

- Conduct an effective plan of management for a patient with dementia with memory/behaviour disturbances:
 - Outline management based on the patient's current and future levels of disability, taking into account the wishes of the patient, the primary carer/family, and available community resources.
 - Financial, legal and vehicle driving issues need to be considered.
 - Appreciate the indications, risk and benefits of the various psychotropic agents which may be of value with specific symptoms.
 - Counsel and educate patients, carers and families about the natural history of the disease and future care options.
 - Continue to provide support and advice to carers.
 - Consider end of life decisions and anticipate death and bereavement issues.

Overview

A call requesting assistance in the delivery room following the birth of a newborn may be 'routine' or because the neonate is apparently depressed and requires resuscitation. For any type of call, the doctor needs to be prepared to manage potential problems.

Causes

1) Respiratory problems

(see #023A Cyanosis/Hypoxia / Apnoea in Children)

- a) Birth asphyxia or central nervous system (CNS) depression (maternal drugs)
- b) Meconium aspiration
- c) Sepsis
- d) Pneumothorax

2) Severe anaemia (erythroblastosis fetalis and secondary hydrops fetalis)

3) Seizures

4) Congenital malformations including congenital heart disease / birth injury

5) Shock – including that due to feto-maternal haemorrhage

6) Other (hypothermia, hypoglycaemia, small for dates neonate)

Key Objective

- Elicit selective maternal history, determine fetal vital signs, rapidly assess for possible causes of the neonate's condition and initiate supportive measures for the infant.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Elicit a maternal history including maternal illnesses, maternal use of drugs, previous high-risk pregnancies, infections during pregnancy or now, how long have membranes been ruptured, mother's blood type and Rh status, evidence of polyhydramnios or oligohydramnios, gestational age, any meconium, etc.
 - Identify significant causes of cardiorespiratory depression in the newborn.

- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - Outline the appropriate investigation of various causes of a 'depressed' newborn and interpret the results.
- Conduct an effective plan of management for a 'depressed' newborn:
 - Differentiate management of respiratory failure in the presence and absence of thick meconium.
 - Select patients in need of specialised care and initiate respiratory and circulatory support prior to transfer of the infant for special care.
 - Counsel and provide explanation to family of the neonate's condition.

(See also #014 Behaviour Disorder)

Overview

A clinician is expected to assess development in an infant in order to diagnose developmental delay.

Causes

1) Global delay

- a) Environment (neglect, understimulation)
- b) Chromosome disorders (e.g. trisomy 21)
- c) Genetic syndromes
- d) Mental retardation, central nervous system (CNS) abnormalities
- e) Inborn errors of metabolism / Hypothyroidism

2) Speech delay

- a) Isolated speech delay
- b) Sensory impairment (auditory/visual)
- c) Autistic spectrum disorders (infantile autism)

3) Motor delay (Duchenne disease, cerebral palsy)

Key Objectives

- Using knowledge of normal child development, determine which children have evidence of developmental delay.
- Determine whether the delay is global, isolated to speech/language or motor delay, or includes abnormal social interaction.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Determine whether there is chronic illness, family history of developmental delay, or risk factors for mental retardation.
 - Determine whether there was a congenital infection or HIV infection.
 - Determine whether there were factors predisposing to speech delay (e.g. ototoxic drugs, recurrent otitis, mastoiditis).
 - Perform a developmental assessment to confirm or disprove developmental delay.

- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - Determine if there is reason to suspect child abuse or neglect.
 - List indications for referral for audiology assessment and referral to speech and language pathologist.
- Conduct an effective plan of management for a patient with development disorder / developmental delay:
 - Select children in need of specialised care.
 - Once a diagnosis of global delay is made outline for parents, along with other caregivers, a management plan which includes (when appropriate) medical care, multidisciplinary services, family support, child placement, and academic support.
 - In a child with speech/language developmental delay, outline with the assistance of specialised caregivers, a management plan which includes (when appropriate) speech therapy, amplification devices, family support, and educational modification.

027A Acute Diarrhoea

Overview

Diarrhoeal diseases represent the second most common cause of death worldwide and the leading cause of childhood death. Acute diarrhoea is defined as more than two to three stools per day for up to three weeks. Chronic diarrhoea lasts over four weeks. International travellers frequently suffer from acute attacks of diarrhoea in areas where sanitation and hygiene are poor due to a variety of bacteria, viruses and parasites.

Causes

- 1) Dietary indiscretion**
- 2) Laxatives (osmotic diarrhoea – e.g. magnesium sulphate, lactulose)**
- 3) Infectious**
 - a) Viral (rotavirus, cytomegalovirus (CMV), AIDS)
 - b) Travellers' diarrhoea
 - *Escherichia coli*, enterotoxigenic
 - *Escherichia coli*, enteroadherent
 - *Shigella*, *Salmonella*
 - Protozoa (Amoebae, *Giardia lamblia*)
- 4) Food poisoning**
 - a) *Staphylococcus aureus*
 - b) *Escherichia coli*
 - c) *Shigella*, *Salmonella*
 - d) *Campylobacter*, etc.
- 5) Post-antibiotic (e.g. *Clostridium difficile* pseudomembranous colitis)**
- 6) Ischaemic**
- 7) Inflammatory (exudative diarrhoea)**
 - a) Inflammatory bowel disease (IBD)

Key Objectives

- Define the patient's precise diarrhoea with respect to the number of bowel actions per day, the consistency, colour and volume of stools and the presence of other symptoms including blood, mucus or undigested food in the faeces.
- Determine the time of onset and progress over time.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Differentiate infectious diarrhoea from IBD and other causes of acute diarrhoea.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis:
 - Select and interpret appropriate investigations for patients with acute diarrhoea.
- Conduct an effective plan of management for a patient with blood in stool:
 - Outline management of patients with acute diarrhoea with attention to public health concerns.
 - Select patients in need of specialised care and/or consultation.
 - Be aware of preventive measures to avoid traveller's diarrhoea and be able to provide advice to travellers on steps to be taken in the event of contracting a diarrhoeal illness.

027B Chronic Diarrhoea

Overview

Patients with inflammatory bowel disease (IBD), especially ulcerative colitis, are at risk for a variety of serious complications; patients with fatty stools suffer from malabsorption of nutrients. An organised approach to the investigation of patients with chronic diarrhoea will result in early diagnosis and avoidance of serious nutritional deficiencies and/or serious complications.

Causes

1) Osmotic

a) Malabsorption

- Small bowel disease (gluten-sensitive enteropathy (coeliac disease), bile acid malabsorption, small bowel diverticulosis, neoplasms (villous adenoma, lymphoma, carcinoma), Whipple disease, etc.)
- Pancreatic disease (chronic pancreatitis, cystic fibrosis)
- Drugs
- Bowel resection

b) Specific food intolerance (lactase deficiency, fructose intolerance)

2) Secretory

a) Inflammatory/Exudative

- Bleeding
 - Ulcerative colitis
 - Chronic bacterial infection
- Non-bleeding
 - Crohn disease
 - AIDS, tuberculosis (TB)
 - Neoplasms (villous adenoma, lymphoma)

b) Endocrinopathies (carcinoid, Zollinger-Ellison syndrome, VIPomas)



Ulcerative colitis

3) Motility (bacterial overgrowth, diabetic neuropathy, scleroderma, short gut, etc.)

4) Irritable bowel syndrome

5) Spurious diarrhoea (faecal impaction)



Crohn enteritis



Crohn colitis

Key Objectives

- Differentiate true diarrhoea from spurious diarrhoea associated with faecal impaction.
- Differentiate osmotic from secretory diarrhoea, and malabsorptive diarrhoea from inflammatory causes.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Diagnose patients with irritable bowel syndrome.
 - Determine whether motility problems might be present.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis:
 - Select and interpret investigations for malabsorptive conditions.
 - Select and interpret investigations for inflammatory bowel conditions.
- Conduct an effective plan of management for a patient with chronic diarrhoea:
 - Outline plan of management for patients with chronic diarrhoea, including the prevention and treatment of related complications (e.g. patients with gluten-sensitive enteropathy, pancreatic insufficiency, vitamin and mineral deficiencies).
 - Select patients in need of specialised care and/or consultation with other healthcare professionals.
 - Conduct education and counselling of patients with malabsorption and IBD.

027C Constipation/Encopresis, Paediatric

Overview

Constipation is a common problem in children. It is important to differentiate functional from organic causes in order to develop appropriate management plans.

Causes

- 1) Psychologic/Developmental delay / Bedridden**
- 2) Diet (inadequate fibre, excessive cow milk, undernutrition, decreased fluid intake)**
- 3) Anatomic**
 - a) Hirschsprung disease
 - b) Anal stenosis / Atresia / Imperforate anus
 - c) Mechanical obstruction/ malrotation
 - d) Absent/Abnormal abdominal musculature ('prune belly')
- 4) Endocrine / Metabolic**
 - a) Hypothyroid
 - b) Hypercalcaemia/Hypokalaemia
- 5) Neuromuscular**
 - a) Cerebral palsy
 - b) Spinal cord disorders / Meningomyelocele
 - c) Peripheral nerves (to gut)
 - d) Systemic striated / Enteric smooth myopathy
- 6) Medications**



Hirschsprung disease

Key Objectives

- Determine whether the constipation should be investigated to exclude a serious organic cause or should be managed symptomatically.
- Select patients with stool soiling or encopresis in need of investigation and management.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Identify clinical features that help to distinguish functional from organic causes of constipation.
 - Perform rectal examination on a child with minimal discomfort.
 - Evaluate the social and psychologic effects of chronic constipation and chronic encopresis.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - List appropriate investigation for chronic constipation.
- Conduct an effective plan of management for a patient with constipation:
 - Outline initial and long term therapy for constipation and encopresis, including diet and education.
 - Identify children who require special, as opposed to conservative management.

027D Diarrhoea, Paediatric

Overview

Diarrhoea is defined as frequent, watery stools and is a common problem in infants and children. In most cases, it is mild and self-limited. However, the potential for hypovolaemia and electrolyte disturbance is ever present and may lead to significant morbidity or even mortality.

Causes

1) Acute

- a) Viral gastroenteritis (rotavirus, Norwalk, adenovirus, influenza, enterovirus)
- b) Bacterial colitis (*Salmonella*, *Shigella*, *Yersinia*, *Campylobacter*, *Escherichia coli*)
- c) Other infections (*Clostridium difficile*, giardiasis, amoebiasis, parasites)
- d) Food poisoning

2) Malabsorption

- a) Lactase deficiency
- b) Cystic fibrosis
- c) Coeliac disease
- d) Primary immunodeficiencies (including HIV)

3) In the neonate (milk protein intolerance, necrotising enterocolitis, overfeeding)

4) Other (drugs, laxative abuse, inflammatory bowel disease (IBD), etc.)

Key Objective

- Determine the presence, degree and type of dehydration/volume depletion and investigate the possibility of electrolyte abnormalities (see #009 Abnormal Serum Sodium Concentration, #008 Abnormal Serum Potassium Concentration / Magnesium).

General/Specific Objectives

- Through efficient, focused data gathering:
 - Elicit a history including previous weight, urine output, and associated symptoms; examine vital signs, mucous membranes, skin turgor, temperature of extremities, and fontanelle in infants, as well as clubbing, wheezing, abdominal examination, etc.
 - Determine whether others have developed diarrhoea and whether the onset was the same day as the ingestion of the same food or 24 hours to days later.
 - Elicit a history of onset and duration of diarrhoea, stool pattern, aggravating and alleviating factors, stool description, fever or associated symptoms, diet history and travel history, etc. in order to diagnose the aetiology of diarrhoea.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - Select blood and stool investigations in patients with diarrhoea; interpret electrolyte abnormalities.
 - Outline investigation of chronic diarrhoea.
- Conduct an effective plan of management for a young patient with diarrhoea:
 - Outline treatment for the underlying cause of the diarrhoea.
 - Select patients who require referral to a nutrition expert (e.g. malabsorption, coeliac disease).
 - Outline supportive management for patients with volume and/or electrolyte disorders.
 - Discuss nutritional rehabilitation in a malnourished patient.
 - Discuss the use of community resources for parental support.
 - Notify the local public health authority if appropriate.

027E Adult Constipation

Overview

Constipation is the infrequent passage of stools or of stools that are harder and more difficult to pass than the individual's normal bowel pattern. Low-fibre diets and lack of activity may worsen constipation. Chronic constipation often follows the habitual ignoring of the stimulus to defaecate. Constipation is an important symptom of colon cancer; colonic malignancy is one of the most common causes of mechanical intestinal obstruction.

Causes

1) Simple constipation

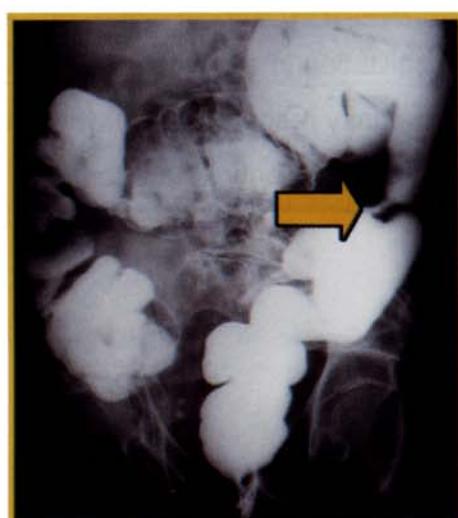
- a) Low dietary fibre
- b) Functional (environment/diet or fluid consumption / activity level change)

2) Disordered motility

- a) Irritable bowel syndrome
- b) Diverticular disease / 'Obstipation' / Faecal impaction
- c) Idiopathic slow transit

3) Secondary constipation

- a) Local ano-rectal problems (anal fissure/stricture/haemorrhoids)
- b) Drugs (opioid analgesics, chronic laxatives, cough medicine, iron, calcium, calcium channel blockers, other antihypertensive drugs, etc.)
- c) Prolonged immobilisation



Carcinoma descending colon

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Causes

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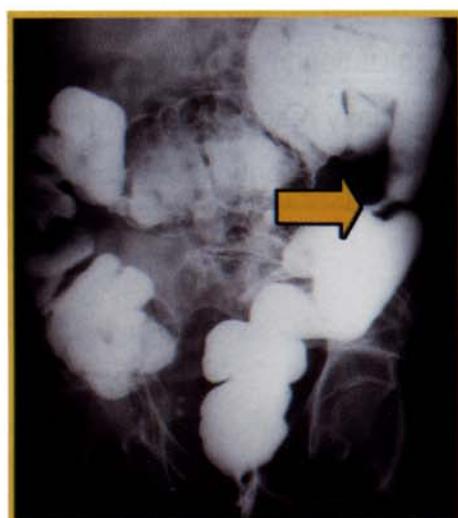
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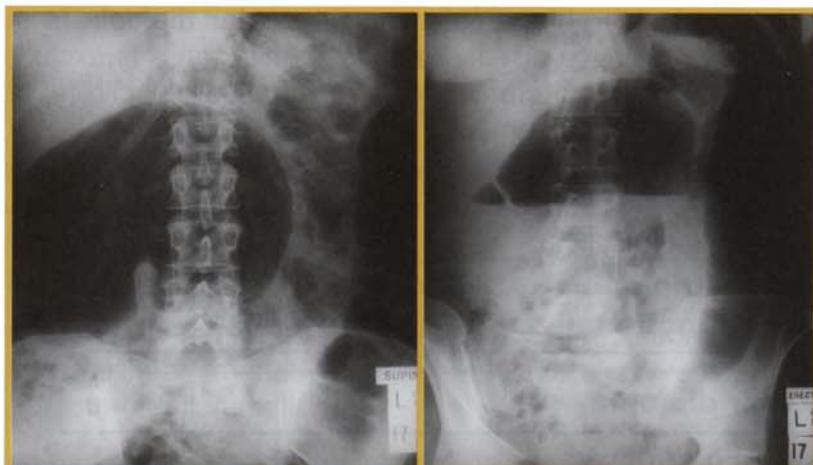
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- c) Prolonged immobilisation



- d) Bowel tumours (rectal, colonic)
- e) Metabolic disorders / Pregnancy (diabetes, hypercalcaemia, hypothyroidism)
- f) Neurological disorders (Hirschsprung disease, spinal cord disease)
- g) Bowel obstruction (see #001 Abdominal Distension / Ileus)



Distended caecum – large bowel obstruction

Key Objectives

- Appreciate that constipation is usually related to influences of diet and activity.
- Appreciate when constipation should be investigated for a serious cause or should be managed symptomatically.

