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QUESTION 1

A 60-year-old morbidly obese man presents with complaints of fatigue, worsening exertional dyspnea, three-pillow orthopnea, lower extremity edema, and cough occasionally productive of frothy sputum. He has a long-standing history of type II diabetes and hypertension. On examination, you note the presence of bibasilar rales, an S3 gallop, jugular venous distention, and 2+ pitting edema in both legs up to the knees. There does not appear to be an arrhythmia present.

Which test would be most sensitive for diagnosis of this condition?

- A. troponin I
- B. LDH
- C. creatine kinase-MB isoenzyme (CK-MB)
- D. brain natriuretic peptide (BNP)
- E. CXR

Correct Answer: D Section: (none)

Explanation:

This patient's presentation is most consistent with pulmonary edema from decompensated CHF. The BNP test has been found to be both sensitive and specific for the diagnosis of CHF. It can be a very useful test to order when a patient is dyspneic to help to determine if CHF is the cause. Troponin, CK-MB, and LDH are markers of damage to cardiac muscle and can be diagnostic in a MI. While MI can be a cause of CHF, and most patients presenting with CHF will have cardiac enzymes drawn as part of their evaluation, cardiac enzymes are neither sensitive nor specific for CHF. Similarly, a CXR can determine the presence of pulmonary edema but not its cause.

Acute pulmonary edema secondary to CHF will require management with diuresis for acute symptomatic relief. ACE inhibitors and beta-blockers do decrease mortality and morbidity in CHF; however their use in acute decompensated heart failure is suspected as they may induce hypotension and further cardiogenic shock. Digoxin is used for symptomatic relief either when other modalities fail or when rate control from atrial fibrillation is an issue. In patients with CHF and atrial fibrillation, beta-blockers have shown better effect and reduced morbidity than digoxin. Nevertheless, in the acute setting of decompensated heart failure with pulmonary edema, diuresis is the optimal initial treatment, not digoxin. In chronic heart failure, digoxin is reserved for patients with systolic failure that are symptomatic despite adequate ACE inhibitor and beta-blocker use. Furosemide is effective in treating the acute pulmonary edema associated with CHF by virtue of its potent diuretic action, which rapidly eliminates excess body fluid volume.

QUESTION 2

A 35-year-old woman presents to your office complaining of fatigue and global achiness. She states that she has "not been myself" since she developed a bad whiplash after a motor vehicle accident. Her health has otherwise been good. About 3 years ago, she saw a cardiologist for chest pain. A full evaluation ensued including heart catheterization that showed no coronary disease, although her cholesterol levels were elevated and a statin was prescribed. She sleeps poorly and notes that she has gained a considerable amount of weight. She has seen a gastroenterologist who has told her that her abdominal pain and alternating constipation and diarrhea are because of irritable bowel syndrome. Physical examination shows that her height is 5 ft 2 in. and her weight is 240 lb. Blood pressure is 126/78. Pulse is 86 and regular. Heart and lung examinations are completely normal. Her pharynx is normal and she has no lymphadenopathy.

Abdominal examination shows diffuse mild tenderness, but no masses, rebound, guarding, or organomegaly. Rectal and pelvic examinations are normal. Muscular strength is 4/5 distally and proximally, but there is a considerable give way secondary to pain. She is tender bilaterally at the occiput across the trapezius, iliac crest at the greater trochanteric, anserine bursae bilaterally, and at the second intercostal space bilaterally.

In this patient, which of the following conditions may also be exacerbating her symptoms?

- A. sleep apnea
- B. hyperthyroidism
- C. RA
- D. celiac sprue
- E. medication side effect

Correct Answer: A Section: (none)

Explanation:

The most likely diagnosis in this case is fibromyalgia. Occasionally, hypothyroidism can present in this way, and a low-grade myopathy can create many of these symptoms. A reasonable workup would include chemistries, TSH, and CPK. The usefulness of Epstein-Barr virus titers in this case is minimal.

Epidemiologic studies reveal that about 90% of Americans over the age of 20 have been exposed to

Epstein-Barr virus even if they never had a clinical scenario of mononucleosis. Your physical examination

did not show any question of acute infectious mononucleosis. Findings of elevated IgG antibodies to Epstein-Barr virus would only reveal the fact that she has had the disease in the past. Absent titers might assure you that there was no evidence of a previous infection, but it is unclear how that would help you sort out the current situation.

QUESTION 3

You are asked to interview a young couple who wish to conceive a child. Their first and only son was born with a rare, autosomal recessive glycogen storage disorder known as Pompe disease. Both parents are healthy and unaffected by this disease, but the father believes that he has heard of a distant cousin who also has this disease. They are concerned about the possibility that their next child will also be born with the affliction. In giving them advice about their chances of having a healthy child, you should:

- A. Tell them not to worry about it; their next child will surely be healthy.
- B. Tell them that their next child has a 25% chance of being born with the disease.
- C. Tell them that there is a 50:50 chance that their next child will be affected.
- D. Tell them that it is impossible to predict the likelihood that their next child will have the disease.
- E. Advise them not to have any more children because they all will certainly be affected.

