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Medicine

1. Bone marrow density 2 SD below the reference level is labeled as:

a. Normal level
b. Low bone mass
c. Osteoporosis
d. Severe osteoporosis

Ans: b
Ref: Authors: Joel S Finkelstein et al., Clinical manifestations, diagnosis and evaluation of osteoporosis in men

- Normal: A value for BMD within 1.0 SD of the young adult female reference mean (T-score greater than or equal to -1.0 SD).
- Low bone mass (osteopenia): A value for BMD more than 1.0 but less than 2.5 SD below the young adult female reference mean (T-score less than -1 and greater than -2.5 SD).
- Osteoporosis: A value for BMD 2.5 or more SD below the young adult female reference mean (T-score less than or equal to -2.5 SD).
- Severe (established) osteoporosis: A value for BMD more than 2.5 SD below the young adult female reference mean in the presence of one or more fragility fractures

2. Which of the following joint is rarely involved in SLE?

a. PIP joints
b. Carpal joints
c. Knee joints
d. Sacroiliac joints

Ans: d
Ref: Authors: Peter H Schur et al., Musculoskeletal manifestations of SLE

- The arthritis and arthralgias of SLE tend to be migratory; symptoms in a particular joint may be gone within 24 hours.
- Involvement is usually symmetrical and polyarticular with a predilection for the knees, carpal joints, and joints of the fingers, especially the proximal interphalangeal (PIP) joint. The ankles, elbows, shoulders, and hips are less frequently involved. Involvement of the sacroiliac joints and cervical spine may occur but is rare. Monoarticular arthritis is unusual and suggests an alternative cause such as infection.
- Morning stiffness is usually measured in minutes and is not prolonged as in RA.
- The degree of pain often exceeds objective physical findings, and tenderness may be difficult to assess because of increased pain sensitivity in some patients, either of which can be associated with coexisting fibromyalgia.

3. The term "Large vessels" in large vessel vasculitis indicates:

a. Arteries arising from arch of aorta
b. Arteries directly arising from any part of aorta
c. Arteries of size (diameter) more than 5 cm
d. Arteries supplying the main viscera

Ans: a
Ref: International Chapel Hill Consensus Conference on the Nomenclature of Vasculitides (CHCC2012)
A. Large vessel vasculitis
Vasculitis affecting large arteries more often than other vasculitides. Large arteries are the aorta and its major branches. Any size artery may be affected.
B. Medium vessel vasculitis
Vasculitis predominantly affecting medium arteries defined as the main visceral arteries and their branches. Any size artery may be affected. Inflammatory aneurysms and stenoses are common.
C. Small vessel vasculitis
Vasculitis predominantly affecting small vessels, defined as small intraparenchymal arteries, arterioles, capillaries, and venules. Medium arteries and veins may be affected.

4. The most commonly used drug in sarcoidosis is:

a. Methotrexate
b. Azathioprine
c. Steroid
d. NSAIDS

Ans: c
Ref: Author:Talmadge E King et al.,Treatment of pulmonary sarcoidosis
Glucocorticoids are the most commonly used medication for the treatment of pulmonary sarcoidosis, although no medications have been approved by the US Food and Drug Administration (FDA) for the treatment of sarcoidosis. However, some patients with sarcoidosis cannot tolerate or do not respond to glucocorticoids. Several alternative approaches have been proposed, such as the use of immunosuppressive, cytotoxic, and antimalarial drugs. In addition, irradiation has been used for neurosarcoidosis and organ transplantation has been performed successfully for end-stage hepatic, renal, cardiac, or pulmonary disease complicating sarcoidosis. Unfortunately, limited data exist regarding the indications and efficacy of these approaches in the management of pulmonary sarcoidosis.

