CAMRT Radiography Practice Exam (Sample)

Study Guide

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Questions

1. Which of the following techniques would help reduce motion artifacts in radiography?

A. Increased exposure time

B. Use of immobilization devices

C. Higher radiation dose

D. Shorter collimation

2. What is the required filtration for X-ray systems operating at 50 - 70 kVp?

A. 0.5 mm Al equivalent

B. 1.5 mm Al equivalent

C. 2.0 mm Al equivalent

D. 2.5 mm Al equivalent

3. What is the proper order for opening a sterile tray?

A. Away, Left, Right, Toward you

B. Away, Right, Left, Toward you

C. Right, Away, Left, Toward you

D. Toward you, Left, Right, Away

4. Which of the following is not a function of the Look-Up Table (LUT)?

A. Evaluating raw luminance values

B. Correcting luminance values

C. Providing appropriate brightness and contrast

D. Setting kVp and mAs values

5. A radiograph of an AP mortise projection of the ankle shows the lateral joint space is not open. What positioning error likely caused this?

A. Insufficient medial rotation

B. Excessive medial rotation

C. Excessive dorsiflexion of the foot

D. Excessive plantar flexion of the foot

6. What is the best imaging technique for evaluating soft tissue pathology?

A. Fluoroscopy

B. X-ray

C. MRI

D. CT scan

7. What structure does the "inlet" projection of the pelvis primarily show?

A. The femoral head

B. The pelvic ring

C. The sacrum

D. The acetabulum

8. Which view is preferred for imaging retro-gastric structures during gastrointestinal examinations?

A. Craniocaudal View

B. Mediolateral Oblique View

C. Right lateral stomach view

D. Left lateral view

9. Which projection technique best visualizes the frontal bone?

A. 15-degree occipitofrontal projection

B. Lateral projection

C. AP projection

D. Tangential projection

10. How frequently should a sensitometry strip be performed?

A. Weekly

B. Monthly

C. Daily

D. Yearly

Answers

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

Explanations

1. Which of the following techniques would help reduce motion artifacts in radiography?

A. Increased exposure time

B. Use of immobilization devices

C. Higher radiation dose

D. Shorter collimation

Using immobilization devices is essential for reducing motion artifacts in radiography. When patients move during the exposure, even slightly, it can result in blurred images and degrade the quality of the diagnostic information. Immobilization devices help to securely hold the patient in place, minimizing any movement that may occur due to discomfort, anxiety, or involuntary actions. This improved stability allows for a clearer and more accurate radiographic image. Other techniques mentioned, such as increased exposure time or higher radiation dose, do not address the fundamental issue of patient movement. Longer exposure times may increase the chance of motion artifacts rather than eliminate them, especially if the patient is not immobilized. Similarly, using a higher radiation dose does not inherently resolve issues related to motion; it primarily raises health risks without guaranteeing improved image quality in cases of motion. Additionally, shorter collimation entails a reduction in the visible area of the image but does not impact the motion directly. Thus, employing immobilization devices is the most effective approach among the options provided to achieve clearer, more diagnostic images.

2. What is the required filtration for X-ray systems operating at 50 - 70 kVp?

A. 0.5 mm Al equivalent

B. 1.5 mm Al equivalent

C. 2.0 mm Al equivalent

D. 2.5 mm Al equivalent

The required filtration for X-ray systems operating at 50 - 70 kVp is indeed 1.5 mm of aluminum equivalent. Filtration is critical in radiography as it helps to reduce patient dose and improve image quality by filtering out low-energy X-rays that contribute little to the diagnostic image but increase the overall radiation exposure to the patient. At this range of kilovoltage peak, 1.5 mm of aluminum effectively attenuates the less penetrating X-rays while allowing the higher energy, more penetrating X-rays to pass through, ensuring that the useful diagnostic beam is optimized. This filtration meets the standards set by regulatory bodies to balance patient safety with diagnostic efficacy. Filtration requirements vary based on the kilovoltage range; for example, lower kVp settings generally require less filtration, and higher settings require more. Thus, in the specific context of 50 - 70 kVp operations, the standard established for filtration is 1.5 mm of aluminum equivalent.

