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QUESTION 1

A 42-year-old man presents to your clinic with a 1-week history of pain and inflammation involving his right first metatarsophalangeal (MTP) joint. He describes the pain as sudden in onset and worse at night. He denies experiencing any fever or traumatic injury to the joint and states that he has never had this type of pain before. He denies any chronic medical conditions, any prior surgery, and any current medication use. Besides an erythematous and exquisitely tender right first MTP joint, the remainder of his physical examination is unremarkable.

What is a potential long-term complication of this patient's condition?

- A. CHF
- B. nephrolithiasis
- C. anemia of chronic disease
- D. recurrent urinary tract infection (UTI)
- E. rheumatoid arthritis (RA)

Correct Answer: B Section: (none)

Explanation:

This patient's presentation is consistent with gout. Aspiration of his first MTP joint is likely to reveal the presence of needle-shaped, negatively birefringent crystals. Rhomboid-shaped, positively birefringent crystals are characteristic of calcium pyrophosphate deposition disease, or pseudogout, with the knee being the joint most commonly affected. Nonbirefringent crystals are found in hydroxyapatite crystal deposition disease. The synovial fluid from joints affected by gout typically show evidence of inflammation in the form of leukocytosis with a predominance of polymorphonuclear neutrophils. The presence of bacteria in synovial fluid is characteristic of infection rather than gout, although gout and infectious arthritis may coexist. (Cecil Textbook of Medicine, pp. 1703-1708) Acute gouty arthritis usually presents in a monoarticular or oligoarticular distribution, with the first MTP joint most commonly affected. The diagnostic gold standard is detection of urate crystals within the synovial fluid of affected joints. It most commonly affects adult men with a peak incidence in the fifth decade of life. While patients with gout typically also have hyperuricemia, only a small fraction of the people with hyperuricemia actually have or will develop gout.

Tophi are primarily seen in patients with long-standing hyperuricemia and is considered a finding of chronic gouty arthritis. As the disease progresses, acute attacks become more frequent and last longer if left untreated. Indomethacin inhibits the prostaglandin synthesis that facilitates the inflammation of acute gout and inhibits the phagocytosis of urate crystals by leukocytes. This inhibits the cell lysis and release of cytotoxic factors that initiate the inflammatory cascade. Allopurinol (an inhibitor of urate synthesis) and probenecid and sulfapyrazone (promoters of urate excretion) are useful for preventing gout but are not effective during an acute gout attack. Aspirin is inappropriate in the treatment of gout since it can inhibit urate elimination and, therefore, increase hyperuricemia.

QUESTION 2

A 65-year-old White woman presents to your office and requests to have a screening test for osteoporosis. She has been menopausal for 15 years. She never took hormone replacement therapy (HRT). She currently takes 500 mg of calcium a day and walks 2 miles a day. She has no history of fractures.

Which of the following tests would be the most appropriate screening test to perform?

- A. lateral thoracic spine x-ray
- B. dual energy x-ray absorptiometry (DEXA) of the lumbar spine and proximal femur
- C. quantitative ultrasound of the phalanges of the hand
- D. peripheral quantitative computed tomography (CT) of the distal radius
- E. single energy x-ray absorptiometry (SXA) of the calcaneus

Correct Answer: B Section: (none)

Explanation: Explanations: DEXA is the most widely used test for the screening and diagnosis of osteoporosis. It is sensitive for the loss of bone density, exposes the patient to a relatively low dose of radiation, and is widely available at a reasonable cost. It is the mode of evaluation that has been used in most of the studies of the evaluation and management of osteoporosis. The American College of Radiology Guidelines state that DEXA of the lumbar spine and proximal femur is the most appropriate screening test for osteoporosis in postmenopausal women who are not on any therapy. Quantitative CT scanning is also highly sensitive but is less widely available, more expensive, and exposes the subject to higher radiation doses. Lateral thoracic spine radiographs can diagnose or confirm the presence of osteoporotic fractures but are not appropriate as a screening test for bone density. Quantitative ultrasonography, usually of the calcaneus or digits, is becoming more widely available at low costs, but has the disadvantage of being unable to directly evaluate the areas where most osteoporotic fractures are likely to occur--hip, spine, and radius. SXA has not correlated as well to fracture risk as dual energy techniques and is, therefore, less appropriate than DEXA.