Correct Answer: B Section: (none)

Explanation:

We are dealing here with a rare disease and certainly one that you most likely will not encounter in clinical medicine. However, to answer the question correctly you must only recognize that we are dealing with an autosomal recessive disease (a positive family history in either side of the family and the mandatory unaffected parents are normally hints). In order to be unaffected by the disease and to have a child who is affected, both parents must be carriers of one copy of the autosomal recessive gene. If we call the recessive gene for this disorder "p" and the normal, dominant gene "P," then we can create a 2 x 2 table demonstrating the likelihood of having a child with the two recessive genes necessary to develop the disease.

		Maternal	
		P	p
Paternal	P	PP	Pp
	p	pP	pp

We can see that there is a one-in-four chance of a child acquiring the two recessive genes necessary to develop the disease. All other answers are incorrect since they represent either an autosomal dominant disease (a 50:50 chance) or are inaccurate for recessive diseases (there is no chance that the child will be affected).

QUESTION 4

A 60-year-old woman arrives at your office for a routine physical examination. During the course of her examination she asks you about osteoporosis. She is concerned about her risk for osteoporosis, as her mother suffered from multiple vertebral compression fractures at the age of 60. Your patient reports that she still smokes cigarettes ("although I know they are bad for me") and has one alcoholic beverage a week. She reports having had menopause 5 years ago and experiencing a deep venous thrombosis approximately 20 years ago. She is proud of the fact that she regularly exercises at the local fitness center. She has been taking 1500 mg of calcium with 800 IU of vitamin D every day. You suspect that she is at risk for osteoporosis. After performing the appropriate imaging study, you determine that your patient has osteoporosis. Of the following choices, which is risk factor most likely contributing to her osteoporosis?

- A. active lifestyle
- B. late menopause
- C. cigarette smoking
- D. frequency of alcohol intake
- E. her intake of calcium and vitamin D

Correct Answer: C Section: (none)

Explanation:

DEXA is the newest, least expensive, and quickest method of assessing BMD. The precision of DEXA is approximately 12%. Standard radiography is inadequate for accurate bone mass assessment. Single photon absorptiometry is used to scan bone, which is in a superficial location with little adjacent soft tissue (e.g., radius). It may not be an accurate reflector of the density in the spine or hip, which are the sites of greatest potential risk for fracture. The quantitative CT scan and dual photon absorptiometry take more time, expose the patient to more radiation, and, in the case of quantitative CT scanning, significantly increase costs, when compared to DEXA. The major risk factors for osteoporosis are family history, slender body build, fair skin, early menopause, sedentary lifestyle, cigarette smoking, medications (corticosteroids or L-thyroxine), more than two drinks a day of alcohol or caffeine, and low calcium intake. The current recommendation for oral calcium in men and premenopausal women is 1000 mg/day. Postmenopausal women and patients with osteoporosis should have 1500 mg calcium a day and 4000 IU of vitamin D, which promotes intestinal calcium absorption. This patient's intake of calcium and vitamin D is not a risk factor for osteoporosis.

Alendronate is a bisphosphonate, which is approved for the prevention and treatment of postmenopausal osteoporosis. Among the many results of the WHI, it was found that combined estrogen plus progestin therapy was associated with an increased risk of nonfatal MI or death from coronary heart disease (CHD). Consequently, while it is recognized that postmenopausal women who are taking estrogen to alleviate postmenopausal symptoms may also experience skeletal benefits, the prevention of osteoporosis should not be a reason in itself to start estrogen therapy. Calcitonin inhibits osteoclastic bone resorption, but is not sufficiently potent to prevent bone loss in early postmenopausal women (within 5 years of menopause). It is best reserved for use in patients with osteoporosis unresponsive to other therapies. Raloxifene is a selective estrogen receptor modulator (SERM), which is effective for prevention of bone loss in early postmenopausal women and treatment of established osteoporosis, but it also increases the risk of venous thromboembolic disease which makes it an inappropriate choice for this patient.

QUESTION 5

A 38-year-old man, previously in good health, suddenly develops severe abdominal pain radiating from the left loin to the groin and associated with nausea, perspiration, and frequent urination. He is restless, tossing in bed, but has no abnormal findings. The most likely diagnosis is which of the following?

- A. herpes zoster
- B. left ureteral calculus
- C. sigmoid diverticulitis
- D. torsion of the left testicle
- E. retroperitoneal hemorrhage

Correct Answer: B Section: (none)

Explanation: Contraction of hollow organs against obstruction or excessive contraction causes colic. Typical ureteral colic is severe, sudden in onset, radiates from the loin to the groin, and is associated with an urge to urinate. Blood clots and calculi in the ureter can cause colic, the latter being more common. Urine examination demonstrates macroscopic or microscopic hematuria.