3. What is the proper order for opening a sterile tray?

A. Away, Left, Right, Toward you

B. Away, Right, Left, Toward you

C. Right, Away, Left, Toward you

D. Toward you, Left, Right, Away

The correct order for opening a sterile tray is based on the principles of maintaining sterility and preventing contamination. The order of "Away, Left, Right, Toward you" ensures that when a sterile field is being prepared, the person opening the tray does so in a manner that minimizes the risk of introducing contaminants. Starting by folding back the flap that opens away from you is essential because it allows you to approach the sterile field without reaching over it, which could potentially deposit contaminants from your hands or clothing. Following this with the left flap, then the right flap, and finally the flap closest to you, maintains a clean barrier throughout the process. This sequence provides a clear direction of movement and keeps your hands away from the sterile field during the process. This procedure reflects standard practices in infection control and emphasizes the importance of understanding how to manipulate sterile equipment without compromising its integrity or the safety of the procedure.

4. Which of the following is not a function of the Look-Up Table (LUT)?

A. Evaluating raw luminance values

B. Correcting luminance values

C. Providing appropriate brightness and contrast

D. Setting kVp and mAs values

The Look-Up Table (LUT) is a crucial component in digital radiography that is used to enhance and optimize image quality. Its primary functions include evaluating and correcting raw luminance values, as well as applying appropriate adjustments to ensure proper brightness and contrast on the displayed image. When evaluating raw luminance values, the LUT aids in interpreting the pixel values associated with the image formation, adjusting them to improve the visualization of anatomical structures. By correcting luminance values, it ensures that the resulting images meet the standard requirements for diagnostic purposes, enhancing areas that require clarity while maintaining overall quality. Additionally, the LUT plays a critical role in providing the appropriate brightness and contrast levels needed for adequate image interpretation. The adjustments made by the LUT are essential for achieving diagnostic-quality images tailored to the specific requirements of different imaging modalities. However, setting kVp (kilovolt peak) and mAs (milliampere-seconds) values pertains to the exposure factors used during the acquisition of the radiographic image, rather than an operation performed post-acquisition through the LUT. These parameters are determined prior to imaging and directly influence the amount of radiation used and the quality of the initial image captured, whereas the LUT's function occurs later in the image processing phase. Therefore,

5. A radiograph of an AP mortise projection of the ankle shows the lateral joint space is not open. What positioning error likely caused this?

A. Insufficient medial rotation

B. Excessive medial rotation

C. Excessive dorsiflexion of the foot

D. Excessive plantar flexion of the foot

The correct answer is that excessive medial rotation likely caused the lateral joint space not to be opened in an AP mortise projection of the ankle. In an AP mortise view, the goal is to visualize the ankle joint, particularly the mortise, which is the space between the talus and the tibia-fibula. Correct positioning involves slightly internally rotating the leg and foot to align the joint space properly. If there is excessive medial rotation, it can close down the lateral aspect of the mortise space, leading to a radiograph where the lateral joint space appears compromised or closed. Understanding the anatomy and mechanics of the ankle joint is crucial in radiographic positioning. Over-rotation alters the alignment needed for a clear visualization of the joint spaces, impacting the diagnostic quality of the image.