5. A 45 years old male presented with jaundice and ascites. On evaluation, his serum bilirubin was 2.1 mg/dl, serum albumin was 3.4 g/dl, INR was 1.8,had controlled ascites and minimal HE. His Child Pugh class would be

a. A
b. B
c. C
d. Above data are insufficient to classify

Ans: c
Ref: Harrison's Principles of Internal Medicine; 20th Edition, Page No: 2337

		POINTS TOWARD TOTAL SCORE		
FACTOR	UNITS	1	2	3
Serum bilirubin	μmol/L	<34	34–51	>51
	mg/dL	<2.0	2.0–3.0	>3.0
Serum albumin	g/L	>35	30–35	<30
	g/dL	>3.5	3.0–3.5	<3.0
Prothrombin time	seconds prolonged	<4	4–6	>6
	INR[a]	<1.7	1.7–2.3	>2.3
Ascites		None	Easily controlled	Poorly controlled
Hepatic encephalopathy		None	Minimal	Advanced

[a]International normalized ratio.

Note: The Child-Pugh score is calculated by adding the scores for the five factors and can range from 5 to 15. The resulting Child-Pugh class can be A (a score of 5–6), B (7–9), or C (≥10). Decompensation indicates cirrhosis, with a Child-Pugh score of ≥7 (class B). This level has been the accepted criterion for listing a patient for liver transplantation.

6. Half life of serum albumin is:

a. 1-3 days
b. 3-7 days
c. 7-14 days
d. 14-21 days

Ans: d
Ref: Harrison's Principles of Internal Medicine; 20th Edition, Page No: 2322
Albumin:

- Lacks sensitivity and specificity for malnutrition.
- Potent risk indicator for morbidity and mortality.
- Proxy measure for underlying injury, disease or inflammation.
- Half-life is 14–20 days.
- Also consider liver disease, nephrotic syndrome, and protein-wasting enteropathy.

7. Which of the following micronutrient potentiates action of insulin?

a. Zinc
b. Chromium
c. Magnesium
d. Calcium

Ans: b

Ref: Harrison's Principles of Internal Medicine; 20th Edition, Page No: 2319

Chromium potentiates the action of insulin in patients with impaired glucose tolerance, presumably by increasing insulin receptor–mediated signaling, although its usefulness in treating type 2 diabetes is uncertain. In addition, improvement in blood lipid profiles has been reported in some patients. The usefulness of chromium supplements in muscle building has not been substantiated. Rich food sources of chromium include yeast, meat, and grain products. Chromium in the trivalent state is found in supplements and is largely nontoxic; however, chromium-6 is a product of stainless steel welding and is a known pulmonary carcinogen as well as a cause of liver, kidney, and CNS damage.

8. Magenta tongue is seen due to the deficiency of:

a. Thiamine
b. Riboflavin
c. Niacin
d. Pyridoxine

Ans: b

Ref: Harrison's Principles of Internal Medicine; 20th Edition, Page No: 2310

NUTRIENT	CLINICAL FINDING	DIETARY LEVEL PER DAY ASSOCIATED WITH OVERT DEFICIENCY IN ADULTS	CONTRIBUTING FACTORS TO DEFICIENCY
Thiamine	Beriberi: neuropathy, muscle weakness and wasting, cardiomegaly, edema, ophthalmoplegia, confabulation	<0.3 mg/1000 kcal	Alcoholism, chronic diuretic use, hyperemesis, thiaminases in food
Riboflavin	Magenta tongue, angular stomatitis, seborrhea, cheilosis, ocular symptoms, corneal vascularization	<0.4 mg	Alcoholism, individuals with poor diets and low intake of milk products
Niacin	Pellagra: pigmented rash of sun-exposed areas, bright red tongue, diarrhea, apathy, memory loss, disorientation	<9.0 niacin equivalents	Alcoholism, vitamin B_6 deficiency, riboflavin deficiency, tryptophan deficiency
Vitamin B_6	Seborrhea, glossitis, convulsions, neuropathy, depression, confusion, microcytic anemia	<0.2 mg	Alcoholism, isoniazid
Folate	Megaloblastic anemia, atrophic glossitis, depression, ↑ homocysteine	<100 µg/d	Alcoholism, sulfasalazine, pyrimethamine, triamterene
Vitamin B_{12}	Megaloblastic anemia, loss of vibratory and position sense, abnormal gait, dementia, impotence, loss of bladder and bowel control, ↑ homocysteine, ↑ methylmalonic acid	<1.0 µg/d	Gastric atrophy (pernicious anemia), terminal ileal disease, strict vegetarianism, acid-reducing drugs (e.g., H_2 blockers), metformin
Vitamin C	Scurvy: petechiae, ecchymosis, coiled hairs, inflamed and bleeding gums, joint effusion, poor wound healing, fatigue	<10 mg/d	Smoking, alcoholism
Vitamin A	Xerophthalmia, night blindness, Bitot's spots, follicular hyperkeratosis, impaired embryonic development, immune dysfunction	<300 µg/d	Fat malabsorption, infection, measles, alcoholism, protein-energy malnutrition
Vitamin D	Rickets: skeletal deformation, rachitic rosary, bowed legs; osteomalacia	<2.0 µg/d	Aging, lack of sunlight exposure, fat malabsorption, deeply pigmented skin
Vitamin E	Peripheral neuropathy, spinocerebellar ataxia, skeletal muscle atrophy, retinopathy	Not described unless underlying contributing factor is present	Occurs only with fat malabsorption or genetic abnormalities of vitamin E metabolism/transport
Vitamin K	Elevated prothrombin time, bleeding	<10 µg/d	Fat malabsorption, liver disease, antibiotic use

