech and behavioural therapist to assess the patient before you proceed

Answer:D

Explanation:

The patient described in the scenario requires an important treatment regime which involves a series of timed investigations and titrated medication doses. Having noticed that the patient has a learning disability, it is essential to maximise the patient’s ability to understand the medication. This is an important initial step. It is vital that simple terms are used to describe what the patient is required to do. Instructions must be offered at a rather slow pace, with extra time given to the explanation of important details. You must enquire if there is a carer or relative who can help with the carrying out of the instructions. If possible, the information must be written on paper for easy referencing. The presence of a carer or a relative does not mean that you do not involve the patient. Visual and auditory aids can be used. For example, colour codes for warfarin should be used rather than mentioning drug doses.Where applicable, a recorded audio file of the discussion can be given to the patient. Social services are involved when the patient cannot retain any information and will require a significant amount of help. However, the degree of help can only be determined when an attempt is made to talk to the patient.

Question:

You are the FY2 in the Acute Medical Unit. A 45-year-old man with type 1 diabetes mellitus, who is being managed on insulin, has been admitted for a hypoglycaemic episode. He works as a heavy duty vehicle driver for a retail company. This admission is his third within a year. He is currently fine and requests to be discharged since he has deliveries to make over the weekend. He has not informed neither his employers nor the Driver and Vehicle Licensing Authority (DVLA) about his health condition. You have tried to convince him to inform his employers and the DVLA but he is reluctant to do so. What would be the next appropriate step to take?

Which one of the following is correct?

A) Respect the patient’s confidentiality and do not disclose his health condition to the DVLA

B) Give him the option of informing his employer and not the DVLA

C) Advise the patient to be compliant with his medication to reduce future hypoglycaemic episodes

D) Breach confidentiality, discuss the patient’s condition with your Consultant,and proceed to inform the DVLA about the patient’s condition

E) Involve the legal team of the hospital

Answer:D

Explanation:

The patient in this scenario is a known type 1 diabetic who has had a hypoglycaemic attack. He drives a heavy duty vehicle. He is required by law to inform the DVLA of his medical condition since he poses a significant risk to the public if he continues to drive. It is essential to convince patients with type 1 diabetes, epilepsy, and acute coronary syndrome, and patients who have had a coronary artery bypass graft and automated defibrillators, to inform the DVLA. If the attempt to convince fails and the patient indicates that he or she will return to driving, as shown in this case, the attending doctor must inform his or her superiors and advise the patient that confidentiality will be breached to tell the DVLA. This breach is justified due to the need forpublic interest disclosure,as in line with the Public Interest Disclosure Act 2013.

Question:

A 35-year-old man is rushed into A&E after being knocked-down by a speeding vehicle. He is unconscious and has sustained a compound fracture of the right femur. He is pale, anxious and has a pulse rate of 140 beats per minute. Blood pressure is 80/40mmHg. A complete blood count done showed haemoglobin levels of 6g/dL. He requires blood transfusion. The ambulance service called his wife, and updated her on her husband’s condition and the need for a blood transfusion. She, however, objects to a blood transfusion because her husband is a Jehovah’s Witness and has told her not to allow a blood transfusion in the event of an emergency. There is no documentation in the patient’s file that indicates his refusal of a blood transfusion and no other instructions can be identified from the patient. What would be the next appropriate step?

Which one of the following is correct?

A) Go ahead and carry out the blood transfusion because there is no prior documentation and the patient is unconscious

B) Consider what the wife has said and do not carry out the blood transfusion because of the patient’s beliefs

C) Discuss with the hospital’s legal team to get a court order to override the wife’s request and then proceed to transfuse the patient

D) Discuss with your Consultant on the possible alternatives to a blood transfusion

E) Withhold the blood transfusion until the patient is conscious and able toconsent

Answer:A

Explanation:

Refusal ofa blood transfusion may be requested by patients who are Jehovah’s Witness. Individuals who are Jehovah’s Witness usually carry a signed and witnessed Advance Decision Document listing the blood products and autologous procedures that are acceptable and unacceptable to them. They usually have no objection to primary blood components such as albumin, cryoprecipitate, clotting factors and immunoglobulins. In elective surgeries, alternative options such as intraoperative cell salvage, apheresisor normovolaemic haemodilution can be considered.

In this scenario, the patient is unconscious and does not have the mental capacity to refuse treatment. He is in a critical state and he has no Advance Decision Document indicating his refusal of a blood transfusion. Therefore, it is appropriate to give the life-saving treatment, i.e.,a blood transfusion, and document it in the patient’s notes. Once the patient regains consciousness, it is important to inform him of thetreatment he has received. Hisfuture wishes should, however, be respected. In instances where the patient is an adult (16 years or over), it is essential to respect his or herrights.

In instances whereparents or legal guardians of a child below 16 years of age refuse a blood transfusion (or other medical interventions) that, in the opinion of the attending physician, is life-saving or essential for the well-being of the child, a Specific Issue Order can be rapidly obtained from a court. (Adapted from Joint United Kingdom Blood Transfusion and Tissue Services Professional Advisory).

Question:

You are the FY2 in a GP practice. A 16-year-old girl presents to your practice alone, requesting abortion service. The girl indicates that she is currently under a lot of physical and emotional stress because of the pregnancy. She is aware of the consequences of an abortion,as well as the implications of proceeding with the pregnancy. You have discussed the options available to her if she wishes to continue with the pregnancy. Despite all these, she is determined to have an abortion. Your practice does not offer such services and you, as an individual, are opposed to abortion. What is the next appropriate step in managing the patient?

Which one of the following is correct?

A) Involve the patient’s parents

B) Refer the patient to the psychiatrist for a mental health assessment

C) Tell the patient to look for another practice where the abortion can be carried out

D) Arrange her prompt referral to another facility where she can get the service she requires

E) Encourage her to continue with the pregnancy since you believe it will be in her best interest in the long-term

Answer:D

Explanation:

A service provider or practitioner may choose to opt out of providing a service due to personal values and beliefs, as long as this does not harm a patient directly or indirectly. This means that your personal beliefs should not prevent you from treating patients. In this scenario, the practice does not offer abortions and the doctor does not believe in abortions. The girl has demonstrated that she is Gillick competent, as per the Fraser guidelines. She is aware of the consequences of having, or not having, an abortion. It is important to tell the patient that you do not provide such as service and follow it up with a referral to another practitioner who can provide the service the patient requires. If it is practical, the patient can arrange to see another doctor. If it is impractical for the patient, as in the scenario described in the question above, necessary arrangements must be made promptly to another colleague to treat and advise the patient. (Adapted from GMC Personal beliefs and medical practice, Conscientious objection)

Question:

You are the FY2 doctor in the Orthopaedic unit. A 32-year-old single mother was seen for a left ankle pain twodays ago after she tripped down the stairs at home. Her X-ray report shows no evidence of fracture. The patient is requesting that you change her notes to indicate that she fell at work so that she can claim compensation. She requests a copy of the amended notes. What is the appropriate initial action to take?

Which one of the following is correct?

A) Change the notes so she can claim the compensation because she is a single mother

B) Inform the patient that you cannot change the notes but can give her the notes

C) Inform the patient that you cannot change the notes and she must put in a formal request for a copy of her notes

D) Inform the patient that her GP can give a letter stating that she fell at work

E) Inform your Consultant about the situation

Answer:C

Explanation:

This scenario presents an ethical dilemma surrounding honesty, confidentiality and maintaining accurate medical records. The patient has indicated that altering the events leading to the fall (thus a factual inaccuracy) is due to a compensatory claim from her employer.It is essential to explain to the patient that the place of fall does not affect her management and you cannot be dishonest. The notes, once written, must not be altered under any circumstances, even if the patient requests. You should also make a note in the medical records indicating what the patient says. The patient does have the right to her medical records. However, a formal application must be submitted through the medical records unit in order for the patient to obtain a copy of her notes.