General/Specific Objectives

- In a patient with constipation:
 - Be able to take an appropriate history and undertake a relevant physical examination.
 - Remember to do a rectal examination.
- Appreciate the likelihood that the patient's symptoms may be due to malignancy.
- Understand the place of investigations in diagnosis and management.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis:
 - Select and interpret investigations including stool for occult blood, and select patients in need of examination by endoscopy or diagnostic imaging.
- Conduct an effective plan of management for a patient with constipation:
 - Outline a plan of management for simple constipation and for constipation due to disordered motility.
 - Select patients in need of specialised care.

Overview

Disorders of eye movement usually present with diplopia. Monocular diplopia (diplopia persisting with occlusion of vision to the other sound eye) is almost always indicative of relatively benign optical problems whereas binocular diplopia is due to ocular misalignment. Once restrictive disease or myasthenia gravis is excluded, the major cause of binocular diplopia is a cranial nerve lesion. Careful clinical assessment is necessary for appropriate management.

Causes

1) Monocular diplopia (refractive error, keratoconus, cataract, functional)

2) Binocular diplopia

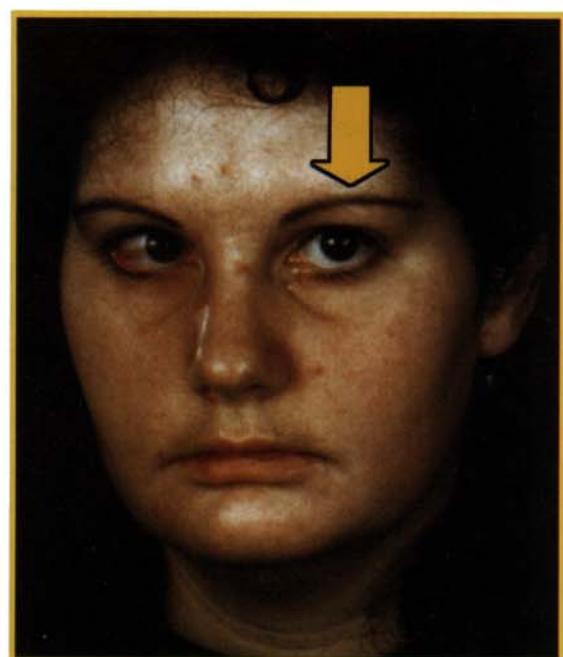
a) Oculomotor nerves

- Third nerve (ischaemia, especially diabetes-associated, aneurysm, tumour, trauma)
- Fourth nerve (ischaemia, especially diabetes-associated, trauma)
- Sixth nerve (ischaemia, especially diabetes-associated, tumour, subdural haematoma, trauma)
{in children consider also postviral inflammation, brain stem tumour}

b) Myoneural junction (myasthenia gravis)

c) Extraocular muscles restriction/entrapment

- Exophthalmos
- Orbital inflammation
- Orbital tumour
- Fracture of the orbital floor ('blowout' fracture)



Left 6th nerve palsy – strabismus with diplopia on left lateral gaze

Key Objectives

- Determine whether the rare condition of monocular diplopia is present or the diplopia is binocular (resolves with occlusion of vision to either eye).
- Determine whether the cause of binocular diplopia is a cranial nerve lesion, which may be the first presentation of a life-threatening condition.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Determine whether restrictive disease, oculomotor nerve palsy or myasthenia gravis is the likely cause of diplopia; determine whether one pupil is dilated in a patient with third nerve palsy (suggestive of aneurysm in circle of Willis).
 - Determine whether doubling of images occurred suddenly (acute event such as ischaemia) or is gradually worsening (progressive process such as tumour or inflammation).
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis:
 - Describe the mechanism of development of the 'down and out' eye in a third nerve lesion.
 - Describe findings expected in fourth and sixth nerve lesions.
 - Describe the value of the Tensilon test for myasthenia gravis.
 - List indications for angiography or computed tomography (CT) / magnetic resonance imaging (MRI).
- Develop an effective plan of management and referral for patients with diplopia.

Overview

True vertigo (an episodic sensation of rotation of the body or its surroundings) must be distinguished from dizziness or pseudovertigo (light-headedness, giddiness, faintness, unsteadiness) because it indicates the presence of localised, rather than generalised, pathology. Some causes of vertigo are serious. Others can be chronic and difficult to treat.

Causes

1) True vertigo

a) Peripheral (labyrinth or acoustic nerve)

- Motion sickness
- Benign positional vertigo
- Acute labyrinthitis
- Vestibular neuronitis
- Ménière disease
- Acoustic neuroma (Schwannoma)
- Chronic otitis media
- Alcohol
- Drugs prescribed or self-administered
- Illicit drugs
- Trauma
- Wax in ear canal

b) Central (brainstem or cerebellum)

- Vertebrobasilar insufficiency
- Cerebellar artery syndrome
- Infarct
- Tumour (primary or secondary)
- Migraine
- Multiple sclerosis
- Head injury

2) Dizziness (pseudovertigo)

- a) Postural hypotension
- b) Hyperventilation
- c) Syncope/Pre-syncope including vaso-vagal attack
- d) Cardiac arrhythmias
- e) Aortic stenosis
- f) Acute myocardial infarction (MI)

- g) Head injury
- h) Hypoglycaemia
- i) Alcohol and drugs
- j) Anaemia
- k) Psychogenic
- l) Idiopathic (particularly in the elderly)

Key Objectives

- Determine whether patients complaining of dizziness have true vertigo or pseudovertigo.
- Differentiate between central and peripheral causes for true vertigo.
- Identify and counsel patients with other causes of dizziness.

General/Specific Objectives

- Use of directed history-taking and regional examination, particularly neurological examination and special office tests.
- Order and interpret the appropriate investigations used in the diagnosis of patients with dizziness/vertigo.
- Conduct an effective plan of management for a patient with dizziness/vertigo:
 - Determine which patients with vertigo require urgent investigation and management.
 - Describe the symptomatic management of patients with benign causes of vertigo.
 - Counsel and educate patients with benign causes of dizziness/vertigo.
 - Select patients in need of specialised care.

Overview

Doctors are frequently faced with patients dying from incurable disease. In such circumstances, the most important roles of the doctor are to improve the quality of remaining life by alleviating suffering by the patient, thereby facilitating a 'good death'; and to provide comfort and empathetic and compassionate support to patients and their families.

Key Objective

- When caring for a dying patient, doctors must listen to what the patient says are the primary concerns, and should formulate a management plan that ensures adequate control of: pain; relief of anxiety and depression; respect for patient autonomy and control; maintenance of human dignity and privacy. The plan should not prolong life pointlessly; and should avoid isolation of the patient from family and loved ones.

General/Specific Objectives

- Through empathetic and efficient data gathering:
 - Discuss with patients their wishes for care in their final days.
 - For patients who are currently incompetent, insensible or unable to express their wishes, determine whether an advanced directive was previously written or expressed.
- Implement an effective plan of management for a dying patient which includes:
 - Selecting analgesic dosages that are adequate for pain control and alleviating dyspnoea in those who forego mechanical ventilation, even if by doing so death is hastened.
 - Discussing with patients their wishes for care, including resuscitation, well in advance of their death.
 - Discussing the role of an advanced directive and the impact this has on clinicians.
 - Providing or arranging for psychosocial, emotional, practical, legal and spiritual support to the patient and family.
 - Selecting patients in need of referral to other health professionals and ensuring access to information and expertise of whatever kind is necessary.
 - Educating patients and their families about the nature of the causal condition and the process of dying.
 - Promoting active coping strategies when appropriate.

- Gently facilitating and acknowledging the expression of feelings, particularly anticipatory grief; and alleviating fear and depression with appropriate treatments.
- Being sensitive to the burden of care borne by others.
- Encouraging the strengthening of relationships with loved ones.
- Remembering the relevance of funerals as life-enhancing experiences.

Overview

Dysphagia is a significant symptom that, if appropriately approached, will enable doctors to distinguish between a benign or malignant cause. With more effective therapy for gastro-oesophageal reflux disease and an increase in the incidence of oesophageal cancer, the symptom of dysphagia is now more frequently an indication of malignant oesophageal obstruction. Mechanical dysphagia thus represents carcinoma until proved otherwise. Physical signs are usually few and appropriate endoscopic/radiologic investigation is essential.

Dysphagia should be distinguished from the anxiety disorder globus hystericus (globus disorder), which is the sensation of a constant irritating lump in the throat without swallowing difficulty.

Causes

1) Oropharyngeal dysphagia (peritonsillar abscess, pharyngitis, cancer, pharyngeal pouch)

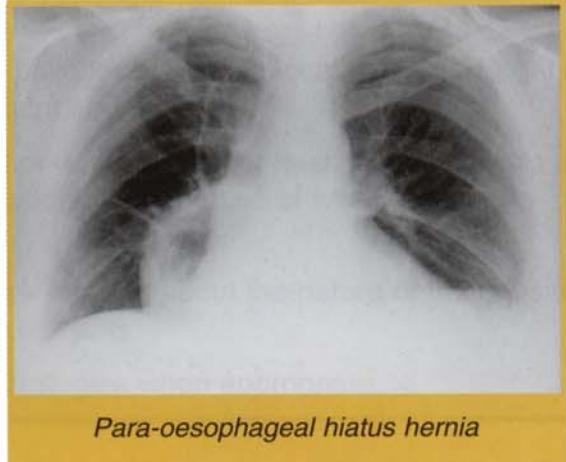
2) Oesophageal dysphagia

a) Mechanical obstruction

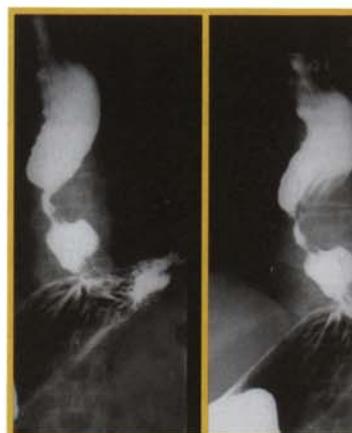
- Carcinoma (squamous cell, adenocarcinoma)
- Other causes (stricture (reflux oesophagitis, corrosives), paraoesophageal hiatus hernia, foreign body, goitre, upper oesophageal web (sideropenic dysphagia))



Carcinoma of oesophagus



Para-oesophageal hiatus hernia



Sliding hiatus hernia with oesophageal stricture



Achalasia

b) Neuromuscular/Motility disorder

- Intermittent (oesophageal spasm)
- Progressive
 - Achalasia
 - Central nervous system (stroke, Parkinson disease, amyotrophic lateral sclerosis, poliomyelitis, multiple sclerosis, pseudobulbar palsy)
 - Cranial nerves (diabetes, laryngeal nerve palsy)
 - Skeletal muscle disease (poliomyelitis, dermatomyositis, scleroderma)

Key Objectives

- Contrast difficulty initiating swallowing (coughing, choking, nasal regurgitation), from food sticking after being swallowed, and then dysphagia involving only solid food from dysphagia of both solid and liquid food, and whether intermittent or progressive.
- Distinguish between oropharyngeal and oesophageal dysphagia.
- Distinguish between difficulty in swallowing and pain on swallowing.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Determine whether symptomatology is intermittent or progressive, whether weight loss (late sign) is a problem, and whether any neurologic symptom or aspiration coexists.
 - Determine the presence of coughing, choking, drooling, or regurgitation.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis:
 - Select patients in need of specialised investigative procedures (e.g. endoscopy); if not available, select diagnostic imaging.
- Conduct an effective plan of management for a patient with dysphagia:
 - Select patients in need of specialised care and/or referral.

032 Dyspnoea and/or Cough / Prevention of Cancers and Chronic Respiratory Diseases

Overview

Shortness of breath may be due to a variety of causes. It is imperative to identify rapidly the aetiology in order to mount, if required, an immediate and long term management programme to minimise complications and excessive morbidity.

Causes

1) Upper airway

- a) Stridor

2) Lower airway

- a) Obstructive (asthma, chronic obstructive lung disease, inhaled foreign body)
- b) Non-obstructive (interstitial lung disease, restrictive lung disease)

3) Cardiac causes

- a) Left heart failure
- b) Aortic stenosis

4) Pneumothorax

5) Pulmonary embolism

6) Pleural effusion

7) Psychogenic

8) Severe anaemia

9) Metabolic acidosis

10) Central nervous system (CNS)

11) Musculoskeletal

Key Objectives

- Differentiate dyspnoea from tachypnoea, hyperpnoea or hyperventilation.
- Differentiate cardiac from pulmonary, neuromuscular or other causes of dyspnoea.
- Develop management programmes to treat the immediate problem and involve the patient, the family and community resources in the overall care of chronic patients.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Differentiate between the causes of cardiac pulmonary oedema.
 - Differentiate between the various causes of pulmonary oedema and pulmonary infiltrations.
 - Diagnose the various causes of life-threatening dyspnoea.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - Appropriately select and interpret lung imaging.
 - Appropriately select and interpret cardiac-related investigations.
- Conduct an effective plan of management for a young patient with dyspnoea:
 - Outline initial management for patients with acute dyspnoea of cardiac, pulmonary, or other origins.
 - Select patients in need of specialised care and referral to other healthcare professionals or institutions.
 - Select those patients in need of hospitalisation.
 - Conduct appropriate education of patients including secondary prevention strategies.