9. The score system used to estimate the risk of ischemic stroke in the first two days after TIA is:

a. NIHSS
b. CHA2DS2-VASc
c. HAS-BLED
d. ABCD2

Ans: d

Ref: Authors: Karen L Furie et al., Initial evaluation and management of TIA and minor ischemic stroke

ABCD2 score:

The ABCD2 score can be used to estimate the risk of ischemic stroke in the first two days after TIA. The score is tallied as follows:

A. Age:

- ≥60 years=1 point
- <60 years=0 points

B. Blood pressure elevation when first assessed after TIA:

- Systolic ≥140 mmHg or diastolic ≥90 mmHg=1 point
- Systolic <140 mmHg and diastolic <90 mmHg=0 points

C. Clinical features:

- Unilateral weakness=2 point
- Isolated speech disturbance=1 point
- Other= 0 point

D.

I. Duration of TIA symptoms:

- ≥60 minutes=2 points
- 10 to 59 minutes=1 point
- <10 minutes=0 point

II. Diabetes:

- Present = 1 point
- Absent = 0 point

10. Diastolic murmur heard in apex in a case of aortic regurgitation is due to:

a. Carey coombs murmur
b. Gallavardin phenomenon
c. Austin flint murmur
d. Dock's murmur

Ans: c

Austin Flint murmur — An apical diastolic rumbling murmur has been described in patients with pure aortic regurgitation. Several mechanisms have been proposed to explain the genesis of this murmur, including fluttering of the mitral valve from the impingement by the aortic regurgitant jet, relative (functional) mitral stenosis, and regurgitant jets directed against the left ventricular free wall.

Carey-Coombs murmur — In acute rheumatic fever, a mid-diastolic murmur over the left ventricular impulse, a Carey-Coombs murmur, has been attributed to acute mitral valvulitis. However, first-degree atrioventricular block (prolonged PR interval) is common in rheumatic carditis and an increased flow due to earlier atrial systole coinciding with the rapid filling phase may contribute to a Carey-Coombs murmur.

In older patients with calcific trileaflet AS, an MSM with a musical quality is frequently heard over the cardiac apex or along the lower left sternal border, in addition to a harsh murmur over the right second interspace. A musical murmur appears to originate from the vibration of the valve and subvalvular structures and can be recorded in the left ventricular (LV) cavity (Gallavardin phenomenon); a harsh murmur originates in the aortic root and is related to the high-velocity ejection jet.

Dock's murmur occurs when there is a severe stenosis of the left anterior descending coronary artery. The murmur produced is diastolic since the coronary arteries fill in diastole. It is described as early diastolic and decrescendo sounding similar to the murmur of aortic regurgitation.

