CAMRT Radiography Practice Exam Sample Study Guide

EVERYTHING you need from our exam experts!

Featuring practice questions, answers, and explanations for each question.

Questions

1. Which patient groups require careful screening for hydration prior to contrast administration?

A. Obese patients and the elderly.

B. Patients with multiple myeloma, diabetes, and high uric acid levels.

C. Children and pregnant women.

D. Patients with a history of respiratory disorders.

2. What does the appearance of a fat pad sign on an elbow X-ray typically indicate?

A. Joint dislocation

B. An undetectable fracture

C. Ligament tear

D. Arthritis

3. What is the average adult respiratory rate range?

A. 8 - 16 breaths per minute

B. 10 - 18 breaths per minute

C. 12 - 20 breaths per minute

D. 15 - 25 breaths per minute

4. What do Blood Urea Nitrogen (BUN) levels primarily assess?

A. Heart function

B. Kidney function

C. Liver function

D. Lung function

5. What is the normal pulse rate for a resting adult?

A. 40-60 beats per minute

B. 60-90 beats per minute

C. 90-110 beats per minute

D. 100-120 beats per minute

6. What must always be checked for in the pressure injector before injecting a patient?

A. Contrast medium viscosity

B. Air bubbles

C. Temperature readings

D. Expired material

7. What is the primary cause of ischemic stroke?

A. A ruptured blood vessel in the brain

B. A temporary loss of blood flow to the brain

C. A blockage in a blood vessel supplying the brain

D. A severe headache

8. How does kV influence the x-ray beam?

A. It controls the amount of photons produced

B. It determines the length of the exposure

C. It regulates the intensity of the electrons

D. It affects the positioning of the x-ray tube

9. What common purpose do the Plia circularis serve in the small intestine?

A. Absorption of nutrients

B. Facilitation of digestion

C. Increase surface area for absorption

D. Produce enzymes

10. In the event of an allergic reaction post-contrast media administration, what is the first step an MRT should take?

A. Administer antihistamines

B. Call for emergency assistance

C. Monitor vital signs

D. Notify the physician

Answers

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

Explanations

1. Which patient groups require careful screening for hydration prior to contrast administration?

A. Obese patients and the elderly.

B. Patients with multiple myeloma, diabetes, and high uric acid levels.

C. Children and pregnant women.

D. Patients with a history of respiratory disorders.

Patients with multiple myeloma, diabetes, and high uric acid levels are particularly vulnerable to complications related to hydration status when undergoing imaging studies with contrast administration. Multiple myeloma can lead to renal impairment because of the presence of abnormal proteins that can clog the renal tubules, increasing the risk of acute kidney injury when contrast is administered. Diabetes, especially in those with nephropathy, can further complicate kidney function, making hydration status critical to ensure that the kidneys can handle the contrast material without sustaining damage. High uric acid levels can also indicate potential kidney issues and raise the risk of gout or kidney stones, which can be exacerbated by the administration of contrast agents. These patient groups thus require careful screening for hydration to ensure adequate renal function and minimize the risk of adverse reactions to contrast media, particularly nephrotoxicity. Ensuring these patients are well-hydrated can help to mitigate these risks and improve their overall safety during imaging procedures.

2. What does the appearance of a fat pad sign on an elbow X-ray typically indicate?

A. Joint dislocation

B. An undetectable fracture

C. Ligament tear

D. Arthritis

The fat pad sign on an elbow X-ray is a crucial indicator of potential underlying injuries, particularly fractures, even when they may not be immediately visible. The presence of a fat pad sign suggests that there is elevated intra-articular pressure, which often occurs with joint injuries. Although it can be associated with joint dislocation, the most significant implication of the fat pad sign is that it may indicate either a fracture that is not directly observable on the X-ray or a subtle fracture that can lead to the accumulation of fluid and therefore the displacement of the fat pads. In practice, this sign can be seen in cases of elbow fractures, such as a radial head fracture, where the fracture might not be explicitly outlined on the radiograph, but the fat pads, which are fat-filled spaces around the joint, are displaced due to the injury. Therefore, recognizing this sign prompts further evaluation and management to rule out unseen fractures or relevant injuries that need treatment. Understanding this relationship helps radiographers and healthcare providers make informed decisions regarding patient care and the necessity for further imaging or intervention.

