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QUESTION 1

A 17-year-old boy is reluctantly taken to the family medicine clinic by his mother, who is upset as "he is hanging out with the wrong crowd." She strongly believes that he has been smoking marijuana every day after school and on weekends with his friends. The patient appears irritated about the appointment but denies using any drugs or alcohol. His mother would like him to be counseled about the potential dangers of "smoking pot."

Which of the following would be the most serious potential long-term consequence of smoking cannabis in this individual?

- A. amotivational syndrome
- B. cerebral atrophy
- C. chromosomal damage
- D. lung cancer
- E. seizures

Correct Answer: D Section: (none)

Explanation:

Cannabis is one of the few substances of abuse that does not affect the respiratory rate. Consuming marijuana classically produces symptoms of a dry mouth and increased appetite (the munchies). Contrary to what is sometimes claimed, intoxication with cannabis does significantly impair motor function and, therefore, interferes with driving ability. It also can cause tachycardia (DSM IV-TR). Amotivational syndrome is a potential, but controversial, long-term effect of heavy cannabis use. It is characterized by apathy and boredom. Cerebral atrophy, chromosomal damage, and seizures have also been reported, but not confirmed, in individuals with chronic cannabis use. The most concerning medical consequences of smoking cannabis over the long term are similar to those from smoking tobacco, such as lung cancer and respiratory disease.

QUESTION 2

You are called to see a 12-hour-old male infant who was born to a 19-year-old G1 woman with no prenatal care. She presented to the emergency room completely dilated and crowning. The baby was born minutes later. On examination, the baby is febrile and tachypneic. A CXR confirms the presence of pneumonia.

What is the most likely infectious agent?

- A. group B Streptococcus (GBS)
- B. HSV
- C. E. coli
- D. respiratory syncytial virus (RSV)
- E. Streptococcus pneumoniae

Correct Answer: A Section: (none)

Explanation: GBS is the most common cause of infection in the newborn infant, followed by E. coli and L. monocytogenes. GBS is the most common cause of pneumonia, septicemia, UTI, and meningitis. The risk of early-onset (within the first 7 days of life) GBS infection can be reduced with the antenatal administration of appropriate antimicrobials. The use of perinatal antimicrobials has no effect on the occurrence of late-onset (after 7 days of life) GBS disease.

QUESTION 3

The patient is a 70-year-old man brought to the primary care clinic by his family over concerns that he has Alzheimer's disease. They have noticed a worsening of his memory over the past 6 months. He does not seem to want to get out of bed, and he appears to have difficulty providing for his basic needs such as cleaning, dressing, and cooking for himself. He is hesitant when talking, but it is unclear whether he is unable or unmotivated to speak. His family has also noticed that he appears depressed and is often seen crying. A MSE of the patient is performed to help determine whether he is suffering from a dementing illness or a depressive illness (pseudodementia).

Further history, cognitive examinations, physical examination, and laboratory/radiographic studies are obtained. The results are consistent with Alzheimer's dementia. While the family had been able to take care of him initially, they have since returned to the clinic stating that they can no longer keep him at home. They feel that he is becoming much more agitated. He is staying up at night. Lately he has been rearranging the furniture, claiming to look for "the little people who are teasing me." They have noticed that he has difficulty walking, often moving slowly and dropping items. The family has pursued nursing home placement, but they wish to have something prescribed in order to help him sleep and keep him calm.

Which of the following medications should be avoided in this patient?

- A. buspirone (Buspar)
- B. donepezil (Aricept)
- C. lorazepam (Ativan)
- D. trazodone (Desyrel)
- E. risperidone (Risperdal)

Correct Answer: E Section: (none)

Explanation:

Older patients with cognitive decline due to depression, sometimes called pseudodementia, display characteristic findings on MSE. They usually are greatly concerned about their problems, even emphasizing their difficulties when compared with demented patients, who attempt to hide or minimize their deficits and appear unconcerned. Patients with pseudodementia are able to attend well to tasks despite their cognitive complaints. Individuals with dementias, however, have significant difficulty with attention and concentration. Patients with depression are more likely to demonstrate good insight into their presumed memory loss than those with dementia, who will commonly deny that there is anything wrong with them. On tests of cognition, those individuals with pseudodementia will show inconsistent results, performing better at some times and worse at others. Patients with dementia, however, will consistently perform poorly on various tests that address the same function. This patient displays characteristics of Lewy body disease, a dementia which may be related to Alzheimer's dementia. The classic triad of Lewy body dementia is a fluctuating course, peduncular

hallucinations (visual hallucinations of small people, animals, or objects), and parkinsonian features. These patients tend to be very sensitive to extrapyramidal side effects and, therefore, antipsychotics such as risperidone should be avoided or sparingly used.