11. Which of the following electrolyte disorder causes atrioventricular block?

a. Hypokalemia
b. Hypernatremia

c. Hypomagnesemia
d. Hypermagnesemia

Ans: d
Ref: Harrison's Principles of Internal Medicine; 20th Edition, Page No: 1728

TABLE 240-1 Etiologies of Atrioventricular Block	
Autonomic	
Carotid sinus hypersensitivity	Vasovagal
Metabolic/Endocrine	
Hyperkalemia	Hypothyroidism
Hypermagnesemia	Adrenal insufficiency
Drug-Related	
Beta blockers	Adenosine
Calcium channel blockers	Antiarrhythmics (class I and III)
Digitalis	Lithium
Infectious	
Endocarditis	Tuberculosis
Lyme disease	Diphtheria
Chagas' disease	Toxoplasmosis
Syphilis	

12. Which of the following is not included in family of PSVT?

a. AV node reentry
b. AV node reentry using accessory pathway
c. Atrial tachycardia
d. Inappropriate sinus tachycardia

Ans: d
Ref: Harrison's Principles of Internal Medicine; 20th Edition, Page No: 1733
Supraventricular tachycardia can be of brief duration, termed nonsustained, or can be sustained such that an intervention, such as cardioversion or drug administration, is required for termination. Episodes that occur with sudden onset and termination are referred to as paroxysmal. Paroxysmal supraventricular tachycardia (PSVT) refers to a family of tachycardias including AV node reentry, AV reentry using an accessory pathway, and atrial tachycardia.

13. What happens to blood pressure and heart rate during recovery phase of Valsalva maneuver?

a. ↑BP ,↓HR
b. ↓BP,↑HR
c. Both BP and HR ↑
d. Both BP and HR ↓

Ans: a
Ref: Harrison's Principles of Internal Medicine; 20th Edition, Page No: 3162

TABLE 432-7 Normal Blood Pressure and Heart Rate Changes During the Valsalva Maneuver

PHASE	MANEUVER	BLOOD PRESSURE	HEART RATE
I	Forced expiration against a partially closed glottis	Rises; aortic compression from raised intrathoracic pressure	Decreases
II *early*	Continued expiration	Falls; decreased venous return to the heart	Increases (reflex tachycardia)
II *late*	Continued expiration	Rises; reflex increase in peripheral vascular resistance	Increases at slower rate
III	End of expiration	Falls; increased capacitance of pulmonary bed	Increases further
IV	Recovery	Rises; persistent vasoconstriction and increased cardiac output	Compensatory bradycardia

14. Which of the following is not true about tetanus?

a. It is completely preventable by vaccination
b. Puncture entry wound is found in every cases of tetanus
c. Deeper infections are associated with more severe disease
d. Persons more than 60 years of age are at greater risk of tetanus

Ans: b
Ref: Harrison's Principles of Internal Medicine; 20th Edition, Page No: 1102

- Tetanus is an acute disease manifested by skeletal muscle spasm and autonomic nervous system disturbance. It is caused by a powerful neurotoxin produced by the bacterium Clostridium tetani and is completely preventable by vaccination.
- In 20-30% of cases of tetanus, no puncture entry wound is found. Superficial abrasions to the limbs are the most common infection sites in adults. Deeper infections (e.g., attributable to open fracture, abortion, or drug injection) are associated with more severe disease and worse outcomes.
- Persons>60 years of age are at greater risk of tetanus because antibody levels decrease over time.

15. Adult intestinal colonization botulism is associated with

a. Food borne
b. Traumatic wound contamination
c. Iatrogenic
d. Antibiotic use

Ans: d
Ref: Harrison's Principles of Internal Medicine; 20th Edition, Page No: 1106

- Adult Intestinal-Colonization Botulism This form of botulism is difficult to confirm because it is poorly understood. No clear criteria are available to differentiate cases of adult intestinal-colonization botulism from other adult botulism cases.
- Often these cases are caused by C. baratii type F, but the involvement of both C. botulinum type A and C. butyricum type E have been reported. Botulism following abdominal surgery or antibiotic use has sometimes been considered to be adult intestinal-colonization botulism.