032A With Diffuse Chest X-Ray Abnormality

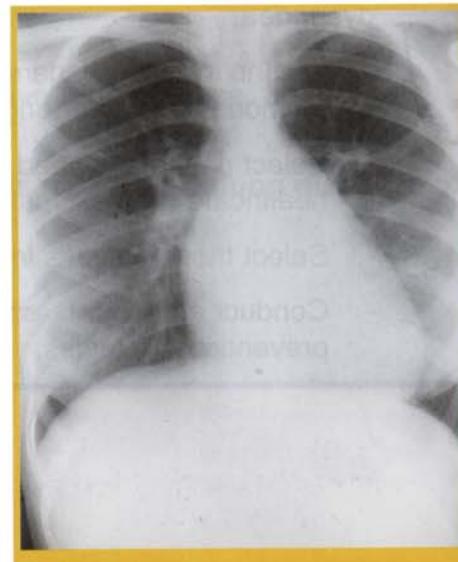
Overview

Shortness of breath has many causes. Prompt recognition of the diagnosis and initiation of therapy can limit associated morbidity and mortality.

Causes

1) Cardiac causes – pulmonary oedema

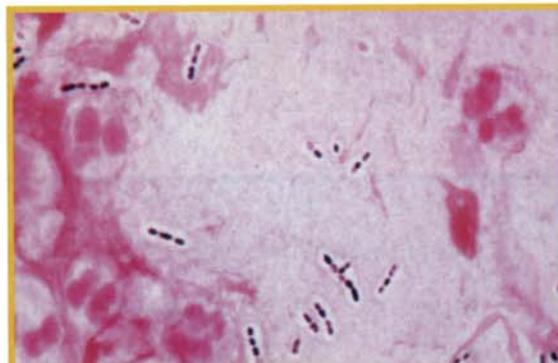
- a) Cardiomyopathy
 - Ischaemic
 - Dilated (idiopathic, alcoholic, haemochromatosis)
- b) Hypertensive heart disease
- c) Restrictive cardiomyopathy (amyloid, sarcoid)
- d) Valvular heart disease
- e) Diastolic dysfunction (hypertension, ischaemia, infiltrative disease)
- f) Increased cardiac output (anaemia, arteriovenous (AV) malformation, hyperthyroid)



Mitral regurgitation

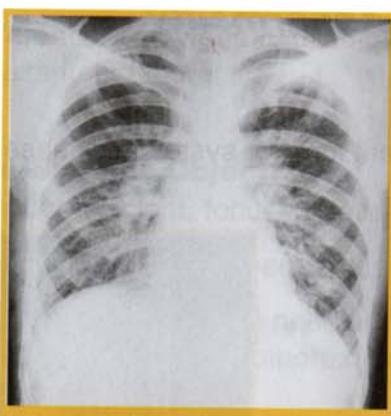
2) Pulmonary Causes

- a) Infectious Pneumonia
 - Bacterial, including tuberculosis (TB)
 - Atypical
 - Fungal, including *Pneumocystis carinii*
 - Viral, including HIV
- b) Inhalational/Environmental ‘pneumoconiosis’ (inorganic, organic)
- c) Vasculitis (Wegener granulomatosis, Goodpasture syndrome)
- d) Pulmonary fibrosis, sarcoidosis, scleroderma

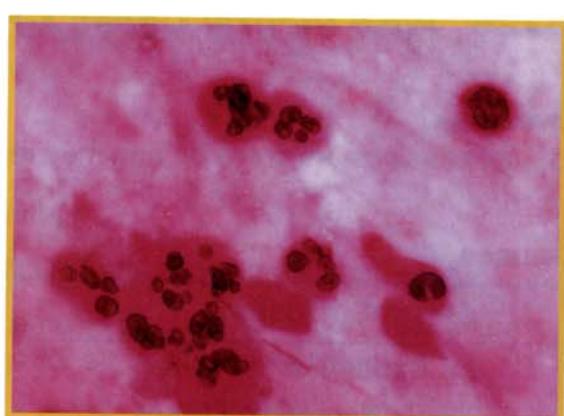


Pneumococcal pneumonia

- e) **Neoplastic (lymphangitic carcinomatosis)**
- f) **Drugs/Radiation (amiodarone, bleomycin, beta-blockers, nitrofurantoin)**



Lymphangitic carcinoma



Pneumocystis pneumonia

Key Objectives

- Differentiate true cough from upper airway clearing, saliva from sputum or haemoptysis, and true dyspnoea from tachypnoea, hyperpnoea, and hyperventilation.
- If initial evaluation indicated that a chest X-ray was necessary, differentiate between cardiac disease, pulmonary disease, and neuropsychiatric disease.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Differentiate between causes of cardiac pulmonary oedema.
 - Differentiate between causes of pulmonary disease.
 - Diagnose acute, life-threatening dyspnoea.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis:
 - Select and interpret lung imaging.
 - Select and interpret heart-related investigations.
- Conduct an effective plan of management for a patient with cough and/or dyspnoea with diffuse chest X-ray abnormality:
 - Outline initial management for patients with acute dyspnoea of cardiac, pulmonary, or neuropsychiatric origin.
 - Select patients in need of specialised care and referral to other healthcare professionals.
 - Select patients requiring hospitalisation.
 - Conduct appropriate education of patients including secondary prevention strategies.

032B With Pleural Chest X-Ray Abnormality

Overview

Pleural effusions are common and may represent local or systemic disease.

Causes

1) Pleural effusion

a) Exudative

- Neoplastic causes
- Infectious causes
 - Parapneumonic
 - Empyema (bacterial, fungal, tuberculous)
- Pulmonary emboli
- Collagen-vascular diseases (rheumatoid, lupus pleuritis)
- Gastrointestinal causes (ruptured oesophagus, pancreatitis)



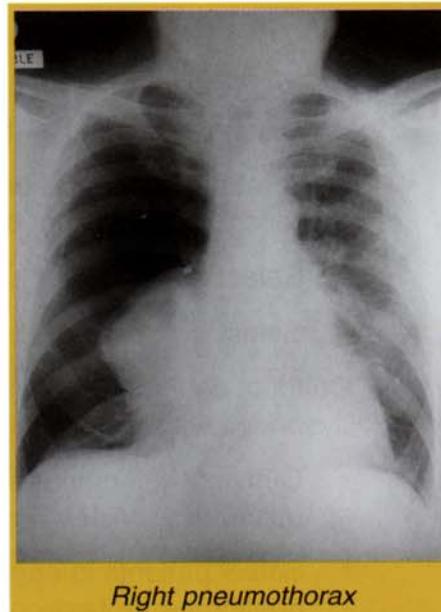
Large pleural effusion

b) Transudative

- Congestive heart failure
- Cirrhosis
- Nephrotic syndrome
- Pulmonary emboli

2) Pleural thickening

- a) Chronic infections (tuberculosis (TB))
- b) Neoplastic (mesothelioma)
- c) Inflammatory (chronic asbestos exposure)



Right pneumothorax

3) Pneumothorax

a) Spontaneous

- Primary
- Secondary (secondary to chronic obstructive pulmonary disease (COPD))

b) Traumatic

c) Tension

Key Objectives

- Conduct an examination of the thorax and demonstrate how to detect a pleural effusion or a pneumothorax; identify life-threatening tension pneumothorax requiring urgent treatment.
- Differentiate between causes of pleural effusion on the basis of analysis results from pleural fluid.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Differentiate between a pleural effusion and a pneumothorax.
 - Perform intercostal needle thoracentesis as initial life-saving procedure for tension pneumothorax; arrange for subsequent intercostal tube thoracentesis.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - Interpret the findings of a chest X-ray.
 - Perform (under supervision) and interpret the findings of a thoracocentesis and intercostal catheter insertion; appreciate hazards of procedure and methods of prevention of complications.
 - Discuss the indications for computed tomography (CT) scanning in patients with a pleural effusion.
- Conduct an effective plan of management for a patient with dyspnoea and/or cough with pleural chest X-ray abnormality:
 - Identify patients in need of immediate management for pneumothorax.
 - Discuss the medical and surgical management for patients with pleural effusion.
 - Select patients in need of specialised care.

032 Dyspnoea and/or Cough / Prevention of Cancers and Chronic Respiratory Diseases

032C With Fever

Overview

Cough with fever may signify pneumonia that can result in rapid deterioration of health. Prompt management of patients with pneumonia may be life-saving.

Causes

1) Infectious causes

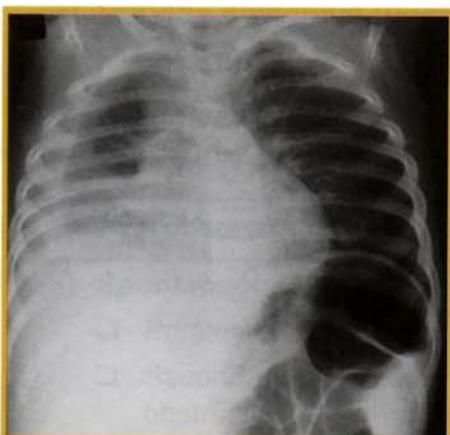
- a) Bronchitis (bacterial or viral)
- b) Pneumonia
 - Bacterial (typical, atypical)
 - Viral (including severe acute respiratory syndrome (SARS) viral pneumonia)
 - Tuberculous or fungal
- c) Upper respiratory tract infections (URTIs)

2) Inflammatory causes (e.g. pulmonary vasculitis)

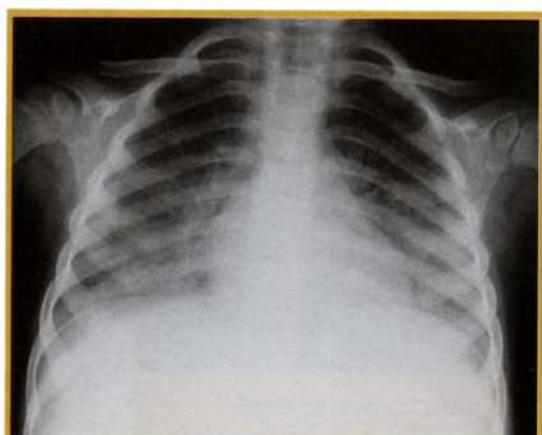
3) Pulmonary embolus

4) Neoplastic causes

- a) Primary
- b) Secondary



Staphylococcal pneumonia



Interstitial pneumonia

Key Objective

- Determine which patients with dyspnoea, cough and fever are likely to have serious pulmonary disease and require immediate investigation and prompt management.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Diagnose the cause of dyspnoea, cough and fever.
 - For patients with pneumonia, elicit risk factors which predispose such patients to specific organisms.
 - Determine which patients are at risk for fungal pneumonia or tuberculosis (TB).
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - Order and interpret the results of a chest X-ray in patients with cough and fever.
 - Order and interpret the results of microbiological cultures and viral serology if appropriate.
- Conduct an effective plan of management for a patient with dyspnoea and/or cough with fever:
 - Assess the severity of the illness and discuss the indications for hospitalisation and referral to specialised care.
 - Discuss the indications for anti-microbial therapy and select the most appropriate antibiotic based on the likelihood of infection with specific micro-organisms.
 - Discuss the treatment and followup of patients with TB.
 - Discuss the preventive and public health measures related to pulmonary infections including TB.

032 Dyspnoea and/or Cough / Prevention of Cancers and Chronic Respiratory Diseases

032D With Local Chest X-Ray Abnormality

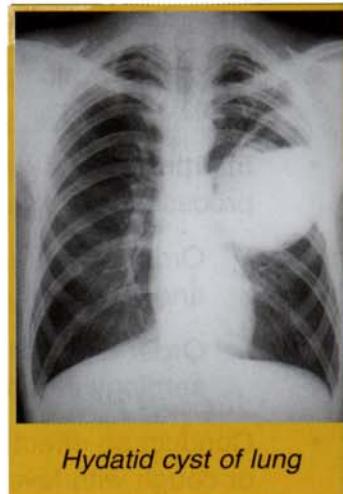
Overview

Dyspnoea and cough with an abnormal chest X-ray are indicative of significant pathology. Accurate interpretation of the chest X-ray is critical for making a diagnosis.

Causes

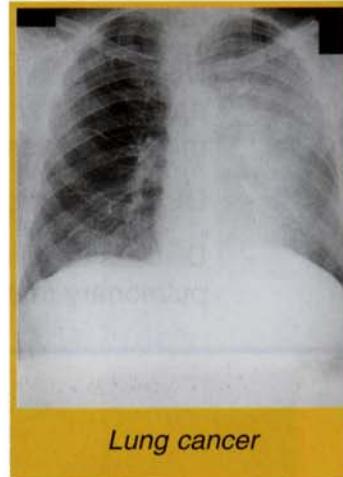
1) Infectious causes

- a) Pneumonia
 - Bacterial (typical, atypical)
 - Viral
 - Tuberculous
 - Fungal
 - Parasitic (hydatid cyst)
- b) Lung abscess (bacterial or tuberculous)



2) Neoplasm

- a) Benign (hamartoma, granuloma)
- b) Malignant
 - Primary (small cell, non-small cell lung cancer)
 - Secondary (metastases, lymphoma)

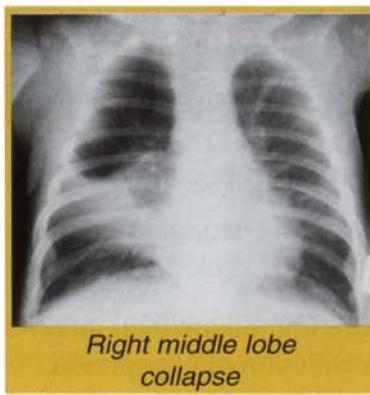


3) Interstitial lung disease

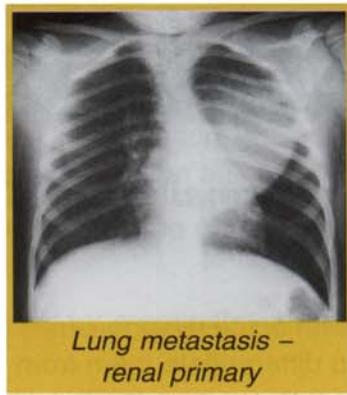
(see #032A With Diffuse Chest X-Ray Abnormality)

- a) Inhalational/Environmental
 - Inorganic (silicosis, asbestosis, coal worker's pneumoconiosis, etc.)
 - Organic (extrinsic allergic alveolitis)
- b) Collagen vascular diseases (systemic lupus erythematosus (SLE), rheumatoid arthritis (RA), ankylosing spondylitis and polymyositis)
- c) Drug/Radiation induced (amiodarone, bleomycin, nitrofurantoin)
- d) Idiopathic (pulmonary fibrosis, sarcoidosis)
- e) Vasculitis (Wegener granulomatosis)





Right middle lobe collapse



Lung metastasis – renal primary

4) Mediastinal masses

- a) Anterior (thymomas, lymphoma, thyroid mass, teratoma)
- b) Middle and posterior (unlikely to present with dyspnoea/cough)

5) Miscellaneous

- a) Atelectasis / Pulmonary collapse
- b) Loculated pleural effusion

Key Objective

- Differentiate patients with infectious or neoplastic causes for their dyspnoea and/or cough and chest X-ray abnormality.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Diagnose the cause of dyspnoea and/or cough and localised chest X-ray abnormality.
 - Determine the most likely cause for interstitial lung disease.
 - In patients with pulmonary nodules, describe risk factors and clinical features favouring malignancy.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - List indications for chest computed tomography (CT) scan in patients with dyspnoea, cough and a localised X-ray abnormality.
 - Discuss investigation for patients with a pulmonary nodule.
 - Describe chest X-ray features of pulmonary nodules favouring malignancy.
- Conduct an effective plan of management for a patient with dyspnoea and/or cough with a local chest X-ray abnormality:
 - Assess the severity of illness and discuss the indications for hospitalisation and referral for specialised care.
 - Describe a management plan based on the mostly likely cause of the chest X-ray abnormality.

