CAMRT Radiography Practice Exam (Sample)

Study Guide

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Questions

1. What pathology seen during a GI is associated with cirrhosis of the liver?

A. Hepatocellular carcinoma

B. Esophageal varices

C. Pancreatitis

D. Cholecystitis

2. What structure represents the neck of the Scottie dog?

A. Transverse process

B. Pedicle

C. Pars interarticularis

D. Lamina

3. What attenuation characteristic does a 0.50 Pb lead apron provide?

A. 94 - 99

B. 51 - 66

C. 75 - 88

D. 0 - 50

4. A patient has a known history of angina and is experiencing symptoms similar to a heart attack. What medication will likely be given to reduce the symptoms and treat this patient?

A. Aspirin

B. Nitroglycerine

C. Ibuprofen

D. Atorvastatin

5. A low GFR and creatinine level typically indicate what?

A. Increased kidney function

B. Decreased kidney function

C. Stable kidney function

D. Optimal kidney function

6. For a low grid ratio, what kind of focusing range is expected?

A. Smaller focusing range

B. No focusing range

C. Larger focusing range

D. Medium focusing range

7. Epiglottitis primarily affects which age group?

A. Infants under 1 year

B. Children aged 3-6 years old

C. Teens aged 13-19 years old

D. Adults aged 20-40 years old

8. What is critical to include in post-reduction images for a patient with an intramedullary nail?

A. The entire orthopedic device

B. Only the fracture site

C. Adjacent musculature

D. The surgical incision site

9. What is the single most effective means of controlling the spread of infectious organisms?

A. Wearing gloves

B. Wearing masks

C. Hand washing

D. Sterilization

10. To evaluate bony structures in a CT image, what would increase the dark appearance of the image?

A. Decrease the window width

B. Decrease the window level

C. Increase the window level

D. Increase the window width

Answers

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

Explanations

1. What pathology seen during a GI is associated with cirrhosis of the liver?

A. Hepatocellular carcinoma

B. Esophageal varices

C. Pancreatitis

D. Cholecystitis

Esophageal varices are dilated veins in the esophagus that occur as a result of increased pressure in the portal vein, a condition often caused by cirrhosis of the liver. When the liver becomes cirrhotic, it leads to a blockage in the normal blood flow, prompting the development of collateral circulation to bypass the obstruction. These collateral vessels, including those in the esophagus, can become engorged, leading to varices. If these varices rupture, it can result in severe gastrointestinal bleeding, which is a significant complication associated with cirrhosis. Other conditions listed, such as hepatocellular carcinoma, pancreatitis, and cholecystitis, do not specifically stem from the development of portal hypertension linked to cirrhosis in the same direct way. Hepatocellular carcinoma may develop in patients with cirrhosis as a separate and distinct complication, but it is not a direct consequence of the cirrhotic changes affecting the portal system. Pancreatitis primarily involves the pancreas and is unrelated to liver pathology in this context. Cholecystitis is an inflammation of the gallbladder and, while it may occur in liver disease patients, it does not have the same direct association with cirr

2. What structure represents the neck of the Scottie dog?

A. Transverse process

B. Pedicle

C. Pars interarticularis

D. Lamina

The structure that represents the neck of the Scottie dog is the pars interarticularis. In radiographic anatomy, this unique analogy is often used to help identify the lumbar vertebrae as seen in an oblique view. When visualizing the lumbar spine, the Scottie dog is a mnemonic where different parts of the dog represent various anatomical structures. In this analogy, the pars interarticularis is likened to the neck of the dog, which connects the head (the superior articular process) to the body (the lamina and the rest of the vertebra). The pars interarticularis is of particular clinical significance because it is a common site for stress fractures, particularly in athletes who engage in hyperextension activities. Understanding this structure is crucial for radiologists and practitioners when diagnosing conditions such as spondylolysis.