Question:

You are the FY2 in the Medical Department. A 28-year-old patient, who was admitted two weeks ago, has arrivedto obtain a medical report in order for her employer to update her medical records. During the process, she tells you that your Registrar has been making sexual advances towards her since her discharge. She shows you text messages that she has received from your Registrar which contain explicit language. She is concerned and feelsunsafe. She does not want to report it to the police because she does not want him to be prosecuted. What would you do?

Which one of the following is correct?

A) There is no need to pursue the matter because the patient is no longer admitted in the hospital

B) Inform the Consultant about the patient’s concerns but ensure that thepatient is not identified

C) Discuss the issue with the Registrar

D) Refer the patient to the Patient Advisory and Liaison Services for her to lodge her complaint

E) Encourage the patient to report the matter to her GP since this is no longer a hospital problem

Answer:B

Explanation:

The General Medical Council document on Good Medical Practice indicates that a doctor must not use his orher professional position to pursue a sexual or improper emotional relationship with a patient or someone close to them. This is to ensure and maintain the trust of patients and the public. A breach of a patient’s sexual boundaries must be reported to the head of the team or an organisation equipped to investigate the matter. In this case, as a FY2,it is more appropriate to talk to your Consultant. The patient must be supported and protected. If patient confidentiality has tobe broken, it is essential to seek consent. Once the Consultant is informed, further action can be taken. This may include the Patient Advise Liaison Services, the police, or the General Medical Council.

Question:

A 55-year-old woman requests to speak to the doctor on duty concerning her mother. You are the FY2 who has been asked to address the woman’s concerns. The woman reports that she brought her 88-year-old mother to the hospital three days ago because of poor feeding. She is wondering why nothing has been done for her. All investigations that have been carried out since admission have been reported as normal. The patient can tolerate oral sips. Consultant review indicates that she has terminal vascular dementia. The Consultant has recommended palliative care for the patient. The daughter requests nasogastric tube feeding for her mother. What will you do?

Which one of the following is correct?

A) Pass the nasogastric tube since the patient is only tolerating sips

B) Discuss the diagnosis with the daughter and explain that her mother is currently on palliative care

C) Explain to the daughter that you are considering feeding via percutaneous endoscopic gastrostomy within a few days

D) Arrange for discharge of the patient into hospice care

E) Do not discuss the diagnosis with the daughter since the patient has not given consent

Answer:B

Explanation:

In this scenario, the patient has been diagnosed with terminal vascular dementia. Normal investigations suggest that the cause of the poor feeding is dementia. It is imperative to discuss the diagnosis and the plan of care with the patient’s daughter. The doctor must convince the relative that passing a nasogastric feeding tube causes pain and is not in the best interest of the patient. This contrasts with the aims of palliative care, which include adequate pain relief, psychological support and appropriate religious support. Since the patient has taken a few sips of water, the relative must be requested to feed the patient with more frequency and with liquid meals rather than solid food. Another argument to support small frequent feeds is that, in elderly patients, the net energy required for metabolism is low. Hence, they require less amount of food. This observation usually makes carers of the elderly worried.

It is essential to treat terminal patients with dignity, respect and confidentiality. In patients who lack capacity, as seen in the scenario above, the decisionregarding the treatment, i.e. palliative treatment, is based on an ethical consideration of the most appropriate treatment and care. This must be properly communicated to the relatives.

Question:

Mr. James Gonzalez is an 88-year-old man who has been admitted with infective exacerbation of chronic obstructive airway disease (COPD). He is very ill and has been started on antibiotics. He is also known to have severe heart failure. He has indicated that he does not want any form of resuscitation. The Consultant had a discussion with Mr. Gonzalez after which a ‘Do Not Attempt Resuscitation’ order was signed. His son, Raul Gonzalez, came in to see his father this afternoon and noticed the DNAR form on his father’s medical notes. He has asked to speak to you, the FY2 on the ward, about this. He is extremely upset and wants the form to be removed. What would be the most appropriateinitial action?

Which one of the following is correct?

A) Remove the DNAR order from the notes as requested by the son

B) Seek consent from Mr. James Gonzalez to discuss his condition and DNAR with his son

C) Establish what Raul knows about DNAR

D) Refer Raul to the Patient Advisory Liaison Services to lodge an official complaint

E) Explain to Raul that his father has consent and has decided on how he should be treated

Answer:B

Explanation:

In this scenario, the question is asking about the initial step to take in addressing the issue. The first action to take when discussing a patient’s condition with a third party is to seek consent from the patient. If consent for disclosure has not been given, information cannot be disclosed. If the patient is not mentally capable, you should discuss the situation with your senior colleagues before proceeding to disclose any information. Mr. James Gonzalez has mental capacity and has granted you permission to talk to his son. It is essential to establish what the son wants to discuss and to understand what he knows about DNAR. You should clarify what the order is and what it entails. It is essential to explain resuscitation and why it is not always appropriate. It is also important to discuss how medical professionals are required to dignify their patients, even in dying and in death. You should highlight toRaul that the decision to sign the DNAR form was made after all the information was clearly offered to his father, who has full mental capacity. If Raul is not convinced, you could book an appointment for him to see your Consultant in order to discuss the issue further.

Question:

Miss Smith, a 52-year-old woman, presents to the Acute Medical Unit requesting to see the doctor. You are the FY2 in the department and have been asked to speak with her. Her father died recently from respiratory failure following infective exacerbation of chronic obstructive pulmonary disease. A death certificate has been issued but Miss Smith wants a post-mortem to be carried out. With her father’s permission, she was constantly updated on his condition throughout his hospital stay. While she does not believe that anything went wrong with the management of her father, she is requesting a post-mortem because her friend told her about it. What will your initial action be in this situation?

Which one of the following is correct?

A) Arrange for the post-mortem to be carried out since Miss Smith has requested it

B) Request her to discuss the issue with the GP since the GP knew her father better

C) Refer her to the hospital’s legal team

D) Take time to explain the indications for a post-mortem to Miss Smith and to highlight that the cause of death in her father’s case is known. Hence, a post-mortem is not required

E) Inform her that it is too late to request a post-mortem since the death certificate has already been issued and it does not matter anymore

Answer:D

Explanation:

A post-mortem examination (autopsy)aims to determine the cause of death. In effect, once the cause of death is known, an autopsy may not be required. Where the cause of death is sudden, suspicious or due to an accident, a coroner’s post-mortem examination is carried out. A hospital post-mortem is performed to learn more about a disease. Consent, either from the patient before death or a close relative, is required for a hospital post-mortem. This contrasts with the coroner’s post-mortem which does not usually require consent. It is important to discuss dignity for the dead with Miss Smith. Although the procedure may involve making surgical incisions and excising whole or parts of organs, the body is not disfigured. However, if it is not required, such as in cases where the cause of death is known, the procedure can be avoided to preserve the patient’s dignity.

If she insists on the post-mortem despite receiving all the necessary explanations, it is prudent to discuss the matter with your Consultant and to then book an appointment for Miss Smith to discuss her concerns with the Consultant.

Question:

You are one of the two new FY2 doctors assigned to the Surgical Department of your hospital. The second FY2 doctor requests to speak with you in private. He discloses that he has Hepatitis C and he has not told anyone about it. He aspires to become a Neurosurgeon and he believes disclosure will prevent him from achieving this dream. He has been put on rota to assist in theatre this week and he has confirmed his availability for the theatre sessions. What would you do?

Which one of the following is correct?

