Emergency Medicine End of Rotation (EOR) Practice Exam (Sample)

Study Guide

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Questions

1. What is one possible treatment option for hypercalcemia?

- **A. Oral furosemide**
- **B. IV isotonic saline**
- **C. Desmopressin acetate**
- **D. Calcium supplements**

2. Which medication is recommended for treating bradyarrhythmias?

- **A. Aspirin**
- **B. Amiodarone**
- **C. Atropine**
- **D. Atenolol**

3. What is a common treatment option for atrial flutter?

- **A. Intravenous antibiotics**
- **B. Cardioversion**
- **C. Vasopressors**
- **D. Antihistamines**

4. What hormone is released in response to low calcium levels?

- **A. Calcitonin**
- **B. Vitamin D**
- **C. Parathyroid hormone (PTH)**
- **D. Aldosterone**

5. Which medication is used for treating opiate and heroin overdoses?

- **A. Flumazenil**
- **B. Naloxone**
- **C. Sodium Bicarbonate**
- **D. Physostigmine**

6. What type of cough is typically associated with chronic bronchitis?

A. Dry cough

B. Productive cough

C. Spasmodic cough

D. Hacking cough

7. What type of hematoma often presents with spinal fluid rhinorrhea and unconsciousness after a skull fracture?

A. Epidural hematoma

B. Subdural hematoma

C. Subarachnoid hematoma

D. Intracerebral hematoma

8. During a salicylate overdose, what is the treatment of choice along with supportive measures?

A. Activated charcoal

B. Hemodialysis

C. Urinary alkalinization

D. Sodium Bicarbonate

9. What is the imaging modality of choice for cholecystitis?

A. CT scan

B. X-ray

C. Ultrasound, then HIDA

D. MRI

10. Which ligament (when injured) is typically not treated with surgery?

A. Anterior cruciate ligament

B. Posterior cruciate ligament

C. Medial collateral ligament

D. Lateral collateral ligament

Answers

1. B
2. C
3. B
4. C
5. B
6. B
7. A
8. B
9. C
10. C

Explanations

1. What is one possible treatment option for hypercalcemia?

A. Oral furosemide

B. IV isotonic saline

C. Desmopressin acetate

D. Calcium supplements

Hypercalcemia, an elevated level of calcium in the blood, can lead to various symptoms and complications. One important treatment option is the administration of intravenous isotonic saline. The rationale behind this treatment is that isotonic saline helps to dilute the serum calcium and promotes renal excretion of calcium. The increased intravascular volume from the isotonic saline also aids in enhancing kidney function, thus facilitating the excretion of excess calcium. The administration of isotonic saline can help to correct dehydration, which is often present in hypercalcemic patients, and encourages the kidneys to filter more calcium from the blood, reducing the serum calcium levels effectively. This is particularly crucial in acute hypercalcemia, where rapid intervention is necessary to alleviate symptoms and prevent complications. Other treatment options, while relevant in certain contexts, do not directly address the need for urgent management of hypercalcemia in the same way that isotonic saline does. For instance, furosemide may promote calcium excretion as well, but it is usually not used as a first-line treatment without adequate hydration due to its potential to cause dehydration. Desmopressin acetate primarily functions in conditions related to diabetes insipidus and does not play a role in managing hypercalcemia. Calcium supplements would further

2. Which medication is recommended for treating bradyarrhythmias?

A. Aspirin

B. Amiodarone

C. Atropine

D. Atenolol

Atropine is the recommended medication for treating bradyarrhythmias primarily because it works by inhibiting the action of the vagus nerve on the heart. This inhibition leads to an increase in heart rate by blocking the effects of acetylcholine at the parasympathetic sites in the nodal tissue of the heart. In cases of symptomatic bradycardia, atropine can help restore an adequate heart rate and improve hemodynamic stability. This approach is effective in clinical scenarios where bradyarrhythmias are causing significant symptoms or need immediate correction, such as in acute cardiac situations where tachycardia is not the desired outcome. Atropine is particularly useful because it can be rapidly administered, often intravenously, allowing for quick action when a patient's condition requires an urgent response. In contrast, other medications listed have different indications. Aspirin is primarily used for its antiplatelet properties and is not indicated for bradyarrhythmias. Amiodarone is an antiarrhythmic medication typically used for tachyarrhythmias and may actually lead to bradycardia or slow the heart rate further in some cases. Atenolol is a beta-blocker that decreases heart rate and would not be appropriate for