032E With Normal Chest X-Ray

Overview

Since patients with acute dyspnoea require more immediate evaluation and treatment, it is important to differentiate them from those with chronic dyspnoea.

Causes

1) Acute dyspnoea

- a) Exacerbation of obstructive airways disease
 - Asthma
 - Chronic obstructive pulmonary disease (COPD)
- b) Pulmonary embolus
- c) Early pneumonia
- d) Miscellaneous (anxiety, fever, sepsis, salicylate, metabolic acidosis)

2) Chronic dyspnoea

- a) Obstructive airways disease
 - Asthma
 - COPD
 - Bronchiectasis
- b) Chronic congestive heart failure
- c) Neuromuscular disorders (post-polio myelitis, myasthenia gravis, muscular dystrophy)

Key Objective

- Differentiate clinically among the causes for acute and chronic dyspnoea.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Differentiate between the different causes for obstructive airways disease.
 - Determine which factors may precipitate dyspnoeic episodes in patients with asthma or chronic obstructive lung disease.

- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - Order and interpret appropriate initial investigations including chest X-ray, arterial blood gas and pulmonary function tests.
 - Outline the diagnostic imaging appropriate for a patient with suspected pulmonary embolus.
- Conduct an effective plan of management for a patient with dyspnoea and/or cough with a normal chest X-ray:
 - Determine which patients have life-threatening acute dyspnoea and perform immediate management, including intubation if necessary.
 - Discuss the acute and chronic pharmacological management of patients with obstructive airways disease.
 - Select patients in need of hospitalisation and/or specialised care.
 - Counsel and educate patients in strategies for smoking cessation and avoidance of precipitants.
 - Describe the complications of chronic hypoxia and hypercapnia and outline the role of oxygen supplementation in patients with chronic hypoxia.

032F Cough

Overview

Chronic cough is one of the most common symptoms for which patients seek medical advice. Assessment of chronic cough must be thorough. Patients with benign causes for their cough (e.g. gastro-oesophageal reflux, post-nasal drip, two of the commonest causes) can often be effectively and easily managed. Patients with more serious causes for their cough (e.g. asthma, the other common cause of chronic cough) require full investigation, and management is more complex.

Causes

1) Chronic cough

a) Miscellaneous

- Post-nasal drip
- Gastro-oesophageal reflux
- Drugs (angiotensin-converting enzyme (ACE) inhibitors)
- Foreign body
- Chronic sinusitis

b) Obstructive airways disease

- Asthma
- Chronic bronchitis
- Bronchiectasis
- Cystic fibrosis

c) Congestive heart failure

d) Lung neoplasm

- Bronchogenic carcinoma
- Carcinoid tumour

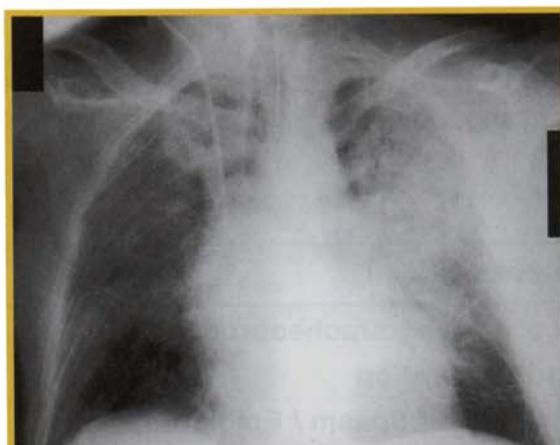
e) Chronic lung infections

- Lung abscess
- Tuberculosis (TB)

f) Interstitial lung disease

2) Acute cough

- a) Infectious (upper respiratory tract infection (URTI), bronchitis, pneumonia)
- b) Irritant (noxious fumes, smoke)



Bilateral pneumonia

Key Objective

- Differentiate patients with chronic cough due to upper or lower respiratory, cardiac or gastrointestinal causes.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Determine whether the patient smokes or takes ACE inhibitors (if not, consider reflux or post-nasal drip).
 - Diagnose the cause of a chronic cough and distinguish those patients with innocuous cough from those with significant disease.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - Outline value of spirometry before and after broncho-dilators for assessment of chronic cough.
 - Order and interpret a chest X-ray if appropriate.
- Conduct an effective plan of management for a patient with a chronic cough:
 - Prescribe appropriate medications used in the management of chronic cough, with proper attention to their indications, contra-indications and adverse effects.
 - Select patients in need of specialised care.
 - Counsel and educate patients with chronic cough including the provision of strategies aimed at smoking cessation.

032G Dyspnoea / Respiratory Distress, Paediatric

Overview

Respiratory distress is one of the most common paediatric emergencies and can be a life-threatening acute emergency.

Causes

1) Airway problems

- a) 'Croup' (acute laryngotracheobronchitis)
- b) Foreign body aspiration
- c) Laryngeal oedema / Spasm / Epiglottitis
- d) Retropharyngeal abscess

2) Pulmonary problems

- a) Tracheitis/Bronchiolitis
- b) Pneumonia
- c) Asthma/Bronchospasm

3) Cardiac problems

- a) Congestive heart failure (left-to-right shunt, left ventricular failure)
- b) Cardiac tamponade
- c) Pulmonary embolus

4) Pleural problems

- a) Pleural effusion, empyema
- b) Pneumothorax

5) Neurologic problems (opiates, increased intracranial pressure, neuromyopathic)

6) Neonatal conditions

- a) Transient tachypnoea of the newborn
- b) Respiratory distress syndrome (hyaline membrane disease)
- c) Diaphragmatic hernia
- d) Massive ascites
- e) Tracheo-oesophageal fistula

7) Other (e.g. severe scoliosis)

Key Objectives

- Differentiate the child who appears well from a child in distress or in critical condition.
- Evaluate the respiratory rate in the context of age of the child (neonates normally breathe 35–50 times per minute, infants 30–40, elementary school children 20–30, and pre-adolescents 12–20) and describe and explain the quality of the breathing.
- Differentiate dyspnoea from tachypnoea, hyperpnoea or hyperventilation.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Differentiate the child who appears well from a child in distress or in critical condition.
 - Ensure patent airway.
 - Determine presence, duration, and type of onset of respiratory distress, presence of cyanosis.
 - Perform examination for vital signs, retraction, flaring, wheezing, or coughing.
 - Perform examination – cyanosis, upper airway, heart, lungs and other relevant areas.
 - Assess pulse oximetry.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - Determine presence of hypoxia; select and interpret lung imaging and/or cardiac investigations.
 - Outline other tests of blood, sputum, electrocardiogram (ECG), echocardiography, etc. as appropriate. Special tests may be required if patient is immuno-compromised.
- Conduct an effective plan of management for a patient in respiratory distress:
 - Outline immediate management of hypoxia; select patients in need of hospitalisation/referral.
 - Discuss potential side-effects of oxygen therapy.
 - Explain choice of antibiotics for pulmonary disorders; discuss use of bronchodilators and steroids if appropriate.
 - Explain advantages/disadvantages of diuretics (e.g. frusemide) in the treatment of cardiac dyspnoea.
 - Counsel patients/parents about secondary prevention strategies.

Overview

Many causes of ear pain exist but **acute otitis media** is by far the most common, especially in children. Diagnosis and treatment of otitis media is usually straightforward but other causes may present more difficult management situations.

Causes

1) Pinna

- a) Cellulitis/Perichondritis
- b) Chilblains
- c) Trauma

2) External auditory meatus and ear canal

- a) Impacted wax / foreign body
- b) Furunculosis
- c) Otitis externa
- d) Herpes zoster – geniculate herpes (Ramsay Hunt syndrome)
- e) Tumour (basal cell carcinoma (BCC), squamous cell carcinoma (SCC), osteoma)

3) Middle Ear

- a) Acute otitis media
- b) Eustachian obstruction
- c) Barotrauma
- d) Acute mastoiditis
- e) Chronic otitis media and cholesteatoma
- f) Penetrating injury

4) Peri-otic

- a) Temporomandibular joint (TMJ) dysfunction
- b) Impacted wisdom teeth
- c) Parotitis
- d) Temporal arteritis
- e) Erysipelas
- f) Pharyngitis/Tonsillitis

5) Referred Pain

- a) Cervical adenitis
- b) Upper cervical spine disorder
- c) Glossopharyngeal neuralgia
- d) Thyroiditis
- e) Laryngeal/Pharyngeal tumours

Key Objectives

- Skill in examination of the ear canal and tympanic membrane using an auroscope.
- Identification of diagnostic features of otitis media, and knowledge of the treatment of acute otitis media.
- Identification and management of other causes of ear pain.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Localise the site of pain.
 - Systematically examine structures which may be the source of origin of the pain.
 - Differentiate between localised and referred pain.
- Interpret critical clinical findings and investigations which were key in the process of exclusion, differentiation and diagnosis:
 - Select any necessary investigation which will confirm, exclude or suggest a possible cause of the ear pain.
- Conduct an effective plan of management for a patient with ear pain:
 - Specific treatments for infective causes.
 - Minor procedures for mechanical causes.
 - Select patients in need of specialised care.

034A Generalised Oedema

Overview

Patients frequently complain of generalised swelling or bloating. At times, the swelling may be caused by relatively benign conditions, but at times, serious underlying diseases may be present.

Causes

1) Idiopathic (cyclical oedema)

2) Drugs

- a) Causing fluid retention (minoxidil, nonsteroidal anti-inflammatory drugs (NSAIDs), etc.)
- b) Without fluid retention (calcium channel blockers, especially dihydropyridines)

3) Cardiac failure

4) Nephrotic syndrome (and/or severe hypoalbuminaemia)

5) Liver failure

6) Renal failure

Key Objective

- Differentiate systemic generalised oedema from localised oedema; categorise oedema as '*underfill*' or '*overfill*' based on patient's volume status, since management may be affected.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Differentiate between the various causes of systemic oedema.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis:
 - Select and interpret laboratory investigations for oedema.

- Conduct an effective plan of management for a patient with generalised oedema:
 - Outline a plan of management for oedema of varying causes.
 - List appropriate dietary interventions.
 - List complications of diuretic use; contrast diuretic use in '*underfill*' versus '*overfill*' oedema.
 - Select patients in need of specialised care and/or consultation.

034B Unilateral Limb Oedema (Swollen Limb)

Overview

The most common causes of unilateral leg oedema are trauma, infection, venous disease and chronic lymphoedema. The ability to reach a diagnosis requires good clinical skills; the most important conditions *not to miss* are **cellulitis** and **deep venous thrombosis (DVT)**.

Causes

- 1) Muscle strain, tear, twisting injury to extremity, haematoma**
- 2) DVT**
 - a) Lower extremity (proximal, calf vein)
 - b) Upper extremity (effort thrombosis, central venous cannulation, chemotherapy)
- 3) Infection/Inflammation**
 - a) Cellulitis / Soft tissue / Bone
 - b) Chronic dermatitis / Cutaneous mucinosis
- 4) Venous insufficiency**
- 5) Lymphatic obstruction / Lymphangitis**
- 6) Baker cyst**
- 7) Infiltrative dermopathy (usually associated with thyroid disease)**

Key Objectives

- Diagnose proximal lower extremity DVT with accuracy and certainty since untreated, it may lead to pulmonary embolus, and treatment with anticoagulants is associated with significant risk.
- Diagnose cellulitis with accuracy and certainty since early and adequate antibiotic treatment is required to prevent serious complications.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Elicit history of predisposing factors, particularly for DVT and cellulitis. Be aware of the key risk factors for DVT (immobilisation, surgery, obesity, previous episode of thrombosis, varicose veins, trauma, malignancy, postpartum, oestrogen therapy, a thrombophilia or family history of thrombosis).

- Examine extremity for tenderness, presence or absence of pitting oedema, inflammation, discolouration, palpable cord, skin changes, venous ulceration, and especially arterial blood supply.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis:
 - State that clinical diagnosis of DVT is not sufficiently accurate, and diagnostic tests are indicated to confirm or exclude the diagnosis.
 - Discuss D-dimer measurements, and compression ultrasound and compare to contrast venography.
 - Select duplex ultrasonography Doppler for the diagnosis of chronic venous insufficiency.
- Conduct an effective plan of management for a patient with oedema which is not generalised:
 - Outline primary prevention and management of DVT.
 - Outline the management of cellulitis.
 - Select patients in need of specialised care.
 - List indications, complications and management of anticoagulant therapy.
 - Counsel patients about anticoagulant therapy.



Streptococcal cellulitis



Lymphoedema – cellulitis

Overview

Red eye is a very common complaint, and despite the rather lengthy list of causal conditions, three problems make up the vast majority of causes: **conjunctivitis**, **foreign body**, and **iritis (uveitis)**. The most common cause is **conjunctivitis**. If unilateral and painful a serious cause is more likely – beware of the unilateral painful red eye!