A) Request his consent to inform the Consultant of his health status

B) Breach confidentiality and inform the Consultant in charge of the team

C) Keep the information to yourself so that he can become the surgeon he aspires to be

D) Make an anonymous disclosure to the Occupational Health Department at the hospital

E) Report your colleague to the General Medical Council

Answer:B

Explanation:

In this scenario, your colleague is aware that, with a diagnosis of Hepatitis C, he will not be allowed to take part in exposure prone procedures such as abdominal surgery. His bid to hide this information and assist in surgery poses a threat to patients. Since patient safety is at risk,disclosure in the public interest allows you to relay this information to the Consultant. If your colleague had excused himself from surgery or had made any effort to stay away from exposure prone procedures, then the options of convincing him to inform the Consultant and Occupational Health are applicable. Other conditions that fall into the same category as Hepatitis C include Hepatitis B and HIV.

It is important to note that confidentiality does not mean secrecy. When asked by a colleague to be spoken to in confidence, it is essential to let the colleague know the circumstances under which the confidentiality will be breached.

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D) Report the incident to the Patient Advisory and Liaison Services (PALS)

E) Request for the patient to be transferred to another unit

Answer:B

Explanation:

It is essential to raise a concern when there are activities that compromise patient care and safety. In this scenario, the first glitch was poor communication to the patient regarding pre-operative preparation for her surgery. This could have resulted in intra-operative and post-operativecomplications. At this level, documentation of this omission and the steps taken afterwards must be recorded in the patient’snotes,as well as through the local incident reporting system. The trigger to raise a concern in this patient is the second incident which put her life at risk. Inadequate monitoring of the patient’s blood sugar plunged her into a serious medical emergency. Suboptimal communication and poor hand-over may have resulted in the less than satisfactory care Mrs Brown received. Concern must be raised by informing the Consultant in charge of the patient and requesting thatrelevant investigations are carried out in order to prevent future occurrences.

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E) Request for the patient to be transferred to another unit

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Explanation:

It is essential to raise a concern when there are activities that compromise patient care and safety. In this scenario, the first glitch was poor communication to the patient regarding pre-operative preparation for her surgery. This could have resulted in intra-operative and post-operativecomplications. At this level, documentation of this omission and the steps taken afterwards must be recorded in the patient’snotes,as well as through the local incident reporting system. The trigger to raise a concern in this patient is the second incident which put her life at risk. Inadequate monitoring of the patient’s blood sugar plunged her into a serious medical emergency. Suboptimal communication and poor hand-over may have resulted in the less than satisfactory care Mrs Brown received. Concern must be raised by informing the Consultant in charge of the patient and requesting thatrelevant investigations are carried out in order to prevent future occurrences.

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C) Discuss the situation with the nurse in charge of the ward and express your dissatisfaction about the way Mrs Brown has been managed

D) Report the incident to the Patient Advisory and Liaison Services (PALS)

E) Request for the patient to be transferred to another unit

Answer:B

Explanation:

It is essential to raise a concern when there are activities that compromise patient care and safety. In this scenario, the first glitch was poor communication to the patient regarding pre-operative preparation for her surgery. This could have resulted in intra-operative and post-operativecomplications. At this level, documentation of this omission and the steps taken afterwards must be recorded in the patient’snotes,as well as through the local incident reporting system. The trigger to raise a concern in this patient is the second incident which put her life at risk. Inadequate monitoring of the patient’s blood sugar plunged her into a serious medical emergency. Suboptimal communication and poor hand-over may have resulted in the less than satisfactory care Mrs Brown received. Concern must be raised by informing the Consultant in charge of the patient and requesting thatrelevant investigations are carried out in order to prevent future occurrences.

Question:

You are the FY2 in the Surgical Department. Mrs Brown was admitted for hip replacement surgery one day ago. This is the first time you are seeing the patient. The notes were not handed over to you by your colleague. While talking to the patient, you realise that she is a known diabetic but has not been made aware that she will be on an insulin drip. She has had breakfast by the time you speak to her and, due to this, the surgery has been postponed to the following day.

The following day, Mrs Brown has the surgery and is transferred to the ward. Within six hours of being on the ward, she has a severe hypoglycaemic episode. On reviewing her charts, you note thatthe blood glucose monitoring regimen instituted by the Consultant was not followed by the nurses. Mrs Brown was resuscitated and continues to be monitoredas instructed. She is currently being managed by a team comprising of the diabetes specialist, orthopaedic team, and the physiotherapist. You are concerned about the care Mrs Brown has received. What should you do?

Which one of the following is correct?

A) Do not need to anything since the issues have been addressed

B) Raise a concern through the appropriate channels indicating what the issues were and how they were addressed

C) Discuss the situation with the nurse in charge of the ward and express your dissatisfaction about the way Mrs Brown has been managed

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Question:

What is the difference between hypertrophy and hyperplasia? Give some examples for each.

Answer:

: Hypertrophy is an increase in the size of an organ due to an increase in cell size but without an increase in cell numbers. Hyperplasia, on the other hand, is an increase in the size of an organ by an increase in the total cell number. The above processes could be either a physiological or a pathological response. The causes for physiological hypertrophy are muscular hypertrophy seen in athletes, and the breast and uterine hypertrophy which occurs in pregnancy. The causes for pathological hypertrophy include cardiomyopathy and congenital muscular dystrophy. Physiological hyperplasia occurs in the thyroid during puberty and pregnancy. Pathological hyperplasia is seen in Graves’ disease and in the endometrium of the uterus which is associated with prolonged use of oestrogen.

Question:

What is your understanding of the shoulder joint and its pathologies?

Answer:

The shoulder joint (Gleno-humeral joint) is a typical synovial joint of the ball and socket variety. Since there is a 4 to 1 disproportion between the large round head of the humerus and the small shallow glenoid cavity, the joint is totally reliant on soft tissue structures for both static and dynamic stability. The capsule is attached around the glenoid cavity and extends onto the base of the corocoid process superiorly to include the biceps attachment (long head). The two major bursae of the shoulder joint are: subacromial (subdeltoid) and subscapular. The subacromial bursa does not normally communicate with the synovial cavity (only communicates if there is tear in the supraspinatus tendon) while the subscapular bursa normally communicates with the synovial cavity.

In painful arc syndrome, there is pain on abduction between 45-160 degrees (middle 1/3 rd of the arc), but the extremes of movements are painless. Abduction is lost in patients with complete tear to the supraspinatus tendon (rotator cuff tear). The patient is unable to initiate abduction of the shoulder because the supraspinatus and the deltoid help the early phase of abduction; supraspinatus causes the first 10-15 degrees of abduction followed by deltoid which helps in further 90-100 degrees of abduction. Anterior dislocation is the commonest type of shoulder dislocation (in contrast to posterior type in the hip joint). Axillary nerve is usually affected in such type of injuries since it lies in contact with the surgical neck of the humerus, just below the capsule of the joint. It supplies the joint, the deltoid and teres minor muscles, and the cutaneous branch (upper lateral cutaneous nerve of the arm) supplies the upper outer aspect of the arm. Dislocations thus cause loss of sensation over this area as well as loss of shoulder abduction (deltoid muscle wasting is seen with long-term axillary nerve injuries). Radial nerve is commonly injured in fractures of the mid-shaft of humerus, as the nerve runs through the radial (spiral) grove.

Question:

What is the difference between a cell cycle and cell differentiation?

Answer:

A cell cycle describes the phases through which the cell progresses before cell division. Cell differentiation is a term that describes the development of a cell with a specialised function that distinguishes it from its parent cell. This occurs as a result of altered expression of selective genes and proteins resulting in the formation of such a cell with a specific function.

Question:

What do you understand by the term ‘apoptosis’?