QUESTION 4

A 4-year-old girl is brought in to the office by her mother. She developed chicken pox about 6 days ago. She appeared to be recovering well but mother became concerned because she was persistently scratching at several of the lesions and they were not healing. On examination, the child is afebrile and generally well appearing. On examination of her skin you see the following image What is the most likely current diagnosis?



- A. tinea corporis
- B. impetigo
- C. warts
- D. contact dermatitis
- E. reactivated chicken pox

Correct Answer: B Section: (none)

Explanation:

The image provided shows a classic case of impetigo. This is a common skin infection of childhood. It frequently occurs following a case of chickenpox and is due to the child picking or scratching at the varicella lesions, resulting in a secondary bacterial infection. GAS infection is the most common cause of impetigo associated with varicella infections. It is markedly more prevalent than the next most common infectious agent, *S. aureus*. Tinea corporis, often due to *T. rubrum*, is also known as ringworm. It classically is a circular lesion with a red, raised border, and central clearing. Contact dermatitis, from exposure to an irritant such as poison ivy, often causes plaques of erythema and edema with superimposed vesicles. This is also frequently secondarily infected with GAS from scratching. Warts, caused by the human papilloma virus, do not typically appear as the lesions in the image. Of the options listed, oral cephalixin would

be the most appropriate initial therapy. Most GAS isolates are sensitive to first-generation cephalosporins, such as cephalexin. Topical steroids are useful for inflammatory or allergic conditions, topical nystatin for a fungal infection (such as tinea corporis) and oral acyclovir can be used early in the course of a varicella infection.

QUESTION 5

A 63-year-old male presents to your office with palpitations for the past 3 weeks. He has had no chest pains or dyspnea. He has no significant medical history and takes no medications. He does not smoke cigarettes and a recent lipid panel was normal. On examination, he is in no apparent distress. His pulse is 115 bpm and irregular. His BP is 125/77. His lungs are clear and his cardiac examination reveals an irregularly irregular rhythm with no murmurs, rubs, or gallops.

An abnormal result of which of the following laboratory tests would be most likely to explain the cause of this condition?

- A. TSH
- B. troponin T
- C. BUN and creatinine
- D. serum glucose
- E. arterial blood gas

Correct Answer: A Section: (none)

Explanation:

Atrial fibrillation is the most common sustained clinical arrhythmia. It occurs in approximately 4% of the population over the age of 60. It is diagnosed by the presence of irregularly irregular QRS complexes on an ECG with an absence of P waves. The QRS complex is most commonly narrow, as this is a supraventricular arrhythmia. Wide QRS complexes can occur if there is an underlying conduction abnormality, such as Wolff-Parkinson-White syndrome or a bundle branch block. Saw-tooth P waves occur in atrial flutter, another atrial arrhythmia that may present similarly to atrial fibrillation but which is less common. The saw-tooth P waves, or flutter waves, are representative of an atrial rate typically in the range of 300-350/minute.

Not infrequently, atrial flutter will lead to atrial fibrillation. Q waves in II, III, and aVF would be seen if there had been a previous inferior MI. Peaked T waves are seen in certain conditions, such as hyperkalemia, but are not routinely associated with atrial fibrillation. Atrial fibrillation may be precipitated by both cardiac and noncardiac conditions. Among the noncardiac conditions are metabolic abnormalities, which include hyperthyroidism. Of the tests listed, a suppressed TSH level, consistent with hyperthyroidism, would be most likely to be causative of atrial fibrillation. Troponin may be elevated in acute myocardial ischemia. Atrial fibrillation can occur following a MI, particularly when complicated by CHF. This is not consistent with the clinical scenario presented. Renal disease and diabetes may contribute to some of the conditions that can predispose to the development of atrial fibrillation, such as metabolic derangements or CAD. Acute and chronic pulmonary disease may also precipitate atrial fibrillation. In the setting of a man who is otherwise healthy and without significant medical history, new-onset atrial fibrillation would be less likely to be the initial presentation of diabetes, renal failure, or pulmonary disease than hyperthyroidism. For this reason, choice A is the single best answer of those provided.

QUESTION 6

A 25-year-old African American female develops a large lesion on her ear lobe after having it pierced (see Figure). How

would you advise this patient?