Causes

1) Lids / Orbita / Lacrimal system

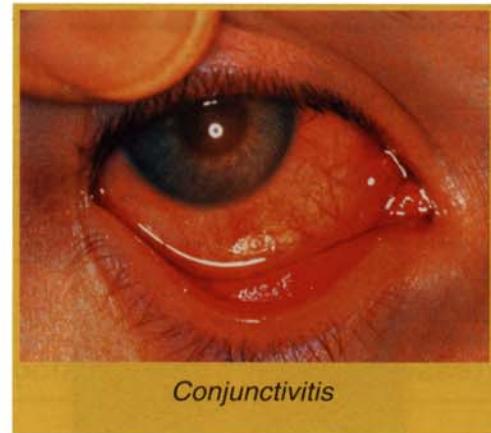
- a) Foreign body
- b) Hordeolum ('stye')
- c) Chalazion (Meibomian cyst)
- d) Blepharitis
- e) Cellulitis (anterior, posterior)
- f) Naso-lacrimal duct obstruction/dysfunction
- g) Orbital cellulitis



'Stye' – infected eyelash

2) Conjunctiva

- a) Conjunctivitis
 - Viral
 - Bacterial (including gonorrhoea and trachoma in the neonate)
 - Fungal
 - Allergic
- b) Pinguecula/Pterygium
- c) Dry eyes
- d) Subconjunctival haemorrhage



Conjunctivitis

3) Cornea

- a) Corneal abrasion
- b) Corneal foreign body
- c) Corneal ulcer
- d) Herpes simplex keratitis (dendritic ulcer)
- e) Herpes zoster ophthalmicus
- f) Fungal keratitis



Sub-conjunctival haemorrhage

4) Anterior chamber

- a) Acute glaucoma
- b) Acute iritis (iritocyclitis, uveitis)
- c) Choroiditis
- d) Hyphaema

5) Whole eye

- a) Penetrating injury
- b) Blunt trauma
- c) Orbital fracture
- d) Chemical injury

Key Objectives

- Identify or exclude serious causes requiring immediate hospitalisation, prompt referral and aggressive treatment.
- For conjunctivitis, define type to determine specific therapy.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Differentiate causal conditions that require prompt referral from those that are less urgent.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis, *viz* :
 - History-taking essentials.
 - Skills for non-specialist examination of eye.
 - Selection and interpretation of appropriate investigations.
- Conduct an effective plan of management for eye redness:
 - Select patients in need of referral.
- Outline a management plan for the following causes of eye redness:
 - Conjunctivitis, foreign body, acute glaucoma.

036A Infant/Child

Overview

Many infants and children do not follow the expected growth and development paths. It is essential to differentiate the normal from the abnormal patterns.

Causes

1) Prenatal

- a) Placental insufficiency
- b) Antenatal infections
- c) Prematurity

2) Perinatal

- a) Acutely ill neonate – hypoxic ischaemia

3) Postnatal

- a) Chronic disease
 - Cardiac, respiratory, gastrointestinal, neurologic, bone, musculoskeletal
- b) Poor intake
 - Maternal-infant bonding
 - Neglect
 - Environmental factors (famine)
- c) Excessive utilisation
 - Acute or chronic infection
- d) Malabsorption
 - Coeliac disease
 - Cystic fibrosis
 - Inflammatory bowel disease (IBD)
 - Malabsorptive enteropathies

Key Objectives

- Identify by comparing to normal growth charts the normal from the abnormally growing and developing child.
- Identify the factors which will give rise to a child who fails to thrive.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Plot growth parameters for any child at regular intervals so as to identify any significant deviation from normal growth curve.
 - Obtain those features on history and physical examination known to be associated with failure to thrive.
 - Diagnose the common causes of failure to thrive at the different age groups.
 - Identify the various social risk factors responsible for failure to thrive.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - Interpret growth parameters to diagnose failure to thrive.
 - Investigate with minimum but appropriate evaluations the commonly associated problems associated with a child who is failing to thrive.
- Conduct an effective plan of management for a child/infant with a failure to thrive:
 - Conduct a counselling and education programme for caregivers of children with failure to thrive.
 - Conduct an ongoing programme to monitor the progress of such children.
 - Appropriately utilise hospitalisation, consultation with other health professionals and community resources.
 - Explain the social and psychological impact of failure to thrive on the family and child.

036B Failure to Thrive in the Elderly

Overview

In an elderly person failure to thrive means the loss of energy, interest and vigour, with or without weight loss. The challenge is to differentiate normal decline of strength with ageing from reversible conditions which may be due to organic disease, environmental factors or psychiatric disorders. Symptoms of serious organic disease are often minimal or even absent in the elderly. Iatrogenic conditions also occur more often in the elderly due to polypharmacy and resultant confusional states. Psychiatric disorders may accompany or be secondary to organic disease, so the search for organic disorders must be thorough before attributing decline to the ageing process or to environmental causes. If clinical assessment does not reveal a cause the most productive investigations in most cases are those which can be attained without invasive procedures.

Causes

1) Organic

- a) Gastrointestinal (poor mastication/swallowing, malabsorption)
- b) Cardiac/Respiratory disease
- c) Metabolic (renal failure, diabetes)
- d) Occult infections (especially urinary tract)
- e) Malignancy – undiagnosed/advanced
- f) Hyper/hypothyroidism

2) Extrinsic / Functional / Social

- a) Medications – especially adverse effects of polypharmacy
- b) Inadequate diet
- c) Loneliness and bereavement
- d) Poverty and isolation (poor mobility)
- e) Elderly abuse or neglect
- f) Alcoholism

3) Psychiatric

- a) Endogenous depression
- b) Confusional states secondary to organic disease including vitamin B₁₂ deficiency
- c) Dementia

Key Objectives

- Select the investigations which screen the patient for occult organic causes.
- Conduct an assessment of cognitive function using the Folstein Mini-Mental State Examination (MMSE).
- Calculate the body-mass index (BMI) (= weight (kg)/height (M²)); recognise that figures outside 22–27 constitute a health risk.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Conduct a review of all body systems.
 - Check the status and management of known continuing health problems.
 - Elicit information about the patient's environment and relationships.
- Interpret critical clinical and laboratory findings which are key in the process of exclusion, differentiation and diagnosis:
 - Select further investigations or specialised care when indicated.
- Conduct an effective plan of management for an elderly patient who is failing to thrive:
 - Treat the identified cause with specific therapy when possible.
 - Counsel the patient and relatives about cause, management and prognosis.
 - List the support services which will improve isolation, nutrition, personal care, medication use, independence and home care.

Overview

Falls are common (30% of people over 65 years; 50% by 80 years) and are associated with functional disability, but they may be preventable. Interventions that prevent falls and their sequelae may delay or reduce the frequency of nursing home admissions.

Causes

1) Factors extrinsic to the patient

- a) Accidental and environmental factors
- b) Medications/Alcohol

2) Factors intrinsic to the patient

- a) Age-related changes (e.g. vision, musculoskeletal, cortical function, etc.)
- b) Syncope
(see #109 Syncope / Pre-Syncope / Loss of Consciousness)
- c) Dizziness/Vertigo
(see #029 Dizziness/Vertigo)
- d) Gait disturbances / Ataxia (see #042 Gait Disturbances – Ataxia)

3) Other – narcolepsy, cryptogenic, depression

Key Objectives

- In a patient with one or more falls, elicit a description of the fall (obtain collateral information if necessary) and conduct an evaluation of the environment for risk factors.
- Differentiate between causes of falls by determining whether the fall was secondary to factors intrinsic or extrinsic to the patient.
- Appreciate that a minority of falls are caused by a single, specific cause; the remainder are caused by more than a single factor.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Determine whether factors extrinsic to the patient may have caused the fall (drugs, alcohol, environmental hazards such as poor illumination, stairs, clutter, uneven or slippery surface, inappropriate footwear).
 - Determine whether factors intrinsic to the patient may have caused the fall (ataxia, cognitive impairment, impaired vision, gait disturbance, other disease entities).

- Conduct a physical examination and performance evaluation including postural changes in blood pressure (BP), visual acuity, musculoskeletal and neurological function, and footwear. Assess gait and balance.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis:
 - Conduct an environmental assessment for hazards.
- Conduct an effective plan of management for a patient who has a tendency to fall:
 - Counsel and educate the patient or caregiver about the complications, morbidity, and mortality associated with falls. Describe the sequelae of falls (injury, functional decline, restraints, immobility, death).
 - Treat correctable conditions.
 - Outline a management programme that includes control of risk factors and provision of an active rehabilitation programme that focuses on gait and balance retraining for seniors, with the provision of spectacles and walking aids if appropriate.
 - List possible modifications in the living environment that reduce the risk of falling (e.g. grab rails, sturdy furniture, improved lighting).
 - Select patients in need of specialised care.

Overview

'Fatigue' means weariness from exertion but is used by both patients and doctors synonymously with such terms as tiredness, weariness, lacking energy, listlessness, sleepiness, exhaustion, weakness and being 'run down'. Possible causes are legion, as indicated below.

Accordingly the symptom is not of high diagnostic value unless it is the outstanding feature of a patient's presenting complaint or associated with certain other symptoms such as loss of weight, chest pain, breathlessness, diarrhoea, rectal bleeding. An organic cause will be found in only about one-third of patients with 'fatigue' as their main complaint; many people with heavy domestic or occupational commitments present – not unreasonably – with fatigue.

Of the remainder, about two-thirds will be suffering from a psychological condition. Patients commonly use fatigue to somatise an underlying psychological problem. The challenges are to identify underlying organic causes or associated pathology and manage these appropriately, whilst recognising those patients without physical illness who require more than simple reassurance and advice.

Causes

1) Psychologic

- a) Depression
- b) Anxiety
- c) Somatisation
- d) Bereavement
- e) Lifestyle factors

2) Pharmacologic

- a) Hypnotics
- b) Antihypertensives
- c) Antidepressants
- d) Alcohol
- e) Drug abuse or withdrawal

3) Endocrine/Metabolic

- a) Hypothyroidism
- b) Diabetes mellitus
- c) Adrenal disease (Addison disease, Cushing disease)
- d) Chronic renal failure
- e) Chronic liver failure
- f) Hypercalcaemia
- g) Hypokalaemia
- h) Hypomagnesaemia

4) Cardio-pulmonary

- a) Chronic congestive heart failure
- b) Ischaemic heart disease

5) Infectious

- a) Bacterial endocarditis
- b) Tuberculosis (TB) and other chronic infections
- c) Viral (mononucleosis, hepatitis, HIV, cytomegalovirus (CMV), influenza)

6) Connective tissue disorders

- a) Rheumatoid arthritis (RA) / Polymyalgia

7) Sleep disturbances

- a) Sleep-apnoea
- b) Oesophageal reflux
- c) Chronic pain interfering with sleep

8) Neoplastic-haematologic

- a) Occult malignancy
- b) Anaemia

9) Neuromuscular

- a) Parkinson disease
- b) Multiple sclerosis
- c) Motor neurone disease
- d) Myasthenia gravis

10) Idiopathic

- a) Idiopathic chronic fatigue
- b) 'Chronic fatigue syndrome'
- c) 'Fibromyalgia'

Key Objectives

- Identify underlying organic disease if present.
- For patients whose fatigue does not have an organic basis, determine the cause and provide advice about lifestyle, relationships or environmental changes.
- Select patients who require more formal psychiatric treatment.

General/Specific Objectives

- Take a comprehensive history which includes details of presenting symptoms, past history, family history, social and work history, habits, systems review and current medication.
- Conduct a thorough physical examination, even when finding an abnormality seems improbable.
- Use discrimination in the selection of investigations:
 - Directed at occult organic disease (e.g. anaemia, primary hyperparathyroidism).
 - To followup diagnostic clues found in the history or physical examination.
 - Be familiar with the criteria for the diagnosis of chronic fatigue syndrome.

Overview

Non-reassuring fetal status occurs in 5–10% of pregnancies. Fetal distress, a term also used for this situation, is imprecise and has a low positive predictive value. Thus, when there is concern about fetal status, the newer term should be used.

Causes

1) Utero-placental insufficiency

- a) Placental oedema (diabetes, hydrops)
- b) Placental 'accidents' (abruption, praevia and/or accreta)
- c) Post-dates
- d) Intra-uterine growth restriction

2) Umbilical cord compression

- a) Umbilical cord accidents (prolapse, knot, anomalous insertion of cord)
- b) Oligohydramnios

3) Fetal conditions/anomalies

- a) Sepsis (maternal, fetal, chorioamnionitis)
- b) Fetal congenital anomalies
- c) Prematurity

Key Objective

- Interpret information such as fetal heart rate and acid-base status after considering patient's antepartum information and known risk factors in order to identify non-reassuring fetal status.

General/Specific Objectives

- Through efficient focused data gathering:
 - Identify historical (e.g. hypertension, smoking) and examination risk factors (e.g. fetal size less than expected).
 - List indications for fetal monitoring (antenatal and intrapartum).
 - Diagnose fetal tachycardia (greater than 160 bpm for more than 10 minutes) and fetal bradycardia (fewer than 120 bpm for more than 10 minutes), deceleration patterns, problems of short term variability, reactivity.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - Describe the measurement of fetal acid-base status (scalp pH, cord pH) and list indications for such assessments.
- Conduct an effective plan of management for a patient whose fetus is in a non-reassuring state:
 - Outline the management of post-term pregnancy.
 - Outline the management of infectious diseases during pregnancy that may impair fetal development.
 - List causes of intra-uterine growth restriction.
 - List options regarding mode of delivery if fetal condition is possibly non-reassuring.
 - While awaiting delivery, outline conservative measures for the management of the mother (e.g. discontinue oxytocin, administer oxygen to the mother, check maternal blood pressure (BP) and treat if necessary, change maternal position to left lateral, volume expansion if problem follows insertion of epidural).
 - Identify the short and long term consequences of fetal non-reassuring status.
 - List risk factors for fetal congenital abnormalities (e.g. chromosomal, associated with teratogens).
 - Counsel parents with psycho-emotional consequences of fetal development problems.
 - Select patients with non-reassuring fetal status for referral since in-depth training and experience in obstetrics are required to manage the condition adequately.

Overview

Fever in children is the most common symptom for which parents seek medical advice. While most causes are self-limited viral infections (febrile illness of short duration), it is important to identify serious underlying disease and/or those other infections amenable to treatment.

Causes

1) Febrile illness of short duration (less than two weeks)

a) Viral

- With rash (varicella, morbilli, rubella, erythema infectiosum, roseola infantum, Ross River fever, herpes simplex, herpes zoster)
- Without rash (common cold, adenoviral, enteroviral, mumps, Epstein-Barr virus (EBV), cytomegalovirus (CMV), influenza, hepatitis A, Murray Valley encephalitis)

b) Bacterial

- With rash (meningitis, scarlet fever, impetigo)
- Without rash (streptococcal pharyngitis, pneumonia, urinary, meningitis, skin)

c) Other infectious agents (mycoplasma pneumonia)

2) Prolonged febrile illness (more than two to three weeks)

(see #040A Fever/Pyrexia of Unknown Origin (PUO))

a) Familial-hereditary diseases

b) Other (malaria, tuberculosis (TB), Hodgkin lymphoma)

Key Objectives

- Determine whether the febrile illness is of short duration or is prolonged.
- Differentiate between acute viral or pyogenic infections, and contrast to prolonged febrile illness.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Differentiate infectious from noninfectious causes of fever.
 - Identify the common causes and risk factors of fever in the various age groups.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - Use relevant and cost-effective measures to investigate causes of fever and exclude more serious problems.
- Conduct an effective plan of management for a patient with fever:
 - Outline the management of a septic child and initiate immediate resuscitation measures if necessary.
 - Outline the management of a specific febrile illness.
 - Select patients in need of referral or specialised care.
 - Perform specific technical procedures to diagnose the cause of fever.
 - Counsel parents, family, or caregivers about the care of children with febrile illnesses.
 - Discuss use of aspirin in children with acute febrile illness and influenza vaccination complications.
 - Discuss the relevant features of pandemic, epidemic, and endemic influenza, populations at highest risk of infection and/or complications of influenza, and measures taken to modify the illness and prevent the predictable excess mortality of influenza.