3. What is a common treatment option for atrial flutter?

A. Intravenous antibiotics

B. Cardioversion

C. Vasopressors

D. Antihistamines

Cardioversion is commonly used as a treatment option for atrial flutter because it directly addresses the abnormal heart rhythm. In atrial flutter, the electrical signals in the atria cause rapid and repetitive contractions. Cardioversion is a procedure that can either be chemical (using medications) or electrical (delivering a shock) to restore the heart's normal rhythm. This restoration can help to alleviate symptoms such as palpitations, shortness of breath, or fatigue that often accompany atrial flutter. The effectiveness of cardioversion in this context is well-supported in clinical practice, and it is often used especially when the arrhythmia leads to hemodynamic instability or when patients have significant symptoms. In contrast, intravenous antibiotics, vasopressors, and antihistamines do not directly address the rhythm issue associated with atrial flutter. Antibiotics are used to treat infections, vasopressors are used in cases of shock to increase blood pressure, and antihistamines are typically used for allergic reactions. As such, these options do not apply to the specific treatment needs for atrial flutter.

4. What hormone is released in response to low calcium levels?

A. Calcitonin

B. Vitamin D

C. Parathyroid hormone (PTH)

D. Aldosterone

Parathyroid hormone (PTH) is released by the parathyroid glands in response to low calcium levels in the blood, playing a critical role in maintaining calcium homeostasis. When calcium levels decrease, sensors in the parathyroid glands detect this change and prompt the secretion of PTH. This hormone acts to increase calcium levels through various mechanisms: 1. It stimulates the release of calcium from bones by promoting osteoclast activity, which breaks down bone tissue and releases calcium into the bloodstream. 2. PTH enhances renal tubular reabsorption of calcium, reducing the amount of calcium excreted in urine while simultaneously promoting phosphate excretion. 3. It also increases the activation of vitamin D in the kidneys, which in turn enhances intestinal absorption of calcium from dietary sources. The other choices do not function to directly raise calcium levels in the same manner. Calcitonin, for instance, lowers blood calcium levels by inhibiting bone resorption and promoting calcium excretion in the kidneys. Vitamin D is important for calcium absorption but is activated by PTH rather than being released in response to low calcium levels. Aldosterone primarily regulates sodium and potassium balance, not calcium levels. Thus, PTH is the primary hormone responsible for counteracting low calcium levels in

5. Which medication is used for treating opiate and heroin overdoses?

A. Flumazenil

B. Naloxone

C. Sodium Bicarbonate

D. Physostigmine

Naloxone is the medication specifically designed to counteract the effects of opioid and heroin overdoses. It is an opioid antagonist that works by binding to the same receptors in the brain that opioids occupy, effectively reversing the effects such as respiratory depression, sedation, and hypotension associated with an overdose. Naloxone is critical in emergency situations where a person is suspected of having an opioid overdose. It can be administered intranasally or via injection, providing a rapid reversal of opioid-induced respiratory depression, which is the primary cause of death in such overdoses. In the context of emergency medicine, Naloxone has become a standard component of overdose management protocols and is often carried by first responders and emergency medical technicians due to its effectiveness and safety profile. It can save lives when administered promptly in cases of suspected opioid overdose. Other medications listed play very different roles in medicine. For instance, Flumazenil is a benzodiazepine antagonist and is not typically used for opioid overdoses. Sodium Bicarbonate is used for metabolic acidosis and various other conditions but does not counteract the effects of opioids. Physostigmine is an acetylcholinesterase inhibitor primarily used in the context of anticholinergic toxicity, again not

6. What type of cough is typically associated with chronic bronchitis?

A. Dry cough

B. Productive cough

C. Spasmodic cough

D. Hacking cough

Chronic bronchitis is characterized by a productive cough, which is central to its definition. In chronic bronchitis, the excessive production of mucus due to inflammation of the bronchial tubes leads to a significant increase in mucus secretions. This accumulation necessitates frequent coughing to help expel the mucus from the airways, making the cough productive. The distinguishing feature of a productive cough is the presence of sputum, which can be clear, white, yellow, or green, depending on the severity and duration of the disease. While a dry cough occurs in conditions where there is little to no mucus production, a spasmodic cough is often associated with conditions like asthma or pertussis. A hacking cough typically describes a dry, persistent cough that does not produce sputum and is generally more associated with viral infections or irritations rather than chronic bronchitis. Thus, the productive cough is a hallmark of chronic bronchitis, reflecting the underlying pathology and the need to clear airway secretions.