QUESTION 3

A 72-year-old man with a diagnosis of prostate cancer was recently seen in the clinic for restaging and reevaluation. His bone scan showed development of widespread osseous metastases and his PSA was rising. He was started on leuprolide acetate, a gonadotropin releasing-hormone (GnRH) agonist. He now returns to the clinic complaining of new severe mid-thoracic back pain, which is worse with recumbency and worse with Valsalva maneuver. He also reports that he has a brief but intense electric shock sensation in his lower extremities when he bends over to tie his shoes. On physical exam, he had localized tenderness over the mid-thoracic spine, but his motor strength, sensation, and deep tendon reflexes are all intact.

What is the most likely explanation for the rapid onset of back pain and neurological difficulty after the initiation of leuprolide?

- A. The patient's tumor was likely androgen-independent and so did not respond to hormonal therapy, with rapid progression of his cancer.
- B. The patient likely experienced vasomotor symptoms such as hot flashes and discontinued the therapy, leading to the tumor progression.
- C. The GnRH agonist produced a transient rise in serum testosterone, causing a "tumor flare."
- D. The patient's response was an unpredictable idiopathic drug reaction.
- E. There is no plausible mechanism by which the medication could cause the development of spinal cord compression, and so it is likely unrelated to the patient's symptoms

Correct Answer: C Section: (none)

Explanation:

The patient has symptoms of spinal cord compression and needs an urgent MRI to establish the diagnosis. Spinal cord compression usually develops when patients have metastases to the vertebral body with epidural extension of the tumor, displacing the underlying thecal sac, and causing cord edema and injury. Patients with cord compression usually experience new or worsening pain symptoms days or weeks before the development of motor weakness below the level of compression. Loss of sensation and loss of bowel or bladder control occur even later. Clues that the pain symptoms may represent cord injury include pain that is worse with recumbency or Valsalva and the occurrence of Lhermitte's sign, an electric sensation down the back and into the extremities with extension or flexion of the neck or spine.

Initiation of therapy, such as radiation therapy or neurosurgical intervention, might be necessary later but would be premature before the diagnosis is established with an imaging study. If the patient's history or physical exam suggests spinal cord compression, initiation of corticosteroids should be started immediately while diagnostic imaging is pending. Pain control with adequate narcotic analgesia is important and may be instituted while the appropriate diagnostic studies are being obtained. Delay of 1 week would be inappropriate due to the urgent nature of the problem and risk of neurological compromise. The patient's neurological status at the time of diagnosis is the most important prognostic factor: 75-80% of patients who are ambulatory at the time of diagnosis will retain locomotion. But, if already paraplegic, only 10% will regain the ability to walk. While this patient appeared neurologically intact, the development of neurological deficits can progress over a period of days, making rapid diagnosis and institution of appropriate therapy such as corticosteroids and radiotherapy an urgent consideration. Other factors such as age, presence of co-morbid medical conditions, functional status, and tumor androgensensitivity are important to the patient's overall cancer prognosis

QUESTION 4

A 74-year-old male with a history of hypertension, CAD, and a 50 pack-year history of smoking presents with complaints of pain and cramping sensation of the thigh and buttock areas for the past 2 months. On detailed history, patient reports that the pain is usually during ambulation and relieves with sitting down. The pain does not change with respect to sitting or supine position. He denies any recent trauma, weakness of the legs, or paresthesias. He takes his prescription medications regularly and denies using alcohol, drugs, or any herbs/ supplements. Which of the following should be performed as an initial test to help confirm your clinical impression?

Which of the following measures should be implemented for the management of this patient's condition?

- A. referral to vascular surgeon
- B. glucosamine and chondroitin sulfate
- C. subcutaneous injections of low molecular weight heparin
- D. smoking cessation and walking program
- E. pentoxifylline

Correct Answer: D Section: (none)

Explanation:

Peripheral arterial disease (PAD) affects roughly 12% of the U.S. population with higher prevalence rates in persons over the age of 70. The classic symptoms of PAD are intermittent claudication which is usually described by patients as cramping pain in the calf, legs, thighs, or buttocks during any type of exercise that quickly relieves with rest. This scenario of worsening with activity and relief with rest is consistent with the disease process, as the pain results from ischemia. The ischemia is worse during periods of increased oxygen demand where the vascular insufficiency fails to

meet the demand. Not all patients with PAD are symptomatic, thus an assessment of risk factors and a thorough physical examination are usually key to making the diagnosis in asymptomatic patients. The ABI is an easy, inexpensive, noninvasive test with a high correlation to angiography that can be done in the office. ABI is the usual initial test to screen for PAD.

A value of greater than 1.0 is considered normal, whereas values less than 0.9 are consistent with varying grades of PAD: · 1.0 or greater: normal · 0.81-0.9: mild PAD · 0.51-0.8: moderate PAD ·