040A Fever/Pyrexia of Unknown Origin (PUO)

Overview

Fever/Pyrexia of unknown origin (PUO) defines a febrile illness of three weeks or more without an established diagnosis despite extensive investigation.

Causes

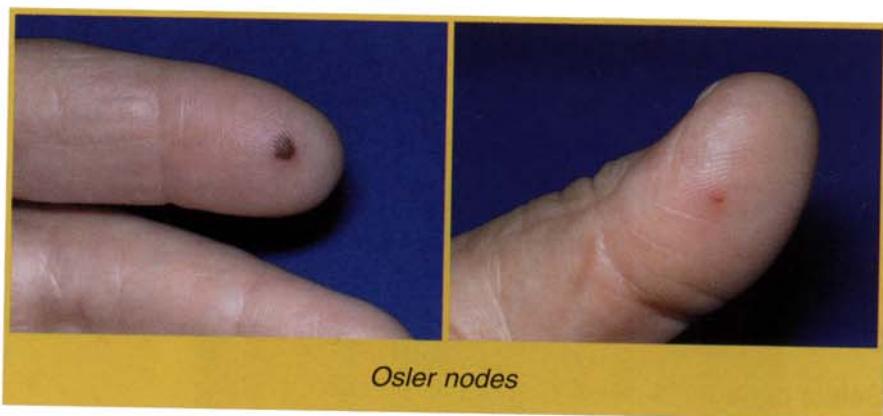
1) Infections (approximately one-third of cases)

a) Systemic

- Endocarditis
- Tuberculosis (TB)
- Malaria
- Other infections (e.g. brucellosis, Q fever)

b) Localised

- Abscess
 - Contiguous spread (e.g. liver, sub-phrenic from hepato-biliary, bowel)
 - Haematogenous spread (e.g. splenic)
 - Perinephric/Renal
- Osteomyelitis
- Central nervous system (CNS) infections (meningitis, encephalitis)



2) Neoplasms (approximately one-third of cases)

- a) Lymphoma/Leukaemia
- b) Solid (renal cell, hepatoma/metastases)

3) Multi-system

- a) Collagen disease (systemic lupus erythematosus (SLE), rheumatoid arthritis (RA))
- b) Granulomatous (sarcoidosis, giant cell arteritis, other vasculitis)
- c) Drug reactions
- d) Miscellaneous (e.g. factitious)

Key Objectives

- Perform repeated clinical assessments searching for unusual presentations of common conditions.
- Elicit a history of travel, animal exposure, whether the patient may be immunosuppressed, is taking any type of medications (e.g. antimicrobial drugs) or had contact with toxins.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Perform a detailed history and physical examination, especially searching for localising symptoms and signs.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis:
 - Conduct the minimum diagnostic investigation based on causal conditions most frequently associated with fever of unknown origin.
 - List indications for lumbar puncture, computed tomography (CT) scan of head or spine, serologic testing, or biopsy.
- Conduct an effective plan of management for a patient with fever of unknown origin:
 - State reasons why therapeutic trials without a firm diagnosis are generally counterproductive.
 - Outline a management plan consistent with the underlying causes.
 - Select patients in need of specialised care.

040B Fever in the Immune-Compromised Host / Recurrent Fever

Overview

Patients with certain immunodeficiencies are at high risk for infections, the infective organism and site depending on type and severity of immuno-suppression. Some of these infections are life-threatening.

1) Defects in cell-mediated immunity (T cells)

- a) Acquired cell-mediated immunity defect (HIV/AIDS, Hodgkin disease, immuno-suppressive therapy, lymphocytic leukaemia)
- b) Inherited cell-mediated immunity defect

2) Defects in humoral immunity (B cells)

- a) Loss (e.g. nephrotic syndrome)
- b) Decreased production (in infancy, transient; myeloma, lymphoproliferative disease)

3) Complement deficiencies (collagen disease, not necessarily associated with infection)

4) Asplenia (splenectomy, congenital absence, sickle cell disease, systemic lupus erythematosus (SLE), etc.)

5) Neutrophil dysfunction (granulomatous disease, uraemia, cirrhosis)



Rash of SLE

6) Neutropenia

(see #010 Abnormalities of White Blood Cells)

7) Anatomic barriers abnormal (surgery, foreign bodies, burns, desquamating rash)

Key Objectives

- Determine if patients with fever have isolated febrile episodes or recurrent ones, single or multiple anatomic sites involved in infections, past history of infections and infections in relatives.
- Determine whether possible exposure to HIV occurred.
- Determine if immuno-suppressive or anti-infective medications are being taken or have recently been administered.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Determine whether it is likely the patient with fever is immuno-compromised (e.g. persistent lymphadenopathy).
 - Determine whether the site of infection is single or multiple, and which body systems are likely to be involved (e.g. upper respiratory tract, lungs, skin, gastro-intestinal tract, nervous system).
 - Determine, if possible, the type of infection and/or organism isolated in previous infections.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis:
 - Select serum protein electrophoresis in a patient suspected of hypogammaglobulinaemia.
 - Select sites from which cultures should be obtained and interpret results.
 - Investigate a patient suspected to have HIV (HIV serology).
 - Select appropriate diagnostic imaging.
 - Contrast the type of organisms likely to cause infection in patients with asplenia or hypogammaglobulinaemia compared to organisms in cell-mediated immune defect.
- Conduct an effective plan of management for an immuno-compromised patient with fever:
 - Outline the initial management of a febrile patient who is immuno-compromised.
 - Select patients in need of specialised care.
 - Discuss indications for intravenous (IV) gamma globulin replacement therapy.
 - Discuss indications for prophylactic pneumococcal vaccination.

040C Fever in the Neonate (in Child Less than Four Weeks)

Overview

Fever in neonates is serious, and the cause must be immediately identified and treated.

Causes

1) Infections

a) Bacterial

- Pneumonia
- Urinary tract
- Septicaemia
- Meningitis
- Omphalitis
- Osteomyelitis, septic arthritis
- Conjunctivitis

b) Toxoplasmosis

c) Viral

- Cytomegalovirus (CMV)
- Herpes
- Rubella
- Other

2) Overheating (e.g. in isolette)

Key Objective

- Rapidly assess the neonate to establish a working diagnosis and institute treatment immediately.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Identify the features of a septic neonate.
 - Recognise that fever may be absent in a neonate with sepsis.
 - Identify the risk factors for sepsis in the neonate including maternal, host, immunologic and environmental factors.
 - Identify the causes of fever in the neonate.

- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - Outline relevant and cost-effective investigations for a neonate with fever.
 - Contrast the differences in laboratory features in neonates and older infants and children with sepsis.
- Conduct an effective plan of management for a fever in the neonate:
 - Outline resuscitative measures in neonates with sepsis.
 - Outline the management of specific causes of sepsis in the neonate.
 - Perform specific procedures to diagnose cause of neonatal fever.
 - Counsel parents regarding the important issues in the short and long term outcome of neonatal fever.

040D Hypothermia

Overview

Although far less common than is elevation in temperature, hypothermia (central temperature less than 35°C) is of considerable importance because it can represent a medical emergency.

Causes

- 1) Accidental/Immersion hypothermia (exposure to cold)**

- 2) Hypothermia with acute illness (associated with metabolic acidosis, cardiac arrhythmias)**
 - a) Decreased heat production (hypothyroidism, drug overdose, diabetes mellitus, hypoglycaemia, congestive heart failure)
 - b) Increased heat loss (cirrhosis, uraemia, respiratory failure, drug overdose)
 - c) Impaired thermoregulation (stroke, drug overdose)



Key Objective

- State that hypothermia is a potential medical emergency and urgent therapy may be necessary.

General/Specific Objectives

- Conduct an effective plan of management for a patient with hypothermia:
 - Outline an emergency management plan.
 - Contrast the advantages and disadvantages of active external re-warming and active core re-warming in accidental hypothermia.
- Through efficient, focused data gathering:
 - In patients with hypothermia secondary to acute illness, determine whether alcohol or other drugs were ingested.
 - Determine whether previous illnesses may have precipitated the hypothermia.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis:
 - Select, list, and interpret investigations immediately after therapy is initiated.
 - Recognise and prevent the potential hazards of iatrogenic hypothermia (massive transfusion, prolonged surgery, etc.).
 - Select patients in need of specialised care.

040E Hyperthermia

Overview

Hyperthermia is an elevation in core body temperature due to failure in thermo-regulation (in contrast to fever, which is induced by cytokine activation). Although the differential diagnosis is extensive (includes all causes of fever), the three conditions listed below may be associated with severe complications and death.

Causes

1) Heat stroke

- a) Classic
- b) Exertional

2) Neuroleptic malignant syndrome (NMS)

3) Malignant hyperthermia

Key Objective

- Determine the context in which the symptoms developed (e.g. malignant hyperthermia after anaesthetic, NMS after antipsychotics).

General/Specific Objectives

- Through efficient, focused data gathering:
 - Elicit a history of chronic medical conditions that either impair thermoregulation or prevent removal from a hot environment, heavy exercise in high ambient temperatures, anaesthetics, or antipsychotics.
 - Perform examination including rectal temperature, presence of pulmonary oedema, cardiac examination, evidence of bleeding, central nervous system (CNS) dysfunction, muscle tone.

- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - Select investigations for the determination of disseminated intravascular coagulation (DIC), rhabdomyolysis, renal or hepatic failure, arrhythmias, pulmonary oedema.
- Conduct an effective plan of management for a patient with severe hyperthermia:
 - Recognise that external cooling may be potentially detrimental.
 - Outline various methods of cooling a hyperthermic patient, and indicate when to stop the cooling process.
 - Outline initial management.

(See also #113 Trauma/Accidents/Prevention and #113B Bone and Joint Injuries)

Overview

Fractures and dislocations are common problems at any age and are related to high-energy injuries (e.g. motor accidents, sport injuries) or, at the other end of the spectrum, simple injuries such as falls (see #037 Falls). Fractures and dislocations in children and young adults tend to be due to motor vehicle and sports injuries whereas in the elderly the cause is more likely to be associated with relatively minor trauma such as a fall.



Dislocated shoulder – axillary nerve at risk



Supracondylar humeral fracture – brachial artery at risk

Causes

1) Fractures – traumatic

2) Fractures – pathologic

- a) Metabolic bone disease
- b) Tumours (benign, malignant, primary, secondary)

3) Fractures – stress

4) Dislocations and fracture/dislocations

Key Objectives

- In traumatic fractures recognise the importance of differentiating 'open' from 'closed' injuries and the need for early wound closure in the former.
- Appreciate and identify accurately and promptly the potential vascular and neurologic complications of common fractures and dislocations.



Stress fracture tibia



Pathological fracture femur

General/Specific Objectives

- Through efficient, focused data gathering:
 - Determine limb function, local soft tissue changes (closed or open fracture), bone or joint disruption, active and passive range of motion, status of joint above and below suspected long bone fracture.
 - Determine neurologic and vascular status distal to level of injury.
 - If minimal trauma causes a fracture, elicit history of conditions associated with pathologic fractures (metabolic bone disease, tumours), or identify activity that involves highly repetitive low-level stress (e.g. marching, running, ballet dancing).
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis:
 - Select skeletal elements to be included in the diagnostic imaging required, as well as views.
 - List circumstances requiring additional diagnostic imaging such as computed tomography (CT), imaging of opposite side for comparison, joint above and below, bone scan, etc.
 - Outline investigation plan in a patient with a pathologic bone fracture.
- Conduct an effective plan of management for a patient with fractures / dislocations / joint injuries:
 - Recognise differing requirements for management of stable and unstable fractures.
 - List methods to obtain and maintain appropriate reduction.
 - Determine whether closed or open treatment is required and select patients requiring referral.
 - List complications of limb immobilisation and methods of maintaining reduction (e.g. plaster cast).
 - Outline management of specific fractures (e.g. stress fracture, pathological fracture).

Overview

Abnormalities of gait can result from disorders affecting several levels of the nervous system and the type of abnormality observed clinically often indicates the site affected.

Causes

1) Disorders of balance

- a) Cerebellar ataxia – midline lesions (tumours, haemorrhage, infarct, multiple sclerosis, drugs, toxins)
- b) Sensory ataxia
 - Vestibular
(see #029 Dizziness/Vertigo)
 - Proprioceptive
(see #069 Numbness and Tingling)
 - Visual
(see #120 Visual Disturbance/Loss)

2) Disorders of locomotion

- a) Weakness disorders
(see #122 Weakness/Paralysis/Paresis)
- b) Parkinsonian gait
(see #057 Involuntary Movement Disorders / Tic Disorders)
- c) Higher level gait disorders (disorders of frontal lobes, basal ganglia, thalamus, midbrain such as stroke, hydrocephalus, dementia, tumours)
- d) Antalgic gait (disorders of the musculoskeletal system such as degenerative joint diseases and other arthropathies, deformities of legs, spinal disorders)

3) Hysterical gait

Key Objective

- Determine whether the gait disturbance occurs more in the dark or light (sensory), whether giddiness or vertigo (vestibular) accompanies the disturbance, presence or absence and distribution of muscle weakness, and whether there is pain, numbness, or tingling in the limbs (sensory).

General/Specific Objectives

- Through efficient, focused data gathering:
 - Differentiate between cerebellar and sensory ataxia.
 - Determine whether there is weakness (difficulty rising from a chair, fatigability of muscles), stiffness, or pain (trauma to legs, pelvis or spine, arthritis).
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis:
 - Outline initial investigation for a patient with an abnormal gait.
 - Select patients in need of referral for further investigation.
- Conduct an effective plan of management for a patient with gait disturbance/ataxia:
 - Select patients in need of specialised care.
 - Outline a management plan for patients with antalgic gait.

043 Genetic Concerns, Dysmorphic Features

(See also #129A Congenital Malformations)

Overview

Three out of 100 infants are born with a congenital defect or genetic disorder. Many of these are associated with a mental retardation or learning disability. Although early involvement of genetic specialists in the care of children with dysmorphic disorders is prudent, primary care clinicians are at times, required to contribute immediate care, and subsequently, assist with long term management of such patients.

Causes

- 1) Teratogenic disorders (fetal alcohol syndrome, cocaine, coumarin)**
- 2) Chromosomal disorders**
 - a) Down syndrome
 - b) Turner syndrome
 - c) Fragile X chromosome
 - d) Klinefelter syndrome
- 3) Genetic syndromes**
 - a) Tuberous sclerosis
 - b) Neurofibromatosis
 - c) Duchenne muscular dystrophy



Congenital ear malformation



Sturge-Weber syndrome

Key Objective

- Demonstrate empathy for parents' concern, if diagnosis is known, outline probable course/management, and discuss early referral for specialised care, if appropriate.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Formulate a phenotype from relevant family history.
 - Determine exposure, if any, to teratogens in pregnancy.
 - Differentiate chromosome disorders or genetic syndromes in the family from other types of dysmorphic features.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - List indications for antenatal screening in a subsequent pregnancy.
 - Determine by seeking the advice of a specialist whether any immediate investigation is required prior to referral.
- Conduct an effective plan of management for a patient with dysmorphic features:
 - Explain the alternatives for dealing with the risk of recurrence.
 - Counsel families or refer for genetic counselling if a genetic disorder is identified concerning future risks and prenatal strategies for the prevention of dysmorphic disorders.
 - Discuss with the parents that the long term care will depend on the diagnosis and prognosis, but may involve specialised medical care, multidisciplinary services, family support, and if necessary, academic support and child placement.



