CAMRT Radiography Practice Exam (Sample)

Study Guide

Everything you need from our exam experts!

Questions

1. **What adjustment in kVp is recommended for a plaster cast?**
   - **A. Increase by 2 - 4 kVp**
   - **B. Increase by 5 - 7 kVp**
   - **C. Decrease by 3 - 5 kVp**
   - **D. No adjustment**

2. **What technique is primarily used for mobile radiography in emergency situations?**
   - **A. Portable X-ray machine**
   - **B. Fixed radiography unit**
   - **C. Fluoroscopy**
   - **D. Digital radiography system**

3. **In an abdominal scan with a typical window level of +50 and a window width of 350, how would a nodule with a Hounsfield number of +320 appear?**
   - **A. All black**
   - **B. Grey**
   - **C. All white**
   - **D. Translucent**

4. **If lung tissue is the primary focus for a CT exam, which window level setting is most appropriate?**
   - **A. 50**
   - **B. 400**
   - **C. 0 or the level of water**
   - **D. -600**

5. **What is a thrombus?**
   - **A. A type of bacteria**
   - **B. A blood clot**
   - **C. An infection in the bloodstream**
   - **D. A type of cancer**

6. Which position is best to demonstrate pleural effusion of the right lung if the patient is unable to stand?

- **A. Left lateral decubitus**
- **B. Right lateral decubitus**
- **C. Supine**
- **D. Prone**

7. Which bone in the human body is non-articulating?

- **A. Sphenoid Bone**
- **B. Hyoid Bone**
- **C. Coccyx**
- **D. Scapula**

8. Which statement is true regarding a delegated order?

- **A. Delegated acts can only be ordered in emergency situations**
- **B. Can only be accepted and performed by MRT's in the specialties of nuclear medicine and radiation therapy**
- **C. Under CMRITO standard of practice, MRT's can delegate controlled acts authorized under the MRT act to other individuals**
- **D. Delegation is the transfer of authority from a member of a regulated health profession who is authorized to perform an act to another professional who is not authorized**

9. Which condition may require a chest routine to be included with the study of the ribs?

- **A. Pectus evacatum**
- **B. Pectorus carinatum**
- **C. Hemothorax**
- **D. Osteomyelitis**

10. How frequently should the MRT assess a trauma patient in an imaging department?

- **A. Every minute**
- **B. Every 5 to 10 minutes**
- **C. Every 15 minutes**
- **D. Every 30 minutes**

Answers

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

Explanations

1. What adjustment in kVp is recommended for a plaster cast?

A. Increase by 2 - 4 kVp

B. Increase by 5 - 7 kVp

C. Decrease by 3 - 5 kVp

D. No adjustment

When dealing with radiographic imaging of a plaster cast, an increase in kilovolt peak (kVp) is necessary due to the increased density and thickness that the cast material adds to the area being imaged. Plaster casts are typically dense and can absorb more radiation than soft tissue, which means that to adequately penetrate the cast and provide a clear image of the underlying structures, an increase in the kVp setting is required. The recommended adjustment of 5 - 7 kVp is based on the typical attenuation properties of the plaster material, which is denser than soft tissue. This adjustment compensates for the higher absorption of X-rays, ensuring that sufficient penetration occurs. Failure to increase the kVp adequately might result in underexposed images that lack clarity or detail. Adjustments beyond this range may lead to overexposure, which could negatively impact the diagnostic quality of the images. Understanding these principles allows a radiographer to make the necessary technical adjustments for optimal imaging outcomes in circumstances where body composition changes, such as when a patient has a plaster cast.

2. What technique is primarily used for mobile radiography in emergency situations?

A. Portable X-ray machine

B. Fixed radiography unit

C. Fluoroscopy

D. Digital radiography system

The primary technique used for mobile radiography in emergency situations is a portable X-ray machine. This device is specifically designed for use outside of the traditional radiology department, allowing healthcare professionals to perform imaging in various settings, including emergency rooms, trauma centers, or even patients' bedsides. Portable X-ray machines are compact, easily transportable, and can quickly provide critical imaging without the need for the patient to be moved. In emergency scenarios, rapid decision-making is crucial, and portable X-ray units enable immediate assessment of injuries or conditions, such as fractures or pneumothorax, without delaying treatment. While fixed radiography units, fluoroscopy, and digital radiography systems have their merits and are used in many medical contexts, they are not suited for mobile applications where flexibility and mobility are essential. Fixed units are stationary and require patients to be transported, whereas fluoroscopy requires specialized setup and often involves a stationary system. Digital radiography, while it can be mobile, typically doesn't match the portability and immediacy offered by a dedicated portable X-ray machine in urgent situations.