Answer:

Apoptosis is defined as programmed cell death. This is a normal process occurring during the physiological part of growth and development. It is also a mechanism for removal of cells that contain abnormal DNA. In apoptosis, there is loss of plasma membrane asymmetry and attachment, condensation of the cytoplasm and nucleus, inter-nucleosomal cleavage of DNA (digested into smaller fragments), and the cell eventually fragments into ‘apoptotic bodies’. Apoptosis is an essential part of tissue homeostasis. The constant production of cells by mitosis, and removed by apoptosis, allows a continuous cell turnover that is able to cope with environmental changes. Apoptosis, for example, occurs in the endometrium of the uterus as a natural part of the menstural cycle when levels of hormones fall. It is also responsible for the degeneration of the thymus after childhood.

Question:

What is the difference between apoptosis and necrosis?

Answer:

Apotosis is programmed cell death, a normal process which occurs during the physiological part of growth and development. It is also a mechanism for removal of cells that contain abnormal DNA. Necrosis is cell death occurring as a result of cell injury or exposure to cytotoxic agents. It is therefore pathological and plays no part in normal tissue homeostasis. Necrosis is generally associated with an inflammatory reaction which is not seen in apoptosis. Apoptosis results in the formation of ‘apoptotic bodies’ which are subsequently removed by phagocytes; this process is not associated with the inflammation seen in necrosis.

Question:

What is the role of apoptosis during embryological development?

Answer:

Three types of apoptosis are seen during embryological development and this has important significance: (i) Morphogenic apoptosis occurs when there is structural change in the tissue or organ. This is seen in during cell death of the skin separating fingers, and cell death in the dorsal neural tube leading to tube closure; (ii) Histogenic apoptosis occurs when the tissue or organ undergo differentiation. This occurs in the Mullerian/Wolffian ducts, under hormonal influence, leading to the development of the female/male genital tracts respectively; (iii) Phylogenetic apoptosis occurs when the embryological vestigeal structures are removed, as occurs in the pronephros.

Question:

What are the processes of wound healing?

Answer:

Wound healing is a sequential cascade of overlapping processes which requires the co-ordinated completion of a variety of cellular activities following complex initiating cellular events that include phagocytosis, chemotaxis, mitogenesis, collagen synthesis, and the synthesis of other matrix components. There are four different stages in acute wound healing. They are haemostasis, inflammation, proliferation, and remodelling and scar formation.

Question:

Briefly describe each of the phases of wound healing?

Answer:

Extravasation of blood into a wound causes constriction of nearby vessel walls and initiates the coagulation cascade leading to clot formation and platelet aggregation. The platelets also secrete several growth factors such as PDGF, IGF-1, EGF and TGF-β which initiate the wound healing cascade by attracting and activating fibroblasts, endothelial cells and macrophages.

Haemostasis is followed by the inflammatory phase. Within 24 to 48 hours of injury, the wound is infiltrated with neutrophils. They phagocytose bacteria and other foreign particles by releasing degrading enzymes. The neutrophil activity usually ceases within a few days of wounding after any contaminating bacteria have been cleared. Macrophages (phenotypic variation of monocytes) arrive at the wound site between 48-72 hours. They also function as phagocytic cells as well as producing growth factors responsible for the production and proliferation of extracellular matrix, proliferation of fibroblasts, and stimulating angiogenesis. They release proteolytic enzymes, such as collagenase, which help to debride the wound.

The proliferative phase starts at approximately day three and lasts after wounding for 2 to 4 weeks. This phase is characterised by migration of fibroblasts, extracellular matrix deposition, angiogenesis, and formation of granulation tissue. With progression of the proliferative phase, the provisional fibrin/fibronectin matrix is replaced by newly formed granulation tissue. Epithelialisation (regeneration) of the wound represents the final stage of the proliferative phase.

The final phase is the remodelling phase and maturation of the resulting scar. The remodelling phase is initiated concurrently with the development of granulation tissue, and continues over prolonged periods of time. There is continuous collagen synthesis and breakdown as the extracelluar matrix is constantly remodelled, equilibrating to a steady state approximately 21 days after wounding. Ultimately the granulation tissue scaffolding evolves into an avascular scar which is composed of largely inactive, spindle-shaped fibroblasts, dense collagen, fragments of elastic tissue, and other ECM components.

Question:

What are the different types of wound healing and describe primary wound healing?

Answer:

There are four general types of wound healing: (i) primary (ii) delayed primary (iii) secondary and (iv) healing of superficial wounds. Primary healing, also called healing by first intention, occurs when a wound is closed within 12-24 hours of its creation. This is the type of healing seen in a clean surgical incision or a clean laceration. The wound edges are approximated directly using sutures, tissue glue, tapes or a mechanical device such as staples. The incision causes only focal disruption of epithelial basement membrane continuity, and death of a relatively few epithelial and connective tissue cells. As a result, the healing of the wound is usually complete.

Delayed primary healing occurs in a contaminated or poorly delineated wound that is closed after a few days after being left open to prevent infection. This type of healing is preferred in wounds due to bites or abdominal wounds after peritoneal soiling. The skin and subcutaneous tissues are left unapposed (sutures may be put in place but not tied) and closure is performed after the normal host defences are allowed to debride the wound. The wound edges may even be approximated after a delay of several days.

Question:

What is secondary wound healing and in which circumstances would you prefer such healing?

Answer:

Secondary healing, also called as healing by second intention, is seen in a wound which is left open to granulate and heal on its own. This is usually done to wounds with extensive soft tissue loss as seen in major trauma or after some surgical procedures such as a laparostomy wound. Since regeneration of epithelial cells alone cannot restore the original architecture, in secondary healing, the wound closes by both wound contraction and epithelialization. Myofibroblasts play a key role in this type of healing leading to wound contracture. Healing by secondary intention is slower, may lead to contractures and functional restriction.

Question:

What is a chronic wound and what causes a chronic wound?

Answer:

A chronic wound is defined as one in which the normal process of healing is disrupted at one or more points in the phases of haemostasis, inflammation, proliferation, or remodelling. In the majority of chronic wounds, the healing process is considered being ‘stuck’ in the inflammatory or proliferative phases. Since growth factors, cytokines, proteases, and cellular and extracellular elements all play important roles in different stages of the healing process, alterations in one or more of these components could account for the impaired healing observed in chronic wounds. In addition, oxidative damage by free radicals or condition specific factors such as neuropathy in diabetes or ischemia in peripheral vascular disease may lead to the non-healing nature of chronic wounds.

Question:

Define Systemic Inflammatory Response Syndrome?

Answer:

Systemic inflammatory response syndrome (SIRS) is a generalised inflammatory response by the body resulting from a variety of clinical insults such as shock, trauma, burns, infection (bacterial, viral, fungal), pancreatitis, and tissue ischaemia. The patient may have one or more of the following features:

Temperature > 38 o C or < 36o C

Heart rate >90 beats/min

Respiratory rate >20 or PaCo2 < 4.3 kpa

WCC > 12, 000 or < 4,000 x 109/L

Question:

What is sepsis and what is the commonest cause of sepsis?

Answer:

Sepsis is defined as systemic inflammatory response syndrome (SIRS) with documented infection, i.e. the systemic response to an infection of some kind. Bacterial infection is the commonest cause of sepsis. Although Gram negative bacteria were considered to the major cause of sepsis earlier, it has been recognised that Gram positive bacteria account for the same percentage of cases as Gram negative bacteria. Together they account for more than 95 % of cases of sepsis; the rest being fungal or viral. Septic shock is SIRS with documented infection, but also including hypotension despite adequate fluid resuscitation, and abnormal or inadequate organ perfusion/hypoperfusion.

Question:

What do you know about cytokines, and what is their role in the aetiology of SIRS and sepsis?