3. What is the average adult respiratory rate range?

A. 8 - 16 breaths per minute

B. 10 - 18 breaths per minute

C. 12 - 20 breaths per minute

D. 15 - 25 breaths per minute

The average adult respiratory rate range is generally accepted as 12 to 20 breaths per minute, making this the correct answer. This range reflects the normal rate at which healthy adults breathe at rest. Respiratory rates outside of this range may indicate underlying health issues or variations in individual physiology. Rates below 12 breaths per minute could suggest bradypnea, which may occur in various conditions including certain medications or respiratory issues. Conversely, rates above 20 breaths per minute may suggest tachypnea, often seen in response to exertion, anxiety, or respiratory distress. Recognizing the normal respiratory rate is important for healthcare providers in assessing a patient's respiratory status and overall well-being.

4. What do Blood Urea Nitrogen (BUN) levels primarily assess?

A. Heart function

B. Kidney function

C. Liver function

D. Lung function

Blood Urea Nitrogen (BUN) levels primarily assess kidney function. Urea is a waste product formed in the liver from the breakdown of proteins. It is then filtered out by the kidneys and excreted in urine. Evaluating BUN levels helps to determine how well the kidneys are functioning in removing waste from the bloodstream. Elevated BUN levels may indicate impaired kidney function, dehydration, or a high protein diet, while low levels could suggest liver disease or malnutrition. The context around the other options clarifies why they are less relevant. For instance, while heart function is assessed through different markers like creatinine kinase or troponin levels, and liver function is often evaluated using liver enzyme tests (such as ALT and AST), lung function assessments typically involve spirometry or imaging tests focused on respiratory health. Thus, BUN reflects specific aspects of kidney performance, making it the correct choice.

5. What is the normal pulse rate for a resting adult?

A. 40-60 beats per minute

B. 60-90 beats per minute

C. 90-110 beats per minute

D. 100-120 beats per minute

The normal pulse rate for a resting adult typically falls within the range of 60 to 100 beats per minute. When considering this range, a pulse rate of 60 to 90 beats per minute is often cited as a standard reference, aligning with physiological norms for resting adults. This range accounts for variations among individuals, including factors such as age, fitness level, and overall health. At rest, the body requires a certain amount of oxygenation, and the heart rate adjusts accordingly to maintain adequate blood flow and oxygen delivery to tissues without unnecessary exertion. A pulse rate below 60 beats per minute is often indicative of bradycardia, which may signal underlying health concerns or could be a normal finding in well-trained athletes. Rates above 100 beats per minute at rest can indicate tachycardia, which may be associated with numerous factors including stress, illness, or dehydration. Thus, the selection of a pulse rate range in the 60-90 beats per minute category as normal for a resting adult reflects a well-established health standard in clinical practice.

6. What must always be checked for in the pressure injector before injecting a patient?

A. Contrast medium viscosity

B. Air bubbles

C. Temperature readings

D. Expired material

In the context of using a pressure injector for contrast media administration, checking for air bubbles before injecting a patient is crucial. Air bubbles can pose a significant risk during an injection, as they can lead to complications such as air embolism, which can be potentially life-threatening. Ensuring that the line is free of air bubbles helps to ensure the safety of the procedure and the well-being of the patient. While other factors such as the viscosity of the contrast medium, temperature readings, and expiration of materials are important considerations in the overall use of contrast media and injectors, they do not directly relate to immediate safety concerns as air bubbles do. For example, contrast medium viscosity affects flow rates and injection pressure but does not inherently pose the same type of acute risk to the patient as air does. Therefore, verifying that there are no air bubbles is a critical step that must always be performed before administering contrast media.