3. In an abdominal scan with a typical window level of +50 and a window width of 350, how would a nodule with a Hounsfield number of +320 appear?

A. All black

B. Grey

C. All white

D. Translucent

In a typical abdominal scan with a window level of +50 and a window width of 350, the window settings determine how different Hounsfield units (HU) are visualized on the image. The window level sets the midpoint of the grayscale mapping, while the window width determines the range of Hounsfield units that will be displayed in various shades of grey. The window level of +50 means that the Hounsfield unit of +50 is represented as a middle gray. The window width of 350 indicates that the range spans from –100 (Hounsfield numbers considerably lower than the window level) to +250 (Hounsfield numbers considerably higher), giving a wide range of contrast in the image. A nodule with a Hounsfield number of +320 falls above the maximum range of the window width (+250). In this case, anything above the maximum range of the window width will be displayed as white on the imaging output. Therefore, the nodule will appear very bright or white, indicating a high density material such as a calcified or high-contrast structure. This understanding of Hounsfield units, window levels, and widths is essential in radiographic interpretation, as it allows technologists and radiologists to assess and

4. If lung tissue is the primary focus for a CT exam, which window level setting is most appropriate?

A. 50

B. 400

C. 0 or the level of water

D. -600

When performing a CT exam focused on lung tissue, the appropriate window level setting is typically a negative value, such as -600. This is because lung tissue's density is quite low compared to other tissues, mainly consisting of air-filled spaces. Setting the window level at -600 enhances the contrast of the lung tissue against the surrounding structures, allowing for clearer imaging of any abnormalities, such as nodules or signs of pathology. The negative window level effectively allows the radiologist to visualize the subtle variations in lung density, improving diagnostic capabilities. In contrast, setting the window level at higher values, such as 50, 400, or even at the level of water (0), would not enhance visualization of the lung tissue as effectively, as these levels cater more to denser materials and would create a loss of detail in the lungs. Therefore, a window level setting at -600 is specifically tailored to accentuate the features of lung tissue in CT imaging.

5. What is a thrombus?

A. A type of bacteria

B. A blood clot

C. An infection in the bloodstream

D. A type of cancer

A thrombus is indeed a blood clot that forms in a blood vessel or the heart and remains attached to the site of its formation. It plays a critical role in the body's hemostatic response to bleeding, as it helps to prevent excessive blood loss. Understanding thrombus formation is vital in various medical fields, including radiography, as it relates to vascular health and conditions like thrombosis, which can lead to significant complications, including stroke or heart attack. The other options do not accurately define a thrombus: a type of bacteria refers to microorganisms that can cause infection; an infection in the bloodstream pertains to systemic illnesses caused by pathogens; and a type of cancer describes abnormal cell growth that can occur in various tissues, none of which align with the definition of a thrombus.

6. Which position is best to demonstrate pleural effusion of the right lung if the patient is unable to stand?

A. Left lateral decubitus

B. Right lateral decubitus

C. Supine

D. Prone

The most effective position to demonstrate pleural effusion of the right lung when a patient is unable to stand is indeed the right lateral decubitus position. In this position, the patient lies on their right side, allowing gravity to help any fluid that may have accumulated in the pleural space to settle in the posterior aspect of the thoracic cavity. Radiologically, this positioning enhances the visualization of the pleural effusion because the fluid will typically layer out on the lateral side of the patient, making it more apparent on the resulting imaging. When the patient is in the right lateral decubitus position, the density difference between the fluid and the lung tissue provides a clear contrast on an X-ray. This contrast is crucial for accurately detecting and assessing the extent of the pleural effusion. Thus, utilizing this position enables radiographers to obtain the most diagnostically useful imaging in the absence of standing capabilities.