Answer:

Cytokines are low molecular weight proteins. They are very potent with a short half-life, and are the local factors involved in the inflammatory and immune responses. They act via complex and interactive pathways, with positive feed-back and amplification, similar to the complement cascade. Cytokines are responsible for the inflammatory response observed in SIRS and sepsis. Initially, a local inflammatory response is triggered by the cytokines leading to the induction and release of neutrophils and macrophages. Then the inflammatory response becomes progressively more systemic and uncontrolled, leading to an overwhelming response involving IL-6, IL-8, IL-1 and TNF-α . The cytokines are responsible for a whole host of local and systemic effects, including vasodilatation, increased capillary permeability, impaired oxygen utilization and myocardial depression.

Question:

How would you recognise a septic patient?

Answer:

A septic patient would appear generally unwell. In the early stages, the patient may present with SIRS, tachycardia, hypotension, tachypnoea (maybe with accompanying hypoxia) with warm bounding peripheral pulses as a result of peripheral vasodilatation. This is related to the hyperdynamic circulation associated with decreased systemic vascular resistance and peripheral vasodilation, and an increased cardiac output. This type of shock was previously referred to as ‘hot shock’ since this type of clinical picture is in contrast to the decreased cardiac output and peripheral vasoconstriction (leading to cold peripheries) observed in other types of shock. In addition, hyperthermia may be seen, or more rarely, and a poor prognostic sign, hypothermia. In the later stages of septic shock, the patient may be hypotensive with peripheral vasoconstriction, especially if the patient is hypovolaemic or myocardial function is compromised. Other pertinent clinical signs and symptoms include oliguria, drowsiness and confusion.

Question:

What investigations would you do in a patient with suspected septic shock and what might these results show?

Answer:

I would ask for a full blood count, coagulation screen, urea and electrolyte balance, liver function tests, arterial blood gas analysis and request a chest X-ray if the patient in manifesting any evidence of respiratory compromise or early symptoms of ARDS. Typically a full blood count would show a high WCC, with neutrophilia, although there might be neutropenia in overwhelming sepsis. The platelet count may be decreased. The coagulation screen may reveal an increased INR and other decreased clotting factors, due to septic coagulopathy and disseminated intravascular coagulation, although in the late stages of septic shock an altered coagulation picture might be due to hepatic involvement (dysfunction). Urea and electrolyte results may show varying degrees of renal impairment, or indicate an element of dehydration if urea and sodium are raised disproportionately compared to the creatinine. Arterial blood gas analysis may reveal a metabolic acidosis with or without compensatory respiratory alkalosis (due to hyperventilation leading to a reduced PCO2). The lactic acid levels may be elevated due to tissue hypoxia and anaerobic metabolism. A chest X-ray may reveal some haziness in the lung fields (mostly bilaterally) due to the inflammatory response or frank signs of pulmonary oedema. In the later stages, there may be associated pleural effusion and consolidation of one or more lung fields due to pneumonia.

Question:

What is the difference between tissue ischaemia and tissue infarction?

Answer:

Ischaemia is the reduction of blood supply to an organ or tissue so that the metabolic demands of the tissue and their oxygen requirements are not met but there is sufficient supply to prevent infarction. Infarction results from total cessation of blood supply (extreme ischaemia) resulting in tissue necrosis.

Question:

What are the causes of tissue ischaemia?

Answer:

This can be classified based on the aetiology into an arterial, capillary or a venous cause. The causes for ischaemia due to arterial compromise include thrombosis, atheroma and embolus. The causes for capillary obstruction leading to ischaemia include external pressure leading to pressure ulcers, digital capillary damage leading to frostbite, vasculitis from meningococcal septicaemia, sickle cell disease and malaria (cerebral capillaries). The causes for venous ischaemia include: strangulated hernia, mesentric thrombosis, volvulus, intussusception, and thrombosis of the intracranial venous spaces (e.g., longitudinal sinus thrombosis and cavernous sinus thrombosis).

Question:

What is an embolus?

Answer:

An embolus is an abnormal mass of undissolved material that is carried in the bloodstream from one site to another. If the embolus impacts in an organ such as the lung it could lead to ischaemia or infarction. About 95% of all emboli are thrombi or a mixture of thrombus and clot. An embolus may also result from a tumour (usually carcinoma), fat or bone marrow from fractured long bones or as a result of an orthopaedic procedure such as intra-medullary nailing, atheromatous material from ruptured plaques (commonly affecting the mesenteric vessels from aortic plaques), air from opened neck veins from trauma or peritoneal insufflation, nitrogen in Caisson disease, amniotic fluid during child-birth, parasites or other organisms in the blood stream, and foreign body due to any cause.

Question:

What is an amyloid?

Answer:

An amyloid is the deposition of a group of pathological proteins within affected tissues. It may be local or systemic, and interferes with the structure and function of the affected tissue or organ, usually by accumulating in the basement membrane of the tissues concerned. They can be classified into local and systemic amyloidosis.

Question:

What are the differences between local and systemic amyloidosis?

Answer:

Local amyloid deposits can occur in any particular organ. It may result from tumours which produce peptide hormones such as medullary carcinoma of the thyroid which affects the calcitonin-producing C cells. It is also seen in the cerebrum of people affected by Alzheimer’s disease manifesting as senile plaques and deposits within the cerebral arteries.

Systemic amyloidosis involves the deposition of amyloid in various organs such as the spleen, liver and heart, although any organ could be affected. It results in enlargement of the affected organ and organ failure ensues as the tissue hardens. The cause for systemic amyloidosis are: (i) secondary (due to chronic inflammatory disease processes such as bronchiectasis, rheumatoid arthritis and TB); (ii) hereditary (familial Mediterranean fever and Portuguese nephropathy); (iii) haemodialysis- related (due to deposition of ß2 microglobulin); (iv) myeloma- related (produced by myelomas) and (v) senile amyloidosis (usually affects the heart and arterial system in the elderly although it is rarely symptomatic).

Question:

Describe the structure of an amyloid?

Answer:

Amyloids, which form characteristic ß pleated sheets, have a fibrillar ultrastructure and is made up of proteins such as serum amyloid proteins A and B, peptide hormones, and immunoglobulin light chains. The type of protein involved varies with the aetiology: amyloid protein A is found in secondary amyloidosis due to inflammatory conditions (AA amyloid) and AL amyloid, derived from the excessive amount of light- chain monoclonal immunoglobulins, found in myeloma-related amyloidosis.

Question:

What signs or symptoms would lead you to a suspicion or diagnosis of amyloidosis? How would you diagnose it?

Answer:

A patient with amyloidosis may present with carpal tunnel syndrome, organomegaly (especially hepato-spleenomegaly), renal failure, cardiac failure, macroglossia, and purpura. If the patient has any risk factors for amyloidosis (e.g., chronic inflammatory conditions such as rheumatoid arthritis or myeloma), and have one or more of the above features, then a diagnosis of amyloidosis need to be considered. Rectal biopsy is a very useful investigation in the diagnosis of amyloidosis. Amyloid has a characteristic apple-green birefringence on Congo red staining. Addition of iodine alone stains mahogany brown; if dilute hydrochloric or sulphuric acid is added, it turns blue-violet. A diagnosis of amyloidosis can also be made from biopsies of the affected organ and demonstrating the characteristic ß pleated sheets under the electron microscope. It may also be possible to determine precisely where the amyloid originated from using special staining techniques.

Question:

What are two most common types of excessive scarring and what are their causes?

Answer:

The two most common forms of abnormal scars are the hypertrophic scars and keloids. They are forms of excessive healing resulting from overproduction of all components of the healing process including fibroblasts, collagen, elastin and proteoglycans.

Question:

What are the differences between hypertrophic scars and keloids?

Answer:

There are a number of differences between hypertrophic scars and keloids:

Hypertrophic scars usually develops within weeks after injury but keloids can develop up to one year later

Hypertrophic scars are usually seen in the flexor surfaces while keloids have a predilection for the sternum, shoulder and earlobes

Hypertrophic scars do not extend beyond the margins of the origin wound (scar) whilst keloids are a form of benign dermo-proliferative tumours which extend well beyond the margins of the original wound. In predisposed people, even a trivial injury can predispose to the formation of a keloid

Question:

What factors predispose to the formation of hypertrophic scars and keloids?