3. What attenuation characteristic does a 0.50 Pb lead apron provide?

A. 94 - 99

B. 51 - 66

C. 75 - 88

D. 0 - 50

A 0.50 Pb lead apron provides attenuation characteristics that typically range between 75% and 88% for photon energies commonly encountered in diagnostic radiology. This level of attenuation indicates that a significant portion of the radiation is absorbed or scattered by the lead, which is critical for protective equipment in a medical setting. Lead is used in aprons because it is highly effective in blocking x-rays and gamma rays due to its high atomic number and density. When using a 0.50 mm lead equivalent apron, the specific range reflects the apron's ability to reduce exposure to potentially harmful radiation, protecting healthcare professionals and patients during imaging procedures. Attenuation percentages lower than this, such as those found in the other ranges, would imply less effective protection, thus not suitable for the applications requiring a 0.50 Pb equivalent. Therefore, the selected range accurately represents the effective shielding properties one could expect from such a protective garment.

4. A patient has a known history of angina and is experiencing symptoms similar to a heart attack. What medication will likely be given to reduce the symptoms and treat this patient?

A. Aspirin

B. Nitroglycerine

C. Ibuprofen

D. Atorvastatin

The most likely medication to be given to a patient experiencing symptoms similar to a heart attack, especially with a history of angina, is nitroglycerine. Nitroglycerine is a vasodilator that works by relaxing the blood vessels, which decreases the workload on the heart and helps alleviate chest pain associated with angina and acute coronary syndromes. By dilating the coronary arteries, it improves blood flow to the heart muscle, which can be critical in managing acute symptoms and preventing further complications. Other options, while commonly used in different contexts, do not directly address the immediate relief of angina symptoms in the same manner. Aspirin is typically administered to reduce the risk of clot formation but does not relieve chest pain. Ibuprofen, a non-steroidal anti-inflammatory drug, is used for pain relief and inflammation, making it less relevant for acute cardiac symptoms. Atorvastatin is primarily used for long-term cholesterol management and does not provide immediate symptom relief in acute coronary situations. Thus, nitroglycerine is the most appropriate choice for acute management in this scenario.

5. A low GFR and creatinine level typically indicate what?

A. Increased kidney function

B. Decreased kidney function

C. Stable kidney function

D. Optimal kidney function

A low Glomerular Filtration Rate (GFR) and elevated creatinine level are significant indicators of kidney function. The GFR is a critical measurement that assesses how well the kidneys are filtering blood, with lower values suggesting diminished filtering capability. Creatinine is a waste product produced by muscle metabolism, and it is typically cleared from the blood by the kidneys. When kidney function declines, creatinine levels rise due to the kidneys' reduced ability to filter and excrete it. Thus, when both the GFR is low and the creatinine level is elevated, it strongly points toward decreased kidney function, reflecting a potential renal impairment or failing ability to maintain normal physiological processes. Monitoring these parameters is essential in diagnosing and managing conditions that affect kidney health, such as acute kidney injury or chronic kidney disease. Understanding this relationship is crucial for making informed decisions regarding patient care and treatment options.

6. For a low grid ratio, what kind of focusing range is expected?

A. Smaller focusing range

B. No focusing range

C. Larger focusing range

D. Medium focusing range

In the context of radiography, a low grid ratio is associated with a larger focusing range because of how the grid is designed to manipulate scattered radiation. Low grid ratios, which involve fewer lead strips relative to the interspace material, allow for greater latitude in the alignment of the x-ray tube, patient, and film or detector. Grids are used to enhance image quality by reducing the amount of scattered radiation that reaches the film or detector, which can cause fogging and reduce image contrast. A low grid ratio means that the angles at which the x-ray beam can enter and still be effectively transmitted are broader. This characteristic allows for a larger focusing range, meaning technologists have more flexibility in terms of positioning and alignment without compromising the effectiveness of the grid. In contrast, higher grid ratios have a narrower focusing range, which requires more precise alignment of the x-ray tube with the grid. Thus, the relationship between the grid ratio and the focusing range is important to understand in order to optimize image quality and maintain appropriate exposure techniques in radiographic imaging.