7. What is the primary cause of ischemic stroke?

A. A ruptured blood vessel in the brain

B. A temporary loss of blood flow to the brain

C. A blockage in a blood vessel supplying the brain

D. A severe headache

Ischemic stroke is primarily caused by a blockage in a blood vessel supplying the brain. This blockage can occur due to various reasons, most commonly by a blood clot that forms in an artery that supplies blood to the brain or travels there from another part of the body, such as the heart. When this blockage occurs, it leads to a reduction or complete cessation of blood flow to a part of the brain, resulting in tissue damage and loss of function in that area. Understanding that ischemic strokes account for about 87% of all strokes highlights the significance of this condition, particularly in the context of risk factors such as atherosclerosis (the buildup of fatty deposits in the arteries) and heart conditions that may contribute to clot formation. The other options presented do not accurately describe the mechanism of an ischemic stroke. A ruptured blood vessel leads to hemorrhagic stroke, a temporary loss of blood flow may result in a transient ischemic attack (TIA), and a severe headache can be a symptom of various conditions but is not a cause of ischemic stroke.

8. How does kV influence the x-ray beam?

A. It controls the amount of photons produced

B. It determines the length of the exposure

C. It regulates the intensity of the electrons

D. It affects the positioning of the x-ray tube

The role of kilovolt peak (kV) in x-ray production is crucial, particularly in terms of the quality and characteristics of the x-ray beam. Specifically, kV influences the energy of the x-ray photons produced during the imaging process. A higher kV results in increased photon energy, which enhances the penetrability of the x-ray beam through tissue. This increased energy helps to improve image quality, particularly for denser body parts. While it is true that exposure time (or length) can also be affected by the selection of kV in clinical practice, the primary function of kV is to adjust the energy level of the x-ray photons rather than directly controlling exposure duration. Exposure time is typically influenced more by the settings applied to the milliampere-seconds (mAs) rather than kV. Additionally, the other options refer to different aspects of x-ray production. For instance, while kV can indirectly influence the amount of photons produced, it does not directly control it. The intensity of the electrons in the tube is related to factors like the filament current and not solely to kV settings. kV does not influence the positioning of the x-ray tube; that is determined by the radiographer's setup and alignment

9. What common purpose do the Plia circularis serve in the small intestine?

A. Absorption of nutrients

B. Facilitation of digestion

C. Increase surface area for absorption

D. Produce enzymes

The Plia circularis, or circular folds, in the small intestine play a vital role in increasing the surface area available for absorption. These folds are a structural adaptation that significantly enhance the intestinal surface area, allowing for more efficient absorption of nutrients as they pass through the digestive tract. By increasing the surface area, the Plia circularis facilitate a more extensive interaction between the intestinal lining and the nutrients, promoting a greater efficiency in nutrient uptake. While the absorption of nutrients is indeed an essential function of the small intestine, it is the presence of the Plia circularis that directly contributes to expanding the surface area necessary for this absorption process. The folds themselves do not directly engage in digestion or enzyme production, though they do support these processes by providing the necessary environment and increased area for interaction with digestive enzymes and nutrients. Therefore, recognizing the specific function of the Plia circularis in increasing surface area for absorption is key to understanding their role in the small intestine.

10. In the event of an allergic reaction post-contrast media administration, what is the first step an MRT should take?

A. Administer antihistamines

B. Call for emergency assistance

C. Monitor vital signs

D. Notify the physician

In the situation of an allergic reaction following the administration of contrast media, the first step an MRT should take is to call for emergency assistance. This immediate action is crucial because allergic reactions can range from mild to severe, potentially progressing rapidly to life-threatening conditions such as anaphylaxis. By calling for emergency assistance, the MRT ensures that the proper medical response team is alerted and can provide necessary interventions without delay. While administering antihistamines, monitoring vital signs, or notifying the physician are essential subsequent steps in managing allergic reactions, they do not replace the urgency of calling for help. Prompt access to emergency care and resources is vital to address any developing complications effectively. Therefore, the priority in such a scenario is to ensure that assistance is on the way as soon as an allergic reaction is recognized.