Answer:

The incidence of HTS is highest in wounds crossing tension lines, areas of increased skin tension and movement, deep dermal burns and wounds that have been left to heal by secondary intention. In addition, factors causing local inflammation such as persistent irritation, haematoma, infection, wound dehiscence and foreign bodies also predispose to a HTS. Keloids, however, do not have a specific aetiological factor although there is an almost certain genetic predisposition and is more common in dark skinned races. HTS may subside with time and respond to conservative treatment. However, no treatment is proven to be useful in the management of keloids.

Question:

What is adult respiratory distress syndrome?

Answer:

Adult respiratory distress syndrome (ARDS) is an acute, diffuse inflammatory process resulting from direct or indirect pulmonary injury. It is also defined as non-cardiogenic pulmonary oedema with a normal pulmonary artery wedge pressure, and characterized by stiff lungs, respiratory hypoxia and diffuse pulmonary infiltrates on chest X-ray. ARDS is characterised by refractory hypoxemia (PaO2 <8 kPa at FiO2 >0.4), alveolar inflammation and oedema, reduced total compliance (<30 ml/cm water) and a PaO2 (in mmHg)/FiO2 ratio of <200 (normal is approximately 500). Pulmonary fibrosis in the later stages of the disease leads to a decrease in the functional residual capacity, further decrease in lung compliance, and an increase in the shunt effect. Pulmonary signs are often minimal or non-specific, the patient simply being breathless, progressively tachypnoeic, hypoxic and then cyanotic. Chest X-ray may be normal in the early stages but later shows bilateral diffuse pulmonary infiltration.

Question:

What are the causes for adult respiratory distress syndrome?

Answer:

Adult respiratory distress syndrome is most commonly seen in patients with sepsis but can also occur after trauma, burns, inhalation injuries, shock and pancreatitis. In post-operative surgical patients, abdominal sepsis or central line sepsis should be considered.

Question:

Briefly describe the pathophysiology of adult respiratory distress syndrome?

Answer:

Indirect or direct lung injury initiates an abnormal behaviour and movement of neutrophils, platelets and macrophages. Neutrophils and platelets attach to capillary endothelium causing capillary leakage. This leads to oedema of lung tissue and movement of neutrophils and erythrocytes into the lung parenchyma. Lung lymph flow is increased with thickening of the alveolar-capillary membrane. This results in impaired oxygen diffusion and reduced lung compliance as the alveolus is surrounded by fluid. In addition, some of the fluid in the pulmonary parenchyma may leak into the alveoli, giving the characteristic appearance of a hyaline membrane.

Question:

Briefly describe the principles of managing adult respiratory distress syndrome?

Answer:

Treatment, in addition to eliminating the precipitating aetiology, involves ventilating the patient in intensive care. Some general and systemic measures include: (i) providing respiratory support (mechanical ventilation, PEEP, permissive hypercapnoea, prevent barotrauma, and inverse ratio ventilation to help alveolar recruitment); (ii) avoidance of pulmonary oedema by restricting fluid and diuretics; (iii) keeping the tidal volume low (approximately 6 mls/kg); (iv) maintaining a low pulmonary capillary wedge pressure (high exacerbates pulmonary oedema); (v) nursing the patient in prone position to redirect blood flow to minimise shunting; (vi) physiotherapy (although not useful in the early stages but effective in the later stages to remove secretions); (vii) inhaled nitric oxide to improve ventilation-perfusion ratio with pulmonary vasodilation; (viii) aerosolised surfactant and prostocycline has also been used but the evidence is limited. Despite appropriate treatment, the mortality of this condition is as high as 50-70%.

Question:

Briefly describe your understanding of gangrene and its common forms.

Answer:

Gangrene implies death with putrefaction of macroscopic portions of tissue. A gangrenous part lacks arterial pulsation, venous return, sensation, warmth and function. The two commonest forms of gangrene are: Dry gangrene and wet gangrene. Dry gangrene occurs when the tissues are desiccated by gradual slowing of the bloodstream; it is typically the result of atherosclerosis and not related to infection. Moist gangrene occurs when venous as well as arterial obstruction is present, when the artery is suddenly occluded, as by a ligature or embolus, and in diabetes. In moist gangrene, superseded infection and putrefaction are more likely, the affected part becomes swollen and discoloured, and the epidermis may be raised in blebs. Diabetic gangrene (usually dry to start with but may become wet gangrene due to superseded infection) is due to three factors: trophic changes resulting from peripheral neuritis; atheroma of the small arteries resulting in ischemia and; excess sugar lowering the resistance to infection. Diabetic gangrene of the toes can occur in the presence of palpable peripheral pulses (absence implies associated major arterial disease).

The other important form of gangrene is known as gas gangrene. Clostridium perfringens, widely found in nature, particularly soil and faeces, is the cause of gas gangrene in about 80 percent of cases. Wound infections in gas gangrene are associated with severe local wound pain and crepitus; gas in the tissues may be noted on plain radiographs. Synergistic spreading gangrene (necrotising fasciitis; Synonyms: Meleney’s gangrene for abdominal wall infections and Fournier’s gangrene for scrotal infections) is usually caused by a mixed pattern of organisms – coliforms, staphylococci, Bacteriodes spp., anaerobic streptococci, and pepto-streptococci. In synergistic spreading gangrene, the extent of subdermal spread of gangrene is always much more extensive than at first apparent. Surgical debridement, wide excision and laying open of the affected tissue, combined with broad-spectrum antibiotic therapy and aggressive circulatory support may be necessary to save life; skin grafting, after resolution of acute symptoms, may be needed to cover the large, excised areas. Meleney’s gangrene still carries 30 - 40% mortality.

Question:

What do you know about bone infection (osteomyelitis) in children?

Answer:

Acute osteomyelitis in children is most commonly caused by Staphylococcus aureus infection. The other important causative organisms include Streptococcus pyogenes or pneumoniae, E. coli, Haemophilus influenzae, Salmonella, Proteus, Pseudomonas and anerobes. It may be acquired by the haematogenous route, direct skin puncture following injury or from infection from adjacent soft tissues. It usually commences in the metaphyseal region of long bones since in children the terminal branches of the nutrient artery of the shaft are end arteries and are subject to pathological phenomena such as infection, embolism and infarction. As the bacteria multiply, an acute inflammatory response is mounted with vascular engorgement, oedema and polymorphonuclear cell aggregation. Tissue cell death occurs secondary to ischemia from both venous and arterial obstruction. The resultant abscess gradually enlarges and may spread to the subperiosteal space, to the medulla, and to the joint itself through vessels which cross the growth plate and epiphyseal cartilage. If the joint is affected, the child may refuse to walk or to move the affected limb.

Radiological appearances in osteomyelitis are normal in the early stages. Sequestrum and involucrum are features of chronic osteomyelitis (sequestrum is a necrotic nidus of bone within a focus of chronic osteomyelitis while an involucrum is a cloak of new bone produced by the periosteum around the infection). The growth disturbance which may follow infection during infancy depends upon the volume of the growth plate affected, the location of the destructive process, and how badly the epiphysis and its cartilage canal systems are invaded and destroyed. This could either lead to overgrowth of the limb due to stimulation of the growth plate or deformity due to growth plate damage.

Question:

What is your understanding of shock and briefly explain the types.