7. What type of hematoma often presents with spinal fluid rhinorrhea and unconsciousness after a skull fracture?

A. Epidural hematoma

B. Subdural hematoma

C. Subarachnoid hematoma

D. Intracerebral hematoma

Epidural hematomas typically occur as a result of trauma, particularly skull fractures that can tear the middle meningeal artery, leading to bleeding between the skull and the dura mater. This type of hematoma is associated with rapid accumulation of blood, which can result in increased intracranial pressure and subsequent neurological deficits. Spinal fluid rhinorrhea indicates the presence of cerebrospinal fluid leakage from the nasal cavity, a condition often linked to skull base fractures. This complication occurs alongside unconsciousness due to increased pressure or direct injury to the brain that may accompany an epidural hematoma. The rapid onset of symptoms, including a lucid interval followed by deterioration in consciousness, is characteristic of this injury pattern. While other types of hematomas can lead to unconsciousness, they do not typically present with spinal fluid rhinorrhea. For instance, subdural hematomas are often associated with venous bleeding and may lead to slower onset symptoms due to gradual accumulation of blood, but they do not typically result in cerebral spinal fluid leaking from the nose.

8. During a salicylate overdose, what is the treatment of choice along with supportive measures?

A. Activated charcoal

B. Hemodialysis

C. Urinary alkalinization

D. Sodium Bicarbonate

In the context of a salicylate overdose, the treatment of choice includes both supportive measures and the use of hemodialysis, particularly in severe cases or when there are significant complications arising from the overdose. Hemodialysis is particularly effective because it rapidly removes salicylate from the bloodstream, especially when levels are life-threatening or when there is impaired renal function, making other treatments less effective. Salicylates can cause metabolic acidosis and respiratory alkalosis, and hemodialysis not only aids in the elimination of the drug but also helps correct these acid-base disturbances more effectively than other methods. It is especially indicated in patients with severe toxicity defined by high salicylate levels, altered mental status, or other clinical signs of significant toxicity. While other treatments, such as sodium bicarbonate, are helpful in managing metabolic acidosis and assisting in urinary alkalinization by increasing the excretion of salicylates, they do not achieve the rapid clearance of salicylate that hemodialysis does. Thus, in terms of efficacy in severe cases, hemodialysis is the recommended course of action.

9. What is the imaging modality of choice for cholecystitis?

A. CT scan

B. X-ray

C. Ultrasound, then HIDA

D. MRI

The imaging modality of choice for cholecystitis is ultrasound, followed by HIDA scan if necessary. Ultrasound is particularly useful because it is non-invasive, does not involve radiation, and is effective in visualizing gallstones and assessing gallbladder inflammation. It can demonstrate the presence of gallstones, thickening of the gallbladder wall, and the presence of pericholecystic fluid, which are indicative of cholecystitis. In situations where the ultrasound is inconclusive or further evaluation is needed—such as in cases of suspected acute cholecystitis with normal ultrasound findings—the HIDA scan can be performed. This test assesses gallbladder function and can confirm the diagnosis by showing non-visualization of the gallbladder due to obstruction. Other imaging modalities, such as CT scans and MRI, while they may have their own uses in abdominal imaging, are not the first choice for evaluating cholecystitis. They can be more expensive, less accessible in urgent settings, and involve radiation exposure in the case of CT. X-ray imaging is not typically useful for diagnosing cholecystitis, as it is less effective in visualizing soft tissues like the gallbladder. Hence, the

10. Which ligament (when injured) is typically not treated with surgery?

A. Anterior cruciate ligament

B. Posterior cruciate ligament

C. Medial collateral ligament

D. Lateral collateral ligament

The medial collateral ligament (MCL) is often not treated with surgery when it is injured, primarily because most MCL injuries, particularly the low-grade sprains, typically heal well with conservative management. This conservative approach usually involves rest, physical therapy, bracing, and gradual return to activities. The MCL has a good blood supply, which enhances its healing potential after an injury. In contrast, injuries to the anterior cruciate ligament (ACL) and posterior cruciate ligament (PCL) often require surgical intervention, especially in cases of complete tears or when the instability affects the person's functional ability, such as in athletes or active individuals. The lateral collateral ligament (LCL) can also vary in treatment based on the severity of the injury but is more likely to undergo surgical repair in severe cases. The MCL's ability to heal effectively with non-surgical methods, particularly in its less severe injuries, sets it apart from the other ligaments mentioned in this context.