- A. Surgical excision is curative.
- B. This resulted from an infection that occurred when she had her ear pierced.
- C. Recurrences of this problem are common.
- D. She is likely to have reduced fertility.
- E. Oral corticosteroids have been effective.

Correct Answer: C Section: (none)

Explanation:

Keloids occur at the site of injury, predominately in people with dark skin who have a genetic predisposition. The keloid is a form of benign tumor that consists of an overabundance of collagen that extends beyond the margins of the incision. Treatment options have only moderate success and include excision of the keloid with intralesional steroid injections. Recurrences of keloids, both at the original site and with subsequent injury/incision elsewhere in the body, are common. They are not associated with decreased fertility or other systemic processes

QUESTION 7

A 55-year-old female presents to your office after a lung mass was found on a chest x-ray. She has undergone a series of imaging studies and has been referred to your office to determine if she is a candidate for surgery. With which of the following findings would she still be a candidate for potentially curative surgical resection?

- A. malignant pleural effusion
- B. contralateral mediastinal node involvement

- C. chest wall invasion
- D. liver metastases
- E. superior vena cava syndrome

Correct Answer: C Section: (none)

Explanation:

Tumor resectability in lung cancer is generally determined by (1) whether or not the resection is technically feasible and (2) whether or not the resection will result in improved survival. In general, invasion of the tumor into structures that are vital to life would classify the tumor as unresectable. For example, the presence of superior vena cava syndrome in the setting of lung cancer is generally the result of tumor growing into the superior vena cava, which cannot be surgically removed. Those patients should be treated with chemotherapy and radiation. For lung cancer, the presence of distant metastatic disease is a contraindication to surgical resection. Distant metastasis is defined by the presence of tumor in distant organs, such as brain, bone, or liver, as well as distant nodal involvement. In the treatment of lung cancer, this can be confusing when evaluating patients with lymph node metastases because the presence of positive ipsilateral mediastinal nodes is not a contraindication to surgery, while positive contralateral mediastinal nodes indicates disseminated disease. With regards effusions, the presence of a pleural effusion in and of itself does not dictate the method of treatment, but identification of malignant cells within the effusion indicates noncurability and those patients should be treated medically. On the other hand, patients who present with local invasion of the tumor into the chest wall can potentially be cured of the disease with en bloc resection. Finally, involvement of more than one lobe has no bearing on prognosis as long as the patient's preoperative ventilation parameters will allow for safe resection.

QUESTION 8

A 63-year-old woman with a grade 2 endometrioid adenocarcinoma of the uterus diagnosed by endometrial biopsy is taken to the operating room for surgical treatment with a total abdominal hysterectomy, bilateral salpingoophorectomy, and pelvic and paraaortic lymphadenectomy. No complications are noted intraoperatively. On postoperative day 1, the patient complains of numbness in her medial thigh. Your neurologic examination suggests absence of cutaneous sensation to the medial thigh and an inability to adduct her hip.

Which of the following is the most likely etiology for this clinical presentation?

- A. femoral nerve injury
- B. genitofemoral nerve injury
- C. pudendal nerve injury
- D. obturator nerve injury
- E. peroneal nerve injury

Correct Answer: D Section: (none)

Explanation: In gynecology, the obturator nerve (L2-L4) is most commonly injured during retroperitoneal surgery for gynecologic malignancies. In this case, a pelvic lymph node dissection for endometrial cancer involves a retroperitoneal dissection into the obturator fossa to remove the obturator lymph nodes. The nodal tissue of the obturator fossa obscures the location of the obturator nerve and predisposes it to injury. Postoperatively, patients with an injury to the

obturator nerve will present with sensory loss to the upper medial thigh and motor weakness in the hip adductors. If an obturator nerve injury is recognized intraoperatively, immediate repair is the recommended treatment. However, with postoperative recognition, as in this case, treatment includes physiotherapy with neuromuscular electrical stimulation and electromyographic biofeedback, and exercise. Obturator nerve injury is a highly treatable condition, and complete recovery of motor strength is generally the result after physical therapy.

The common peroneal nerve branches off the posterior tibial branch of the sciatic nerve just above the popliteal fossa and runs superficially across the lateral head of the fibula and down the lateral calf. This nerve can be compressed when patients are inappropriately placed in the lithotomy position with stirrups. Compression of the peroneal nerve results in a foot drop and lateral lower extremity numbness or paresthesia

QUESTION 9

A 19-year-old college student is found to have an elevated serum calcium on routine physical examination. She has a family history of hypercalcemia that has not resulted in any known symptoms. Further workup reveals a slightly elevated serum parathyroid hormone with depressed levels of serum phosphate. A 24-hour urine calcium excretion is obtained and is low. Which of the following is the correct diagnosis?