Answer:

Shock is defined as inadequate organ perfusion and tissue oxygenation. The common types of shock are: hypovolemic, cardiogenic, septic, neurogenic, anaphylactic and obstructive. True neurogenic shock follows spinal transaction or brainstem injury with loss of sympathetic outflow beneath the level of injury and consequent vasodilatation. The rapid increase in size of the vascular bed, including venous capacitance vessels, leads to a reduction in the venous return and cardiac output. Hypovolemic shock is classified into four classes (I to IV) depending on the amount of blood loss (Class I: <750 mls; Class II: 750–1500 mls; Class III: 1500-2000 mls; Class IV: >2000 mls). In class I the signs and symptoms are very minimal. In class II, the systolic blood pressure is normal but the diastolic is raised (reduced in classes III and IV). A thready pulse of >120 beats/min indicates Class IV shock (the rate is about 100 beats/min in class II, and weak and >120 beats/min in class III shock).

In septic shock, an early effect of cytokine and other mediators is to cause a fall in the systemic vascular resistance (SVR) due to vasodilatation. The decrease in SVR reduces the afterload on the heart and leads to a reflex increase in cardiac output. Noradrenaline, which causes stimulation of alpha (and to a lesser extent beta-1) receptors, causes a marked increase in the SVR with increase in blood pressure and therefore an increase in left ventricular afterload. Therefore, it is a useful drug in septic shock, but not in hypovolemic shock where there is vasoconstriction. Myocardial infarction (MI), myocardial contusion, chronic cardiac failure, arrhythmia etc. are common causes of cardiogenic shock, of which MI is the commonest cause in surgical patients.

Question:

Briefly explain your understanding and the importance of scaphoid fractures.

Answer:

The scaphoid is the most frequently fractured carpal bone, accounting for approximately 80% of all carpal bone fractures. It is more common in young male adults after a fall, athletic injury or road traffic accident. The mechanism of injury is usually a fall on to the outstretched hand, with the wrist extended to at least 95 degrees. The classical signs of scaphoid fractures are pain on wrist movements, swelling (fullness) of the anatomical snuff box region and tenderness on direct pressure over this region with worsening of the pain when the wrist is ulnar deviated. If initial X-rays are negative (as happens in a majority of cases) and scaphoid fracture a strong possibility, treatment in a scaphoid plaster cast for two weeks followed by repeat X-ray is recommended by which time the fracture may be visible. If the X-ray is still inconclusive, bone scan, CT or MRI may be required to confirm the diagnosis.

The majority of stable, nondisplaced, acute scaphoid fractures heal with conservative treatment. As a general rule, well-managed fractures involving the distal pole have a nearly 100% healing rate, while fractures of the waist have an 80-90% healing rate and proximal pole fractures treated by immobilisation have only a 60-70% rate of union. In cases of non-union, a bone graft or internal fixation using a Herbert screw may be required. The blood supply to the scaphoid is from the radial and anterior interosseous arteries, with 70% of the blood supply entering through the distal ridge. Normally no vessels enter through the proximal pole, and there is no intraosseous anastomosis between the vessels entering the tuberosity and dorsal ridge. The proximal pole receives its blood supply via retrograde flow from vessels that enter the cortex at or distal to the scaphoid waist; therefore, fracture through the waist causes devascularisation of the proximal pole resulting in avascular necrosis (this also explains the high healing rate in distal scaphoid fractures). Degeneration of the wrist and early osteoarthritis are also recognised complications of scaphoid fractures.

Question:

What is your understanding of intracranial pressure and its monitoring?

Answer:

Extradural and subdural haematomas, or any condition leading to cerebral oedema or cerebral engorgement could lead to a rise in the intracranial pressure (ICP). Likewise, obstruction to the cerebrospinal fluid (CSF) pathway could lead to a raised ICP, although this is uncommon after head injuries. In the early stages of head injury, there is a non-linear relationship between an expanding haematoma and elevation of ICP – a haematoma may expand without any significant rise in pressure. Once this early compliance is lost, the pressure will rapidly rise. This severely jeopardises cerebral perfusion: cerebral perfusion pressure (CPP) is equal to mean arterial blood pressure minus ICP (normal CPP is approximately 70 mmHg and the normal ICP in adults is 10-15 mmHg). Therefore, any rise in ICP will cause a corresponding fall in CPP.

As ICP rises, CSF is driven out of the intracranial compartment – the first stage of compensation. This follows the Monro-Kellie hypothesis which states that ‘the sum of intracranial volumes of blood, brain, CSF and other components is constant, and that an increase in any one of these must be offset by a corresponding decrease in another, or else ICP will rise’. With a continuing rise in ICP, brain shifts occur within the cranial cavity. The most important of these brain shifts is uncal transtentorial herniation or ‘coning’. This causes impairment of conscious level, development of an ipsilateral fixed dilated pupil (due to third nerve compression), hemiparesis of the contralateral side (due to compression of the cerebral peduncle), and later cardiovascular and respiratory abnormalities (Cheyne Stokes breathing) due to brain stem compression. The agonal event is often accompanied by hypertension and bradycardia – Cushing’s reflex. Frank papilloedema may be seen at this stage.

Question:

Briefly describe your anatomical understanding of the anterior abdominal wall and its clinical significance.

Answer:

The anterior abdominal wall is comprised of four muscles on each side of the midline: three of these are arranged in layers in the lateral part of the abdominal wall – external oblique, internal oblique, and transversus abdominis. As these muscles traverse medially, the fleshy part gives way to an aponeurosis which forms a sheath (rectus sheath) around the fourth muscle – the rectus abdominis. The rectus sheath also contains the superior and inferior epigastric vessels, the lower six intercostal (thoracic) nerves and the small pyramidalis muscles. Between the two recti, all the aponeuroses fuse to form the linea alba, a strong midline fibrous structure. Median incisions through the linea alba are relatively bloodless and allow access to all four abdominal quadrants. The transversalis fascia is a complete fascial sheet lying deep to the abdominal wall muscles surrounding the peritoneal cavity.

The composition of the rectus sheath varies at different levels. The posterior wall of the rectus sheath thins out abruptly a short distance below the umbilicus to form the arcuate line. Above this line, the posterior wall of the sheath comprises the transversus abdominis aponeurosis and the posterior layer of the internal oblique aponeurosis. Below the arcuate line, all three aponeuroses pass anterior to the rectus and thus at this level the posterior surface of the rectus muscle is in direct contact with the transversalis fascia. Above the umbilicus, the superficial tissues of the anterolateral abdominal wall drain to the pectoral group of axillary nodes and below the umbilicus, to the superficial inguinal nodes. The deeper parts of the wall, above the umbilicus, pierce the diaphragm to reach the mediastinal nodes and below it they run to the external iliac and para-aortic nodes. Umbilical tumours (squamous carcinoma) metastasise to the inguinal nodes.

Question:

Explain briefly your understanding of bilirubin metabolism by the liver and its associated pathology.

Answer:

Unconjugated bilirubin is the main breakdown product of the haem moiety of haemoglobin and is derived mostly from effete erythrocytes. Unconjugated bilirubin is insoluble in water and is transported bound to albumin in the plasma. Unconjugated bilirubin is transported across the hepatocyte membrane by a carrier protein, where it is bound to glutathione transferases, enters the endoplasmic reticulum, and is conjugated to bilirubin monoglucuronide and bilirubin diglucuronide, both of which are water soluble. Unconjugated hyperbilirubinaemia is caused by overproduction of bilirubin usually as a result of haemolytic disease such as spherocytosis, thalassemia and sickle cell disease. In such disorders, the liver is presented with an excessive load of bilirubin which is unconjugated and therefore absent from the urine. However, a healthy liver attempts to conjugate the majority of the bilirubin presented to it and thus the faecal stercobilinogen and urinary urobilinogen levels are raised (gut bacteria causes conjugated bilirubin to form urobilinogen, of which 20% is excreted in urine and 80% is excreted in stools; urobilinogen on oxidation forms urobilin which is colourless).