Conjoined twins

043A Genetic Concerns, Screening

Overview

Advances in genetics have increased our understanding of the origin of many diseases. Not infrequently, spouses who are considering becoming parents, or have just conceived, seek medical advice because of concerns they might have. Primary care clinicians and others must provide counselling and referral if further evaluation is necessary.

Causes

1) Chromosome defects

- a) Numerical (Down syndrome)
- b) Structural (*cri-du-chat*)

2) Mendelian – common causes are listed below

a) Dominant

- Huntington chorea
- Familial hypercholesterolaemia
- Polycystic kidney disease

b) Recessive (cystic fibrosis)

c) X-linked

- Haemophilia
- Duchenne muscular dystrophy

3) Multifactorial conditions (neural tube defects)

Key Objective

- Elicit history on the *proband* or *index case* (the clinically affected person who has brought the family to the attention of the clinician) and of each of the *first-degree* relatives (parents, siblings, and offspring of the proband). Formulate a three-generation pedigree.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Elicit history regarding prior obstetrical, medical, and family history, exposure or concerns during current pregnancy, age of mother at date of delivery.
 - Determine whether there are relatives with identical, similar, or associated features, or a problem recognised to be genetically determined: is there consanguinity, what is the ethnic origin of the family? Unexplained early neonatal death may indicate an inherited genetic disorder.
 - Identify/search literature for physical characteristics/hallmark features of genetic conditions.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - List diagnostic tests available for prenatal diagnosis in a subsequent pregnancy (e.g. amniocentesis, fetal blood sampling); discuss sensitivity, specificity, expense, and risk of such testing.
 - Differentiate between screening tests and diagnostic tests for chromosome disorders and list indications.
 - Select patients who require consultation with a DNA laboratory or geneticist consultant regarding additional investigation and plan this prior to next pregnancy.
- Conduct an effective plan of management for screening genetic concerns/ dysmorphic features:
 - Counsel pertinent family members by explaining meiosis, mitosis, and errors leading to aneuploidy.
 - Select patients for referral to genetics specialists, community resources, social support groups, etc.
 - Counsel patients regarding alternative reproductive options (e.g. contraception, therapeutic donor insemination, donor ova, adoption, prenatal diagnosis with/without therapeutic termination of affected fetus, embryo biopsy and assessment within an invitro-fertilisation programme (IVF) (with subsequent transfer of normal embryos only).

044A Hair Disorders

Overview

Symptoms of too little or too much hair are common. Loss of hair and hirsutism may have serious effects on self-esteem. A correct diagnosis is usually possible from systematic history-taking and examination. Hair changes can provide significant hints of underlying systemic disease. A treatable underlying cause may be present; but treatment is poorly effective except when an accompanying local inflammatory disorder is present.

Causes

1) Alopecia (hair loss)

a) Primary

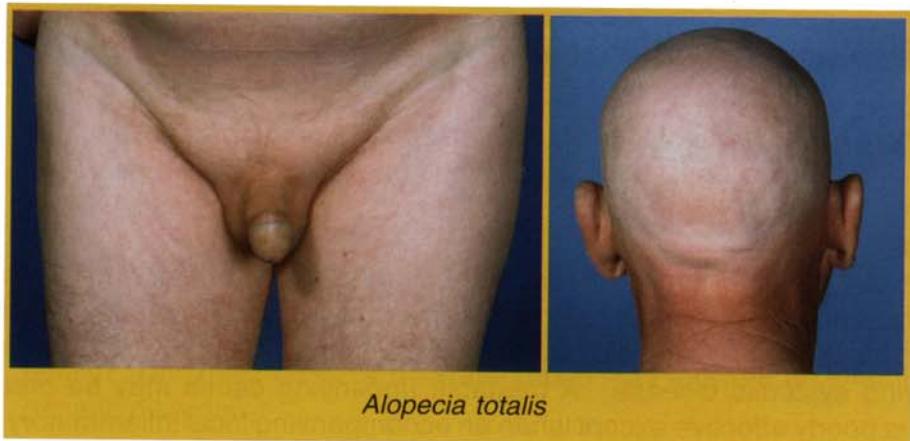
- Alopecia areata, alopecia totalis, alopecia universalis (poor prognosis)
- Acute telogen effluvium – pregnancy, surgery, acute illness etc. (good prognosis)

b) Secondary

- Chronic telogen effluvium
 - Metabolic and endocrine disorders (thyroid, diabetes, puberty)
 - Iron and zinc deficiency
 - Advanced malignancy
 - Malnutrition
- Anagen effluvium
 - Chemotherapy and radiation therapy
 - Poisoning (thallium, mercury, arsenic)
- Androgenic alopecia
 - Male pattern baldness
 - Female pattern baldness
- Infections (tinea capitis)



Alopecia areata



2) Hirsutism

(see #052 Hirsutism and Virilisation)

a) Virilisation absent

- Idiopathic
- Familial
- Drugs (minoxidil, cyclosporine, phenytoin)

b) Virilisation present (clitoromegaly, male habitus, voice deepening)

- Androgenic excess from ovarian or adrenal source

3) Local inflammation

a) Scaly scalp disorders

- Dandruff (pityriasis capitis)
- Seborrhoeic dermatitis
- Psoriasis

b) Infective hair disorders

- Folliculitis barbae
- Tinea capitis
- Lice (pediculosis) – head, pubic



Tinea capitis

Key Objectives

- In patients with alopecia:
 - Identify type of hair loss.
 - Exclude secondary causes and establish whether scarring is present.
- In patients with hirsutism:
 - Determine whether virilisation is present, indicating need for full investigation.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Differentiate between various causes by seeking corroborative evidence.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis.
- Interpret influences of hair cycles of anagen (the growing phase) and telogen (the resting phase when hair is normally shed).
- Conduct an effective plan of diagnosis and management for a patient with alopecia.
- Conduct an effective plan of diagnosis and management for a patient with other local hair disorders.

044B Nail Disorders

Overview

Nail changes frequently provide significant hints of underlying systemic disease. Changes in colour, surface or shape may be diagnostic.

Local medical and surgical nail disorders may involve nail bed and germinal matrix, nail plate, nail fold sulcus, lateral nail fold, or cuticle.

Causes

1) Nail changes in systemic disease

Nail sign

a) Colour change

- | <i>Nail sign</i> | <i>Condition</i> |
|----------------------------------------------------|---------------------------------------------------------------------------------------------|
| <input type="checkbox"/> Nail bed pallor | Anaemia |
| <input type="checkbox"/> Blue nails | Cyanosis, Wilson disease |
| <input type="checkbox"/> Red nails | Polycythaemia, carbon monoxide poisoning |
| <input type="checkbox"/> Yellow nails | Jaundice, tinea, tetracycline, yellow nail syndrome |
| <input type="checkbox"/> Brown nails | Nicotine, psoriasis, poisons |
| <input type="checkbox"/> White nails – leuconychia | Hypoalbuminaemia ('liver nails') |
| <input type="checkbox"/> Black nails | Haematoma, melanoma |
| <input type="checkbox"/> Splinter haemorrhages | Infective endocarditis, vasculitis, subclavian artery compression, blood dyscrasias, trauma |



Nails in liver disease



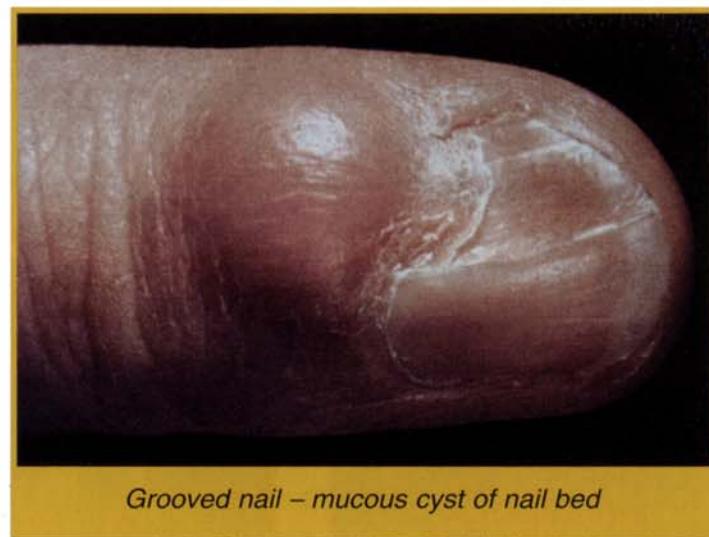
Pitted nails – psoriasis

b) Surface change

- | | |
|---------------------------------------------------------------------------------|--------------------------------------------------------|
| <input type="checkbox"/> Transverse grooves (Beau lines) | Serious illness or local trauma |
| <input type="checkbox"/> Opaque white transverse bands (Muehrcke or Mees lines) | As above, also hypoalbuminaemia, poisons, chemotherapy |
| <input type="checkbox"/> Pitting | Psoriasis, chronic paronychia |
| <input type="checkbox"/> 'Half and half' nails (white proximal and red distal) | Chronic renal disease, cirrhosis |

c) Shape change

- | | |
|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> Clubbing | Lung cancer, chronic lung suppuration, cyanotic heart disease, infective endocarditis, ulcerative colitis, thyroid acropathy in Graves disease |
| <input type="checkbox"/> Spoon shaped (koilonychia) | Iron deficiency anaemia, diabetes |
| <input type="checkbox"/> Onycholysis (separation of nail plate from nail bed) | Thyrotoxicosis, psoriasis, trauma |
| <input type="checkbox"/> Nail fold erythema and telangiectasis | Systemic lupus erythematosus (SLE), and other connective tissue disorders |
| <input type="checkbox"/> Hypoplastic | Congenital syndromes |
| <input type="checkbox"/> Onychogryposis (ram-horn nail) | Trauma, fungal infection, ischaemic, idiopathic |



2) Other local nail disorders

- a) 'Hang nail' – cuticle tear
- b) Nail-biting – habit associated with emotional concerns
- c) Chipped, engrimed – manual labouring occupations
- d) Paronychia ('whitlow') infected nail fold, acute or chronic, bacterial, fungal, herpetic (dishwashers, diabetics and nurses)
- e) Onychomycosis – tinea unguim, more frequent in toenails
- f) Ingrown toenail – onychocryptosis
- g) Mucous cyst of nail bed / nail fold
- h) Subungual haematoma or melanoma
- i) Glomus tumour – marked tenderness
- j) Hereditary pachyonychia
- k) Drug effects – minocycline, tetracycline, antimalarials, retinoids, nicotine staining

Key Objectives

- Make nail assessment an integral component of examination of the limbs.
- Differentiate between changes in colour, surface and shape.
- Be alert to nail changes in systemic disease.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Differentiate between various causes by seeking corroborative evidence.
- Conduct an effective plan of management for a patient with a nail disorder.
- Select patients in need of referral.
- Interpret critical clinical and laboratory findings which were key in the process of exclusion, differentiation and diagnosis.



Ram-horn nail – onychogryposis



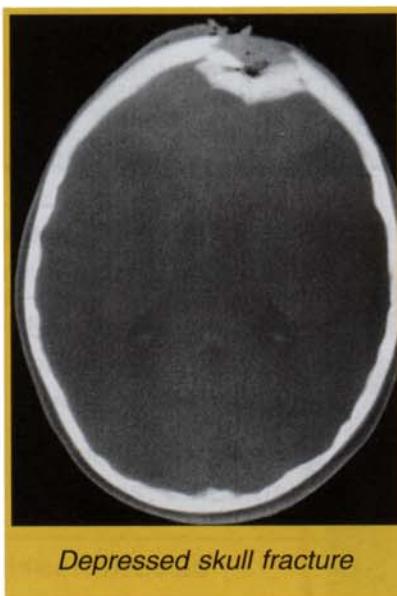
Subungual haematoma

Overview

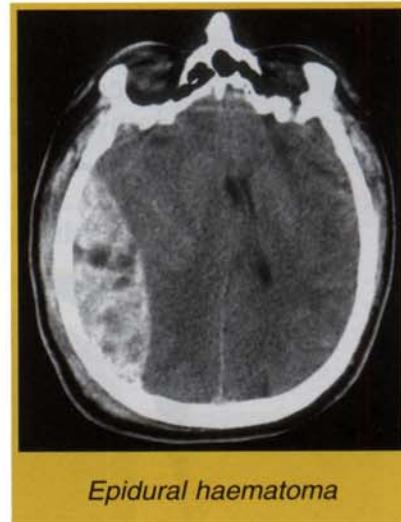
Most head injuries follow blunt trauma. Fractures of the skull can be open/compound externally in association with scalp wounds, or internally from basal fractures. Cerebral concussion, contusion and laceration represent a spectrum of increasingly severe primary damage. The most important aspect of clinical neurological assessment is level of consciousness, together with abnormal neurological signs. Cerebral compression with progressive clinical deterioration is seen in patients with complications resulting from haematoma formation, cerebral oedema or hypoxic damage. A computed tomography (CT) scan is an essential baseline investigation in the patient with a severe head injury.

Causes

- 1) Blunt or penetrating injuries with or without skull fracture**
- 2) Cerebral concussion, contusion, laceration**
- 3) Cerebral haemorrhage/haematoma (epidural, subdural, subarachnoid, intracerebral)**
- 4) Cerebral oedema/compression**



Depressed skull fracture



Epidural haematoma

Key Objectives

- Grade level of consciousness on Glasgow Coma Scale using responses of eye opening, best motor response and best verbal response.
- Select CT scan of the head in a patient, whose mental status is depressed or worsening, has focal neurologic deficit, depressed skull fracture, or penetrating head injury.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Elicit history on more than one occasion to detect change in mental status.
 - Perform neurological examination on more than one occasion.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis:
 - Contrast time course for appearance of abnormal findings on head CT for epidural haematoma from middle meningeal artery injury from epidural or subdural haematoma resulting from venous injury.
 - Order repeat head CT for patient whose neurologic condition deteriorates or fails to improve as expected.
- Conduct an effective plan of management for a patient with head injury:
 - Select patients in need of specialised care.
 - Assess patients with deep non-responsive coma for criteria of brain death by establishing diagnosis of irreversible absence of brain stem reflexes and permanent absence of spontaneous breathing under conditions that exclude the effects of hypoxia and neuromuscular blocking drugs.
 - In a patient whose head injury has caused brain death but the heart is beating, communicate this information to the transplantation team (or equivalent) if the deceased patient or the family have indicated a desire to donate organ(s).
 - If there is no indication that organ donation has been considered, counsel, with empathy, the family regarding the possibility.