6. What is the best imaging technique for evaluating soft tissue pathology?

A. Fluoroscopy

B. X-ray

C. MRI

D. CT scan

The best imaging technique for evaluating soft tissue pathology is MRI (Magnetic Resonance Imaging). MRI is especially effective because it utilizes powerful magnetic fields and radio waves to generate detailed images of soft tissues, making it particularly useful for visualizing muscles, fat, ligaments, tendons, and organs. Unlike X-rays and CT scans, which primarily excel in viewing dense structures such as bones, MRI provides superior contrast resolution for soft tissues, allowing for better diagnosis of conditions like tears, tumors, inflammation, and other pathologies. While fluoroscopy can be beneficial for real-time imaging of moving structures, it is less effective than MRI in providing comprehensive details about soft tissue abnormalities. X-rays are primarily geared towards assessing bone integrity, so they do not provide adequate information on soft tissue structures. CT scans can be useful for certain soft tissue evaluations, but they do not match the level of detail and contrast achieved with MRI, particularly for complex soft tissue pathologies.

7. What structure does the "inlet" projection of the pelvis primarily show?

A. The femoral head

B. The pelvic ring

C. The sacrum

D. The acetabulum

The "inlet" projection of the pelvis is primarily used to visualize the pelvic ring. This particular projection provides a view that allows for assessment of the overall stability of the pelvis, particularly in the context of trauma. By examining the pelvic ring, it helps in identifying any fractures or displacements that may compromise the integrity of the pelvis. While other structures like the femoral head, sacrum, and acetabulum may be partially visible, the primary focus and utility of the inlet projection centers around the pelvic ring itself. The importance of this view lies in its role in helping clinicians determine the extent of pelvic injuries and guide further management.

8. Which view is preferred for imaging retro-gastric structures during gastrointestinal examinations?

A. Craniocaudal View

B. Mediolateral Oblique View

C. Right lateral stomach view

D. Left lateral view

The preferred view for imaging retro-gastric structures during gastrointestinal examinations is the right lateral stomach view. This position allows for optimal visualization of structures located behind the stomach, such as the pancreas and the aorta, as well as assessing the contours of the stomach itself. In the right lateral position, the stomach is positioned anteriorly, which reduces superimposition of other abdominal organs and enhances the clarity of the retro-gastric structures. The right lateral view also takes advantage of the natural orientation of the gastrointestinal tract, making it easier to identify abnormalities or pathologies in the retro-gastric area. Choosing this view ensures that the radiologist can effectively assess the area of interest without interference from overlapping structures, leading to improved diagnostic accuracy. This specificity is important for evaluating conditions like tumors or inflammatory processes that may affect the retro-gastric area.

9. Which projection technique best visualizes the frontal bone?

A. 15-degree occipitofrontal projection

B. Lateral projection

C. AP projection

D. Tangential projection

The 15-degree occipitofrontal projection is the preferred technique for visualizing the frontal bone, primarily because it provides a detailed view that highlights the contours and features of this area. This projection involves angling the central ray 15 degrees from the occipital region toward the frontal bone, effectively reducing superimposition from other structures and enabling clearer visualization. By using this specific projection technique, radiographers can obtain a more accurate representation of the frontal bone, which is crucial for diagnosing any potential pathologies or injuries associated with that area. In contrast, while other projections such as lateral and AP may show the frontal bone, they are not specifically designed to accentuate its details as effectively as the occipitofrontal projection. The tangential projection is typically not used for frontal bone visualization, as it is better suited for assessing regions like the nasal bones or zygomatic arches. Overall, the targeted approach of the 15-degree occipitofrontal projection provides the best clarity and detail for evaluating the frontal bone.

10. How frequently should a sensitometry strip be performed?

A. Weekly

B. Monthly

C. Daily

D. Yearly

A sensitometry strip should be performed daily because it is essential for monitoring the performance of the imaging system and the consistency of film processing. By conducting this test every day, radiologic technologists can quickly identify any variations in film speed, contrast, or processing conditions that may affect image quality. Daily sensitometry helps ensure that the radiographic equipment is operating within the optimal parameters and that any adjustments needed for film processing are made promptly, therefore maintaining high standards of patient care and safety. Regular daily checks provide immediate feedback on any potential issues, allowing for timely corrections before they impact diagnostic imaging.