7. Which bone in the human body is non-articulating?

A. Sphenoid Bone

B. Hyoid Bone

C. Coccyx

D. Scapula

The hyoid bone is recognized as a non-articulating bone because it does not form a joint with any other bone in the human body. This unique feature allows the hyoid to serve as an anchoring structure for the tongue and support for various muscles involved in swallowing and speaking. Positioned in the anterior neck, it is suspended by ligaments and muscles, which is why it is not connected directly to any of the surrounding bones. In contrast, the other choices listed involve articulations with adjacent bones. The sphenoid bone contributes to the structure of the skull and forms joints with several other cranial bones. The coccyx, or tailbone, is the final segment of the vertebral column and connects with the sacrum, confirming its articulating nature. Lastly, the scapula, or shoulder blade, connects with the clavicle and upper arm bone through the shoulder joint, reaffirming that it is also an articulating bone. This distinction emphasizes the hyoid bone's unique role and function within the human anatomy.

8. Which statement is true regarding a delegated order?

A. Delegated acts can only be ordered in emergency situations

B. Can only be accepted and performed by MRT's in the specialties of nuclear medicine and radiation therapy

C. Under CMRITO standard of practice, MRT's can delegate controlled acts authorized under the MRT act to other individuals

D. Delegation is the transfer of authority from a member of a regulated health profession who is authorized to perform an act to another professional who is not authorized

The statement regarding delegation that is true is that delegation involves the transfer of authority from a member of a regulated health profession, who is authorized to perform a certain act, to another professional who does not have the same level of authorization. This reflects the understanding that delegation is about allowing a qualified individual to pass on responsibilities for specific acts to someone who is otherwise unqualified to perform them independently. This framework is essential in healthcare to ensure that tasks can be effectively managed while adhering to the legal and ethical standards established for patient care. It enables the efficient functioning of teams within healthcare settings, where specialists can delegate specific tasks to assistants or colleagues who possess appropriate training, even if they are not authorized to perform those tasks independently. This principle operates under regulatory guidelines that aim to maintain patient safety and uphold the standards of practice within the healthcare profession, which is why this statement is particularly significant in the context of health care delegation practices. The other statements either misinterpret the limitations or roles associated with delegation or present conditions that are not universally supported within the context of the practice.

9. Which condition may require a chest routine to be included with the study of the ribs?

A. Pectus evacatum

B. Pectorus carinatum

C. Hemothorax

D. Osteomyelitis

In the context of radiographic imaging, hemothorax, which involves the accumulation of blood within the pleural cavity, can significantly influence the appearance of the ribs and the surrounding structures on imaging studies. The presence of fluid in the pleural space can obscure underlying anatomical details and potentially mask rib fractures or other pathological changes related to rib injuries. Including a chest routine in the study of the ribs allows clinicians and radiographers to have a comprehensive view of the thoracic cavity, facilitating the identification of fluid levels or other complications that may be present. This combination of imaging studies can provide crucial information for diagnosis and management, particularly in trauma cases where rib injuries might be accompanied by pleural effusion or hemothorax. Other conditions listed, such as pectus excavatum, pectus carinatum, and osteomyelitis of the ribs, do not typically necessitate a chest routine. Pectus deformities are anatomical variations that may require specific imaging but do not involve acute complications seen with hemothorax. Osteomyelitis, while serious, focuses primarily on the bone itself and might not require the comprehensive chest evaluation that hemothorax would. Hence, the combination of rib studies with a chest routine

10. How frequently should the MRT assess a trauma patient in an imaging department?

A. Every minute

B. Every 5 to 10 minutes

C. Every 15 minutes

D. Every 30 minutes

The recommended frequency for assessing a trauma patient in an imaging department is every 5 to 10 minutes due to the critical nature of such patients. Traumatic injuries can lead to rapid changes in the patient's condition, including vital signs and overall stability. Frequent assessments within this time frame allow the medical imaging technologist to closely monitor for any deterioration and respond swiftly if urgency arises. This practice aligns with standard protocols in trauma care, emphasizing the importance of timely intervention. Assessing more frequently than this, such as every minute, may not be necessary and could lead to over-assessment without providing additional clinical benefit. On the other hand, assessing only every 15 or 30 minutes might not be adequate to catch critical changes in a patient's condition promptly, potentially delaying necessary medical interventions. Thus, the 5 to 10-minute interval strikes a balance between maintaining vigilance and allowing for comprehensive patient care.