16. A 9 year boy presented with the features of truncal and limb ataxia, dysarthria, myoclonic jerks, areflexia, extensor plantar response and distal sensory deficit. He had repeated history of pneumonia in the past. He also has generalized lymphadenopathy. The probable diagnosis is

a. Spinocerebellar ataxia

b. Friedreich's ataxia
c. Ataxia telangiectasia
d. Mitochondrial ataxia

Ans: c
Ref: Harrison's Principles of Internal Medicine; 20th Edition, Page No: 3157
Ataxia Telangiectasia
Symptoms and signs:

- Patients with ataxia telangiectasia (AT) present in the first decade of life with progressive telangiectatic lesions associated with deficits in cerebellar function and nystagmus.
- The neurologic manifestations correspond to those in Friedreich's disease, which should be included in the differential diagnosis.
- Truncal and limb ataxia, dysarthria, extensor plantar responses, myoclonic jerks, areflexia, and distal sensory deficits may develop.
- There is a high incidence of recurrent pulmonary infections and neoplasms of the lymphatic and reticuloendothelial system in patients with AT. Thymic hypoplasia with cellular and humoral (IgA and IgG2) immunodeficiencies, premature aging, and endocrine disorders such as type 1 diabetes mellitus are described.
- There is an increased incidence of lymphomas, Hodgkin's disease, acute T cell leukemias, and breast cancer.

17. The diagnosis of acromegaly is confirmed by

a. Measurement of random Growth hormone level
b. IGF-I level
c. MRI pituitary
d. Oral glucose tolerance test

Ans: d
Ref: Harrison's Principles of Internal Medicine; 20th Edition, Page No: 2679
Laboratory Investigation

- Age-matched serum IGF-I levels are elevated in acromegaly. Consequently, an IGF-I level provides a useful laboratory screening measure when clinical features raise the possibility of acromegaly.
- Owing to the pulsatility of GH secretion, measurement of a single random GH level is not useful for the diagnosis or exclusion of acromegaly and does not correlate with disease severity.
- **The diagnosis of acromegaly is confirmed by demonstrating the failure of GH suppression to <0.4 µg/L within 1-2 h of an oral glucose load (75 g).**

18. Differentiating the ACTH dependent Cushing's syndrome, which of the following feature is more prominently seen in ACTH secreting pituitary tumor as compared to ectopic ACTH secretion

a. Rapid onset
b. Pigmentation
c. Severe myopathy
d. None of the above

Ans: d
Ref: Harrison's Principles of Internal Medicine; 20th Edition, Page No: 2681

TABLE 373-8 Differential Diagnosis of ACTH-Dependent Cushing's Syndrome[a]

	ACTH-SECRETING PITUITARY TUMOR	ECTOPIC ACTH SECRETION
Etiology	Pituitary corticotrope adenoma Plurihormonal adenoma	Bronchial, abdominal carcinoid Small cell lung cancer Thymoma
Sex	F > M	M > F
Clinical features	Slow onset	Rapid onset Pigmentation Severe myopathy
Serum potassium <3.3 μg/L	<10%	75%
24-h UFC	High	High
Basal ACTH level	Inappropriately high	Very high
Dexamethasone suppression 1 mg overnight		
Low-dose(0.5 mg q6h)	Cortisol >5 μg/dL	Cortisol >5 μg/dL
High-dose (2 mg q6h)	Cortisol <5 μg/dL	Cortisol >5 μg/dL

Surgery

19. Poor host immune reaction denotes:

a. Tuberculoid leprosy
b. Lepromatous leprosy
c. Borderline leprosy
d. Drug resistant leprosy

Ans: b

Ref: Bailey and Love's Short Practice of Surgery 27th Edition, Page No: 68

Mycobacterium leprae – pathology

- Leprosy is a chronic curable infection caused by *Mycobacterium leprae*
- It occurs mainly in tropical regions and resource-poor countries
- The majority of cases are located in the Indian subcontinent
- Transmission is through nasal secretions, the bacillus inhabiting the colder parts of the body
- It is attributed to poor hygiene and insanitary conditions
- The incubation period is several years
- The initial infection occurs in childhood
- ***Lepromatous leprosy denotes a poor host immune reaction***
- Tuberculoid leprosy occurs when host resistance is stronger than the virulence of the organism

20. Harmonic scalpel uses which of the following to cut tissues?

a. Cold
b. Heat
c. Ultrasound
d. Fire