Post-hepatic jaundice (due to bile duct obstruction, strictures, and pancreatic, bile duct and ampullary malignancies) causes a conjugated hyperbilirubinaemia with bilirubin in the urine, causing dark urine; bilirubin is absent in the stools, leading to pale stools. Pruritus is an important feature of both hepatic and post-hepatic cholestasis. Itching which is related to bile salt deposition within the skin is most severe on the extremities and worse in warm weather. When jaundice is caused by a stone in the common bile duct (CBD) dilatation of the gallbladder is rare, but when the duct is obstructed in some other way (e.g.carcinoma of the ampulla, pancreas or bile duct) dilatation is common (Courvoisier’s law). This is because stones in the CBD lead to fibrosis and atrophy of the gall bladder.

Question:

Briefly explain your anatomical understanding and common pathologies affecting the knee joint.

Answer:

The knee joint is a synovial and a hinge joint. The capsule of the knee joint is thin anteriorly and posteriorly but reinforced on either side by strong collateral ligaments. Both the anterior and posterior cruciate ligaments are intracapsular, but extrasynovial. The medial and lateral menisci are C-shaped with their anterior and posterior horns attached to the intercondylar eminence of the tibia and their outer borders to the joint capsule. The meniscofemoral ligament is adjacent to the posterior cruciate ligament and attaches the posterior border of the lateral meniscus close to the femoral attachment of the posterior cruciate ligament. It stabilises the meniscus during rotation of the femur on the tibia. The oblique popliteal ligament is a lateral expansion from the insertion of semimembranosus which slopes up to the popliteal surface of the femur. The obliquity of this ligament limits rotation-extension in the ‘screw-home’ or locked position.

The anterior cruciate ligament, running upwards and backwards from the anterior part of the tibial plateau towards the lateral condyle of the femur, prevents backward displacement of the femur on the tibial plateau. It also limits extension of the lateral condyle of the femur and of then causes medial rotation of the femur in the ‘screw-home’ position of full extension. The posterior cruciate ligament, running obliquely from the posterior part of the tibia towards the medial condyle of the femur, prevents the femur from sliding forwards off the tibial plateau. In the weight-bearing flexed knee it is the only stabilising factor for the femur and its attached quadriceps. The suprapatellar bursa is continuous with the synovial cavity of the joint, and it thereby provides a route for injecting or withdrawing fluid into or from the joint. After injuries to the joint, fluid accumulates (effusion) in the suprapatellar bursa, causing typical fullness around the knee. The pre- and infrapatellar bursae, however, do not communicate with the joint.

Question:

Please explain your understanding of Adult respiratory distress syndrome.

Answer:

Adult respiratory distress syndrome (ARDS) is an acute, diffuse inflammatory process resulting from direct or indirect pulmonary injury. It is most commonly seen in sepsis but can also occur after trauma, burns, inhalation injuries, shock and pancreatitis. In post-operative surgical patients, abdominal sepsis or central line sepsis should be considered. Indirect or direct lung injury initiates an abnormal behaviour and movement of neutrophils, platelets and macrophages. Neutrophils and platelets attach to capillary endothelium causing capillary leakage. This leads to oedema of lung tissue and movement of neutrophils and erythrocytes into the lung parenchyma. Lung lymph flow is increased with thickening of the alveolar-capillary membrane. This results in impaired oxygen diffusion and reduced lung compliance as the alveolus is surrounded by fluid. In addition, some of the fluid in the pulmonary parenchyma may leak into the alveoli, giving the characteristic appearance of a hyaline membrane.

ARDS is characterised by refractory hypoxemia (PaO2 <8 kPa at FiO2 >0.4), alveolar inflammation and oedema, reduced total compliance (<30 ml/cm water) and a PaO2 (in mmHg)/FiO2 ratio of <200 (normal is approximately 500). Pulmonary fibrosis in the later stages of the disease leads to a decrease in the functional residual capacity, further decrease in lung compliance, and an increase in the shunt effect. Pulmonary signs are often minimal or non-specific, the patient simply being breathless, progressively tachypnoeic, hypoxic and then cyanotic. Chest X-ray may be normal in the early stages but later shows bilateral diffuse pulmonary infiltration. Treatment, in addition to eliminating the precipitating aetiology, involves ventilating the patient in intensive care. Patients are usually nursed in prone position. The tidal volume should be kept low (approximately 6 mls/kg) and so should be the pulmonary capillary wedge pressure (high exacerbates pulmonary oedema). The mortality of this condition is as high as 50-70%.

Question:

Briefly describe your understanding of the phrenic nerve.

Answer:

The phrenic nerve arises in the neck from C3, C4 and C5 nerve roots. It lies on the scalenus anterior muscle and enters the thorax between the subclavian artery and the subclavian vein. The nerve then courses down the mediastinum lying anterior to the hilum of the lung, and is squeezed between the pleura and the pericardium. The right phrenic nerve then leaves the thorax along with the inferior vena cava by passing through the vena cava hiatus opening in the diaphragm at the level of T8 vertebra. The left phrenic nerve passes through the muscular part of the diaphragm separately. The phrenic nerve supplies the diaphragm and it is its only motor nerve. It also sends sensory fibres to the mediastinal pleura and pericardium along its course between the pleura and the pericardium. Some sensory fibres are also given off to the diaphragm and the peritoneum. Clinical conditions that cause irritation of the diaphragm (e.g., subphrenic abscess) may lead to referred pain to other somatic regions (such as the shoulder tip) served by the spinal nerves C3, C4 and C5. Irritation of the phrenic nerve (or the tissues supplied by it) can also lead to the hiccup reflex. Injury to the phrenic nerve such as during thoracic surgery may lead to paralysis of that half of the diaphragm leading to breathing difficulties.

Question:

Describe briefly your understanding of the term ‘cervical rib’.

Answer:

A cervical rib is an extra (abnormal) rib that arises from the seventh cervical vertebra (normally, the ribs arise from the 1st thoracic vertebra) and located above the normal first rib. It is a congenital abnormality present in about 1 in 200 people. A cervical rib can compress the brachial plexus or the subclavian vessels causing signs and symptoms in the limb on the affected side. The lower trunk or the medial cord of the brachial plexus is frequently affected leading to motor and sensory symptoms along the median and ulnar nerve distributions. In the hand, this may manifest as wasting of the small muscles of the hand, wasting of the thenar and hypothenar eminences and altered sensation over the digits. Patients may also complain that they are unable to grip objects or to pick small objects. Compression of the subclavian artery may lead to pale and cold hands. The radial pulse in the wrist may be felt to disappear when the patient’s arm is abducted and externally rotated (Adson's sign). This sign can also be demonstrated by asking the patient to take a deep breath and hold it for about 15 to 30 seconds whilst simultaneously extending and flexing the neck to one side (Adson’s test). The cervical rib may not be picked up on a plain radiography as they may be cartilaginous (or a fibrous band). In such instances, an MRI scan is useful in diagnosing the condition. MRI or a CT scan can distinguish cervical root injury from degenerative spurs, herniated discs or other aetiologies.

Question:

What is the difference between a carcinoma and a sarcoma?

Answer:

A carcinoma is a malignant tumour of epithelial cells while a sarcoma is a malignant tumour of connective tissue cells. A carcinoma can also arise in organs derived from the mesoderm; examples include carcinoma ovaries, endometrium, and fallopian tube, and carcinoma of the kidney.

Question:

Briefly describe some histological features seen in a malignant tumour?

Answer:

There may be increased mitosis, abnormal mitosis (tripolar, tetrapolar, sunburst, bizarre), an increase in the nuclear-cytoplasmic ration, pleomorphism (variance of size and shape of tumour cells), and hyperchromatism (increased amounts of DNA leading to dark-stained nuclei). In addition, there may be focal or extensive areas of haemorrhage and necrosis due to abnormal vascularity. The tissues may also have infiltrative borders.