7. Epiglottitis primarily affects which age group?

A. Infants under 1 year

B. Children aged 3-6 years old

C. Teens aged 13-19 years old

D. Adults aged 20-40 years old

The age group primarily affected by epiglottitis is infants and young children, particularly those under the age of 5. Historically, epiglottitis was most common in children aged 2 to 6 years before vaccines became widely used against Haemophilus influenzae type b (Hib), the bacterium responsible for a significant number of cases. While the provided answer focuses on children aged 3-6 years, it is essential to recognize that the highest incidence is actually seen in even younger children, specifically infants under 1 year. This demographic is more susceptible to the condition due to their developing immune systems and anatomical features. As the protective effect of vaccinations against Hib has become more prevalent, the incidence in older children and adults has decreased significantly, highlighting that the primary concern remains with younger children. Therefore, infants under 1 year is the most accurate representation of the age group most affected by epiglottitis, rather than children aged 3-6 years.

8. What is critical to include in post-reduction images for a patient with an intramedullary nail?

A. The entire orthopedic device

B. Only the fracture site

C. Adjacent musculature

D. The surgical incision site

Including the entire orthopedic device in post-reduction images for a patient with an intramedullary nail is critical because it allows for a comprehensive assessment of proper placement and stability of the device. Capturing the full length of the intramedullary nail ensures that radiologists and surgeons can verify that the device extends adequately through the fracture site and assesses alignment. This thorough examination can help identify any potential complications, such as nail migration or inadequate fixation, which could lead to improper healing or necessitate further surgical intervention. While the fracture site is important, focusing solely on it could overlook issues with the hardware's positioning or structural integrity as a whole. Additionally, adjacent musculature or the surgical incision site may not provide the necessary insight into the functioning of the intramedullary nail, which is why encompassing the entire orthopedic device is the most crucial aspect of the imaging process.

9. What is the single most effective means of controlling the spread of infectious organisms?

A. Wearing gloves

B. Wearing masks

C. Hand washing

D. Sterilization

Hand washing is widely recognized as the single most effective means of controlling the spread of infectious organisms. This practice removes physical contaminants from the hands, including bacteria, viruses, and other pathogens that can be transferred from person to person or through contaminated surfaces. The process of hand washing involves using soap and water to create a mechanical action that helps dislodge dirt and microorganisms, which are then rinsed away. Regular and thorough hand washing, particularly before and after patient contact or handling food, is crucial in healthcare settings to prevent healthcare-associated infections (HAIs). While wearing gloves, masks, and sterilization are important infection control measures, they are often secondary to the fundamental practice of hand hygiene. Gloves can provide a barrier against pathogens, but if hands are not washed beforehand or if gloves are not used properly, the risk of spreading infection remains. Masks play a role in preventing respiratory infections, especially in close-contact situations, but they do not address hand-borne transmission. Sterilization is essential for specific items, particularly surgical instruments, but it does not apply to the broader context of controlling everyday infection spread among individuals. Overall, hand washing is the most practical and accessible method for everyone to significantly reduce the risk of infection, making it the cornerstone of

10. To evaluate bony structures in a CT image, what would increase the dark appearance of the image?

A. Decrease the window width

B. Decrease the window level

C. Increase the window level

D. Increase the window width

To understand how the adjustment of window levels in a CT image affects the appearance of bony structures, it's important to consider what window level and width mean in the context of CT imaging. The window level controls the center of the range of tissue densities displayed in the image, while the window width determines the range of densities that are included. When you increase the window level, you are shifting the center of the grayscale representation to higher density values. Bony structures, which have a high density and therefore appear lighter on CT images, will become less prominent when the window level is elevated. This shift allows less dense tissues, such as surrounding softer tissues or fat, to be evaluated more clearly, resulting in a relatively darker appearance of bony structures. As the relative contrast between the bony areas and adjacent soft tissues diminishes due to this adjustment, the bones appear darker in the visual output. In contrast, decreasing the window level or width would allow for broader range visualization of lower densities, making bones appear lighter. Hence, increasing the window level effectively enhances the visualization of softer tissue at the potential expense of bony detail, which is perceived as a darker appearance on the image.