Overview

The differentiation of patients with headaches due to serious or life-threatening conditions from those with benign primary disorders (e.g. tension headaches or migraines) is an important diagnostic challenge. Contrary to popular belief, 'eye strain' is not a common cause of headache.

Causes

1) Migraine

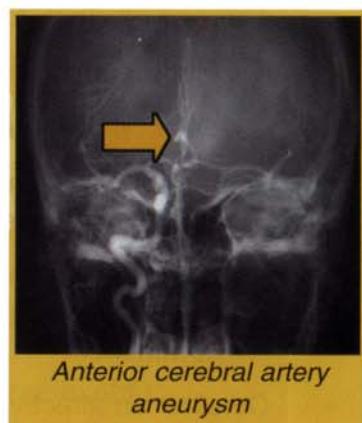
- a) With aura
- b) Without aura

2) Tension-type headache (also headache with medication overuse)

3) Cluster headache

4) Headache associated with vascular disorders

- a) Subarachnoid haemorrhage
- b) Temporal arteritis
- c) Venous thrombosis
- d) Intracranial haematoma (including epidural, subdural)
- e) Severe arterial hypertension



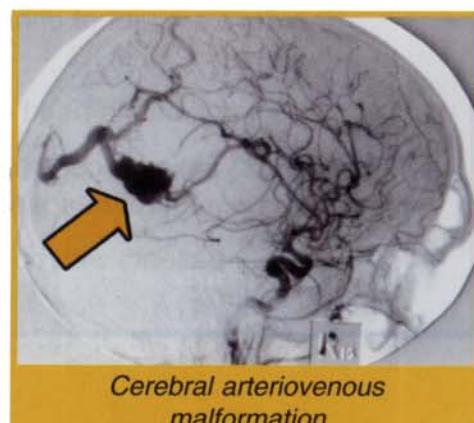
Anterior cerebral artery aneurysm

5) Headache associated with nonvascular intracranial disorder

- a) Elevated cerebrospinal fluid (CSF) pressure (intracranial mass lesion or hydrocephalus)
- b) Intracranial infection (meningitis, abscess, sinusitis)

6) Miscellaneous

- a) Systemic viral infection
- b) Psychological disorders
- c) Medication use (nitroglycerin) or medication withdrawal (analgesic)
- d) Cervical spondylosis
- e) Poor working ergonomics (computer screen at wrong level, etc.)



Cerebral arteriovenous malformation



Meningioma



Temporal arteritis

Key Objective

- Elicit the signs and symptoms that help distinguish potentially serious from benign headaches.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Differentiate between the various causes of headaches.
 - Select patients in need of immediate management.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation and diagnosis:
 - Outline and interpret appropriate and cost-effective laboratory and diagnostic imaging tests used in the assessment of patients with headaches.
- Conduct an effective plan of management for a patient with a headache:
 - List the indications and contraindications for the use of various analgesic medications and for the prophylactic use of specific medications.
 - Outline use of analgesics and ergotamine for the purpose of avoiding the development of chronic daily headaches secondary to medication overuse.
 - Select patients in need of specialised care.
 - Provide patient education and counselling regarding the causes and management of headaches.
 - Identify patients with complications related to narcotic therapy and addiction.

Overview

There are many causes for hearing loss, many treatable and/or preventable. In paediatrics, otitis media accounts for 25% of all office visits. Although adults and older children have otitis less commonly, they may be affected by otitis sequelae.

Causes

1) Conductive hearing loss

a) External ear pathology

- Inflammation or infection
- Obstruction of canal (wax, foreign body, tumour)

b) Middle ear pathology

- Otitis media (acute, serous, chronic)
- Cholesteatoma
- Ossicular pathology (otosclerosis, fracture)
- Tumours (glomus, adenoma)

2) Sensorineural hearing loss (sudden, chronic)

a) Cochlear (inner ear) pathology

- Presbycusis of old-age
- Loud noise
- Ototoxic drugs (aminoglycosides)
- Trauma (temporal bone fracture)
- Inner ear disease (Ménière disease, autoimmune, etc.)

b) Retro-cochlear/central pathology

- Cerebellopontine angle tumours (acoustic neuroma, meningioma)
- Infection (meningitis)
- Multiple sclerosis
- Vascular occlusion

c) Congenital

- Hereditary, congenital syndromes
- High-risk birth 'TORCH' infections (Toxoplasmosis, Other, Rubella, Cytomegalovirus, Herpes simplex virus), low birth weight, etc.

Key Objectives

- Differentiate between conductive and sensorineural hearing loss by history and tuning fork test.
- Communicate primary prevention strategy (ear noise protection).

General/Specific Objectives

- Through efficient, focused data gathering:
 - Elicit history mindful of the non-specific symptoms of otitis in younger children; examine after wax removal; identify risks of hearing loss (familial, industrial, drugs, at birth).
 - Differentiate conductive and sensorineural hearing loss with a tuning fork test.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis:
 - Differentiate conductive and sensorineural hearing loss on audiograms.
- Conduct an effective plan of management for a patient with hearing loss / deafness:
 - Select patients in need of specialised care.
 - Outline a management and followup plan for a patient with otitis, selecting appropriate antibiotics.
- Counsel and educate patients about primary prevention of hearing loss (e.g. ear noise protection).

Overview

Haematemesis, although often self-limited, is likely to be large and severe in elderly patients with arteriosclerotic vessels and may be associated with considerable mortality and morbidity without urgent management. Mortality and morbidity is also high in patients with portal hypertension.

Causes

1) Ulcerative/Erosive

a) Peptic ulcer disease

- Idiopathic
- Drugs (nonsteroidal anti-inflammatory drugs (NSAIDs), corticosteroids, immunosuppression)
- Infectious (*Helicobacter pylori*, cytomegalovirus (CMV), herpes simplex)
- Stress ulcer (postoperative, post-trauma, intensive care patients)

b) Oesophagitis

- Peptic
- Infectious
- Pill-induced, e.g. potassium chloride

2) Portal hypertension

3) Trauma / Severe vomiting (Mallory-Weiss syndrome)

4) Vascular malformations (angiomas, hereditary haemorrhagic telangiectasia (Osler disease))

5) Tumours (benign, malignant)



Key Objectives

- Determine the haemodynamic stability of the patient and the resuscitation measures required.
- Select patients requiring admission to intensive care units.
- Select diagnostic studies after adequate resuscitation and stabilisation (to prevent complications of endoscopy) and deliver associated treatment if required.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Diagnose the likely cause of haematemesis.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis:
 - Select appropriate investigations for the causes of haematemesis, and determine whether bleeding disorders are present.
 - List the indications for diagnostic endoscopy and diagnostic imaging.
 - List findings suggesting that likelihood of re-bleeding is high.
- Conduct an effective plan of management for a patient with haematemesis:
 - Outline the mechanism of action of various medical treatments.
 - List indications for pharmacological, endoscopic or surgical treatment.
 - Outline subsequent treatment to decrease recurrence.
 - Select patients in need of specialised care.

Overview

Haematuria is bleeding via the urinary tract and may be a dramatic presentation of renal or urinary tract pathology (frank haematuria) or a condition that is only detected on dipstick testing and/or microscopic examination. Phase contrast microscopy, except in frank haematuria, can indicate whether the bleeding is more likely to be of kidney origin (glomerular) or not.

Causes

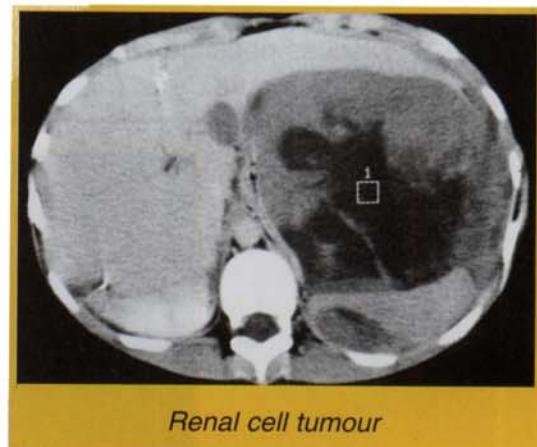
1) Transient

- a) Urinary tract infections (UTIs)
- b) Exercise-induced
- c) Glomerulonephritis
- d) Stones/Crystals
- e) Trauma
- f) Endometriosis
- g) Thromboembolism
- h) Anticoagulants

2) Persistent

a) Extraglomerular

- Renal
 - Tumours
 - Tubulointerstitial diseases (e.g. polycystic kidney disease, pyelonephritis)
 - Vascular (e.g. papillary necrosis, sickle cell disease)
- Collecting system
 - Tumours
 - Stones



Renal cell tumour

b) Glomerular

- Isolated (e.g. immunoglobulin A (IgA) nephropathy, thin membrane disease)
- Post-infections (e.g. post-streptococcal)
- Systemic involvement (e.g. vasculitis, systemic lupus erythematosus (SLE))

Key Objective

- Differentiate red urine from haematuria, frank from microscopic haematuria, transient from persistent haematuria, and glomerular from extraglomerular haematuria.

General/Specific Objectives

- Through efficient, focused data gathering:
 - Determine whether the patient has true haematuria.
 - Diagnose the presence of UTIs.
 - Differentiate between glomerular and extraglomerular haematuria.
- Interpret critical clinical and laboratory findings which were key in the processes of exclusion, differentiation, and diagnosis:
 - Interpret reported urinalysis findings.
 - Outline significance of patient's age, gender, and lifestyle on diagnostic possibilities.
 - Formulate a diagnostic plan for a patient with frank haematuria.
- Conduct an effective plan of management for a patient with haematuria:
 - Select treatment for patients with UTIs appropriate for gender, and for lower and upper urinary tract.
 - Outline a plan for investigation of patients with recurrent nephrolithiasis.
 - Formulate a management plan for prevention of recurrent nephrolithiasis.
 - Discuss possible strategies for the detection and prevention of urinary tract tumours.



Large vesical calculus

050 Hemiplegia / Hemisensory Loss / Stroke with or without Aphasia / Prevention of Stroke

Overview

Stroke is a focal neurologic deficit lasting longer than 24 hours, of presumed vascular origin. If the deficit lasts less than 24 hours, it is termed transient ischaemia. These arbitrary definitions are conventional but it is now recognised that a significant proportion of patients with transient ischaemic attacks will have pathological lesions on cerebral imaging (computed tomography (CT) and magnetic resonance imaging (MRI)). Vascular causes of neurological deficit usually have a sudden onset. Hemiplegia and hemianaesthesia arise from a lesion above the mid-cervical region, and aphasia indicates the involvement of the dominant cerebral hemisphere. The occurrence of a stroke or transient ischaemia indicates significant vascular, cardiac or haematological disease demanding investigation and appropriate medical or surgical treatment.

Causes

1) Stroke or transient ischaemia

a) Ischaemic

- Embolism, thrombosis, hypoperfusion

b) Cerebral haemorrhage

- 'Spontaneous'
- Vascular malformation
- Clotting disorder

c) Subarachnoid haemorrhage

- Usually indicating intracerebral bleeding or vascular spasm

2) Postepileptic (Todd palsy)

3) Head trauma

- a) Cerebral contusion with haemorrhage and oedema**
- b) Extradural haematoma**
- c) Subdural haematoma**

4) Intracranial space-occupying lesions

- a) Primary and secondary malignancy**
- b) Benign tumours**
- c) Cerebral abscess**

5) Hemiplegic migraine

6) Demyelination

- a) Encephalomyelitis
- b) Multiple sclerosis

7) Infections

- a) Encephalitis
- b) Toxoplasmosis (in AIDS)

Key Objectives

- Recognise the risk factors for stroke within the community, and recommend appropriate preventive measures.
- Diagnose the cause of hemiplegia, on the basis of history, clinical findings and neuro-imaging studies.
- Diagnose the cause of transient ischaemia and minor stroke and recommend appropriate medical or surgical treatment to prevent further stroke.

General/Specific Objectives

- Through efficient history-taking:
 - Differentiate between the causes of hemiplegia based on history, time course, clinical findings and risk factors.
 - Identify transient ischaemic syndromes including transient monocular blindness (amaurosis fugax), transient hemispheric syndromes and vertebrobasilar syndromes including visual, brainstem and cerebellar symptoms.
- Interpret critical clinical findings, laboratory data and CT and MRI scan images necessary to arrive at a presumptive diagnosis.
 - Recognise the CT scan appearance of large vessel and lacunar cerebral infarction, cerebral haemorrhage, subarachnoid haemorrhage, extradural haematoma, subdural haematoma, cerebral contusion and intracranial space occupying lesion.
 - Recommend other appropriate laboratory and imaging studies (including contrast CT and MRI) if required to arrive at a definitive diagnosis.
- Recommend an immediate plan of investigation and treatment for all patients presenting with transient ischaemia.

- Describe an effective plan of management for a patient with hemiplegia:
 - Outline the acute medical management of patients with ischaemic and haemorrhagic strokes.
 - Discuss the primary and secondary preventive measures used in the prevention of ischaemic stroke, including medications (anti-platelet and anticoagulant) and carotid endarterectomy.
 - Outline the management in the prevention of stroke of a patient with atrial fibrillation.
 - Select patients in need of specialised care.
 - Understand the effective and timely use of rehabilitation.

050 Hemiplegia / Hemisensory Loss / Stroke with or without Aphasia / Prevention of Stroke

050A Paraplegia/Paraparesis

Overview

Acute paraplegia should be identified as a medical emergency which may require urgent surgery. Spinal cord lesions cause lower motor neuron signs at the level of the lesion and upper motor neuron signs below that level. High cervical lesions will cause tetraplegia (quadriplegia). Lesions at lower cervical level or below cause paraplegia or paraparesis, with sensory loss affecting trunk and lower limbs. Cord compression also causes neurogenic bladder involvement with bladder distension and overflow incontinence.

Causes

1) With cord compression

- a) Spinal fractures/dislocations
- b) Intervertebral disc prolapse
- c) Metastatic or primary neoplasms
- d) Vascular malformations

2) Without cord compression

- a) Vascular thrombosis
- b) Syringomyelia
- c) Demyelinating disease
- d) Nutritional deficiency (vitamin B₁₂)

Key Objective

- Recognise acute paraplegia as a medical emergency and identify causes associated with cord compression.

General/Specific Objectives

- Through efficient, focused data gathering, diagnose level and cause of paraplegia/paraparesis.
 - Define the upper limit of sensory loss to help determine level of injury.
 - Describe and explain the dissociated sensory loss and other findings in hemi-section of the spinal cord (Brown-Séquard syndrome) and outline other causes of paraplegia with dissociated sensory loss.
 - Describe the role of investigation by plain X-ray, computed tomography (CT) scanning, magnetic resonance imaging (MRI) and isotope bone scan in making the diagnosis of causative lesions.