- A. familial hypocalciuric hypercalcemia (FHH)
- B. primary hyperparathyroidism
- C. secondary hyperparathyroidism
- D. tertiary hyperparathyroidism
- E. metastatic bone cancer

Correct Answer: A Section: (none)

Explanation:

FHH, or familial benign hypercalcemia, is a rare condition characterized by asymptomatic or mildly symptomatic hypercalcemia. It is inherited as an autosomal dominant trait and the parathyroid glands are usually normal in size. The basis for the development of FHH appears to be mutations in the calcium-sensing receptor gene which regulates the parathyroid gland set point and modulates the extracellular calcium concentration. The condition may be mistaken for primary hyperparathyroidism because, in both conditions, the serum calcium and parathyroid hormone levels are elevated with a concomitant low serum phosphate. The distinction is made by obtaining a 24-hour urine calcium excretion level. In patients with FHH, the urine calcium level is low, whereas in primary hyperparathyroidism the level is high. The distinction is important, as patients with primary hyperparathyroidism benefit from surgery and those with FHH do not.

QUESTION 10

A 55-year-old male is brought to the ED, by ambulance, because of crushing chest pain radiating to his left shoulder and arm that started 1 hour ago. He has a history of hypertension, high cholesterol, and has smoked a pack of cigarettes a day for 30 years. He has never had symptoms like this before. The patient's rhythm converts to asystole. What is the most appropriate first action to take?

- A. IV epinephrine

- B. IV atropine
- C. discontinuation of resuscitation
- D. direct current (DC) cardioversion
- E. check a second monitor lead

Correct Answer: E Section: (none)

Explanation:

The clinical scenario described is classic for an acute MI. The patient has multiple risk factors, including smoking, hypertension, and elevated cholesterol. His symptoms of crushing chest pain radiating to the left arm is commonly seen in this setting. Often the first electrocardiographic sign of acute ischemia is the development of hyperacute T waves. The ECG will usually show S-T segment elevations in the area of the involved occluded vessel, with reciprocal S-T segment depressions in uninvolved areas. This can be followed by the eventual resolution of S-T segment abnormalities and the development of T wave inversions and Q waves. Diffuse P-R depressions are often the initial manifestation of pericarditis, a less common cause of acute chest pain. This often progresses to diffuse S-T segment elevations, the presence of which helps to distinguish pericarditis from the focal S-T elevations more classically associated with a thrombosed coronary artery. Q waves would be unlikely to occur within 1 hour of the onset of symptoms. In this clinical setting, a normal ECG, while possible, would be less likely to occur.

Ventricular arrhythmias, both tachycardia and fibrillation, are recognized complications of acute MI. The presence of ventricular fibrillation or pulseless ventricular tachycardia should lead to the primary "ABCD" survey, as outlined in the American Heart Association's ACLS protocols. The mnemonic stands for airway, breathing, circulation, and defibrillation. Epinephrine, lidocaine, or amiodarone are reserved for the setting where defibrillation is ineffective. Synchronized cardioversion would be used in efforts to convert a patient's rhythm in the setting of a stable tachycardia.

QUESTION 11

One of your responsibilities at the community health center is to serve as director of the tuberculosis (TB) screening and prevention program.

Which of the following test results would be considered positive?

- A. 10 mm redness and 3 mm induration in a man with HIV
- B. 10 mm redness and 10 mm induration in a nursing home resident
- C. 20 mm redness and 8 mm induration in a person with no known risk factors
- D. 5 mm redness and 5 mm induration in a physician having a routine, annual screening
- E. 10 mm redness and 5 mm induration in an immigrant from Southeast Asia

Correct Answer: B Section: (none)

Explanation:

Current guidelines for TB control emphasize testing of those who are at high risk for the development of TB and who would benefit from the treatment of a latent TB infection, if detected. Based on that principle, testing is encouraged in those who are at high risk and discouraged among those who are at low risk. Further, anyone who is at high risk for the development of TB and who tests positive should be offered treatment, regardless of age. The preferred testing modality for asymptomatic persons of all ages is the intradermal (Mantoux) method of testing with PPD. Multiple puncture tests (e.g., Tine) are not sufficiently accurate and should not be used. The test should be read at 48-72 hours and the diameter of induration, not redness, should be measured and recorded. Previous BCG vaccination is not a contraindication to skin testing and a positive skin reaction should be used as an indication of TB infection when the tested person is at increased risk for infection or has medical conditions that increase the risk of the disease. Delayed-type hypersensitivity reactions may wane over time. This is especially a problem in older individuals. Repeating a PPD placement may result in a "booster" phenomenon, in which a person who initially tests negative develops a positive reaction. This increases the overall sensitivity of the testing process. Three cutoff points for the determination of a positive test are currently in use: 5 mm of induration is used for those who are at the highest risk of disease, such as those immunosuppressed from HIV or medications, or those recently exposed to TB; 10 mm induration is used as a positive result for persons who have an increased probability of infection (such as immigrants from endemic areas), who have clinical conditions that increase the risk for TB (such as injection drug users) or who are residents or employees in high-risk settings (nursing homes, hospitals, prisons, and so on); 15 mm is used as a cutoff for those who have no known risk factors. In question 46, ignoring the amount of redness and using only induration as the criteria for positive or negative, the nursing home resident (option B) is the only one with a positive test. All persons who test positive by a skin test should then have a chest x-ray to evaluate for evidence of pulmonary TB. In an asymptomatic person, sputum studies are not necessary to determine the need for treatment. Pregnant women should still get a chest x-ray, with appropriate abdominal shielding, as soon as feasible. As stated above, a history of BCG vaccination should not deter from the need for further evaluation and treatment of a positive test result. Age should also not be a determining factor in treating someone who is at risk for the development of TB. Currently, there are four acceptable treatment recommendations for latent TB infections. Daily isoniazid for 9 months is the most widely used regimen and has the highest level of recommendation because of its effectiveness, relative safety, ease of administration, and low cost. Twice-weekly isoniazid may also be used but should only be given as directly observed therapy, due to the fact that a missed dose of this regimen represents a substantial risk of under treatment. Rifampin alone or rifampin plus pyrazinamide are alternative regimens for use in certain, specified situations.

QUESTION 12

A 22-year-old nulliparous woman who desires future fertility is found to have a pap smear consistent with high-grade squamous intraepithelial lesion (HGSIL). The test you performed above was inadequate. What would be your next step in management?

- A. transvaginal ultrasound (TVUS)
- B. endometrial dilation and curettage
- C. ECC
- D. cold knife cervical conization
- E. repeat pap smear in 3 months

Correct Answer: D Section: (none)

Explanation: Current American Society for Colposcopy and Cervical Pathology (ASCCP) guidelines for treating a pap smear consistent with HGSIL is to perform colposcopy with directed biopsies if a lesion is seen. Routine pap smear in 1 year is an unacceptable option for this patient given her increased risk for developing cervical cancer. Random biopsies have a high false negative rate if there is no visible lesion to biopsy, thus, are not helpful. The pap smear is a screening test of the cervix, not the endometrium. There is no reason to suspect that this patient has endometrial pathology,

therefore, an endometrial biopsy is not warranted. HPV testing is not recommended for high-grade pap smears. All high-grade pap smears require further investigation with colposcopy regardless of HPV status. If colposcopy is unsatisfactory, meaning no lesion is identified, the full transformation zone is not visualized or the full extent of the lesion is not identified, then a diagnostic excisional procedure is warranted. A loop excisional electrocautery procedure (LEEP) would be appropriate. However, note that if your suspicion for cancer is high, the cauterized edges from a LEEP procedure can complicate the pathologic assessment of positive margins. A cold knife cervical conization can be performed in the operating room as an outpatient surgery and provides the best surgical specimen for pathologic evaluation. In this case, a TVUS, endometrial dilation, and curettage, and ECC are all inappropriate options since they do not accurately evaluate the cervix, which is the primary site of concern. This patient has, by definition, microinvasive cervical cancer. Approximately 1015% of patients in the United States with stage I cervical cancer will have a microinvasive cancer. Microinvasive cancer is defined as stage IA with invasion limited to a depth of 5 mm with lateral extent not to exceed 7 mm. Stage IA is further subdivided into stage IA1 with stromal invasion less than 3 mm and IA2 with invasion 3-5 mm in depth. Young patients with microinvasive squamous cell carcinoma of the cervix who desire future fertility can be treated with conization alone, provided that certain strict criteria are met. The cone specimen should be properly excised and then evaluated by an experienced pathologist. The tumor must meet the criteria for stage IA1 disease with invasion less than 3 mm and a lateral extent less than 7 mm. The cone margins must be negative, and there should be no lymphovascular space invasion.