

American Chiropractic Registry of Radiologic Technologist (ACRRT) Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

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SAMPLE

Questions

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- 1. When a patient is prone and requires an axial patellar view, what is the position of the knee?**
 - A. Extended straight**
 - B. Slightly bent**
 - C. Fully extended**
 - D. Fully flexed**
- 2. What effect does decreasing object-screen distance have?**
 - A. Increases magnification**
 - B. Decreases magnification**
 - C. Has no effect on magnification**
 - D. Increases exposure time**
- 3. What anatomical structures are the pedicles part of?**
 - A. Ribs**
 - B. Vertebrae**
 - C. Cranial bones**
 - D. Clavicles**
- 4. What factor controls the quality of x-rays emitted?**
 - A. mAs**
 - B. kVp**
 - C. Exposure time**
 - D. Image receptor type**
- 5. Which factor does NOT directly affect radiographic definition?**
 - A. mA**
 - B. kVp**
 - C. Object thickness**
 - D. Film speed**
- 6. The sternum is divided into how many parts?**
 - A. Two**
 - B. Three**
 - C. Four**
 - D. Five**

- 7. What term describes the forward slippage of a vertebral body in relation to the adjoining body?**
- A. Spondylolysis**
 - B. Spondylolisthesis**
 - C. Spondylopathy**
 - D. Spondylosis**
- 8. When details are lacking due to insufficient density, the radiograph is described as?**
- A. Underexposed**
 - B. Overexposed**
 - C. Correctly exposed**
 - D. Excessively bright**
- 9. What is the impact of using a higher kVp on radiographic exposure?**
- A. Decreases exposure**
 - B. Increases exposure**
 - C. No impact on exposure**
 - D. Fluctuates exposure**
- 10. The "scotty dog" sign is primarily viewed in which lumbar view?**
- A. Lateral**
 - B. Oblique**
 - C. Anteroposterior**
 - D. Flexion**

Answers

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

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Explanations

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1. When a patient is prone and requires an axial patellar view, what is the position of the knee?

- A. Extended straight**
- B. Slightly bent**
- C. Fully extended**
- D. Fully flexed**

The correct approach for obtaining an axial patellar view when the patient is positioned prone requires that the knee be fully flexed. This positioning allows for a clear visualization of the patella and its relationship to the femur in the axial plane. By flexing the knee fully, the angle between the femur and the patella is optimized to capture a detailed radiographic image that highlights any potential abnormalities or conditions affecting the patella. This positioning is crucial because it helps to separate the patella from the femur, reducing superimposition and allowing for a more accurate assessment. Understanding this technique is vital for radiologic technologists and chiropractors, as it directly impacts the quality of the diagnostic images, facilitating effective patient management and treatment planning.

2. What effect does decreasing object-screen distance have?

- A. Increases magnification**
- B. Decreases magnification**
- C. Has no effect on magnification**
- D. Increases exposure time**

Decreasing the object-screen distance directly impacts the magnification of the radiographic image. When the distance between the object being imaged (such as a body part) and the image receptor (screen or film) is reduced, the radiographic result will show less magnification. This happens because the x-rays have a more direct path to the receptor, leading to a more accurate representation of the object's size and shape. In radiography, magnification occurs when the x-ray source is significantly farther from the object than the image receptor, causing the image to appear larger than the actual object. Therefore, bringing the object closer to the image receptor decreases the likelihood of this enlargement effect, resulting in a more precise depiction of the original dimensions of the object. In addition, the other options relate to various factors that could affect imaging but are not relevant in this scenario. For example, magnification is specifically tied to the distances involved in radiography rather than exposure time or being unaffected. Hence, it's clear why reducing the distance between the object and the screen effectively decreases magnification.

3. What anatomical structures are the pedicles part of?

- A. Ribs
- B. Vertebrae**
- C. Cranial bones
- D. Clavicles

Pedicles are crucial components of the vertebral anatomy. They are bony structures that connect the posterior parts of the vertebrae to the body of the vertebra, forming the sides of the vertebral arch. This arch houses the spinal cord and provides stability and support to the spine. Each vertebra has two pedicles—one on either side—which serve as attachment points for ligaments and muscles, as well as helping to form the foramina through which spinal nerves exit the vertebral column. Understanding the role of pedicles within the vertebrae helps clarify their importance in maintaining spinal structure and function. The pedicles' positioning also plays a significant role in providing passageways for neurovascular structures and helps define the overall anatomy of the spinal column, emphasizing their unique identity as part of the vertebral system.

4. What factor controls the quality of x-rays emitted?

- A. mAs
- B. kVp**
- C. Exposure time
- D. Image receptor type

The quality of x-rays emitted is primarily controlled by kilovoltage peak (kVp). kVp determines the energy level and penetrating ability of the x-rays generated during the exposure. Higher kVp settings produce x-rays with greater energy, which are more capable of penetrating tissues and yielding better contrast in the resulting images. This is crucial for visualizing different densities within the body, as it affects contrast and image quality. While factors like milliamperere-seconds (mAs) and exposure time influence the quantity of x-rays (the amount of radiation produced), they do not directly affect the energy or quality of the x-rays themselves. The type of image receptor can impact the final image quality but only in relation to how it captures the x-rays that pass through the body; it is not a fundamental quality control factor for the x-rays emitted. Thus, kVp is the primary factor that directly controls the quality of the x-rays, making it the correct answer.

5. Which factor does NOT directly affect radiographic definition?

- A. mA**
- B. kVp**
- C. Object thickness**
- D. Film speed**

Radiographic definition, which refers to the visibility of details in an image, is influenced by several factors. The correct choice indicates a factor that does not have a direct impact on this aspect. Milliampere-seconds (mA) primarily influences the density of an X-ray image, as it controls the quantity of radiation produced. While density can indirectly affect the perceived sharpness or clarity of an image, it does not directly correlate with the definition or the visibility of fine details present in the radiograph. In contrast, kilovoltage peak (kVp) affects both the quality and the penetration power of the X-ray beam, which is critical for obtaining clearer images with better definitions. Object thickness determines the degree of attenuation of the X-ray beam as it passes through an object, impacting the contrast and visibility of details. Film speed, which indicates the sensitivity of the film to radiation, can also influence the sharpness and resolution of the final image. Thus, while mA plays an important role in the overall quality of the radiograph, it does not directly affect the definition in the same way that the other factors do.

6. The sternum is divided into how many parts?

- A. Two**
- B. Three**
- C. Four**
- D. Five**

The sternum, or breastbone, is a flat bone located in the front of the chest. It is composed of three distinct parts: the manubrium, the body (also known as the gladiolus), and the xiphoid process. The manubrium is the broad, upper section of the sternum, which articulates with the clavicles (collarbones) and the first pair of ribs. Below it lies the body of the sternum, which is the longest section and serves as the attachment point for the remaining ribs through costal cartilage. Finally, the xiphoid process is the small, cartilaginous structure at the lower end of the sternum that can vary in shape and size. Understanding the structure of the sternum is important in anatomy, particularly in the context of chest injuries, surgical procedures, and the examination of chest X-rays, as it plays a crucial role in protecting vital organs and providing attachment points for ribs and muscles.

7. What term describes the forward slippage of a vertebral body in relation to the adjoining body?

A. Spondylolysis

B. Spondylolisthesis

C. Spondylopathy

D. Spondylosis

The term that describes the forward slippage of a vertebral body in relation to the adjoining body is "spondylolisthesis." This condition typically occurs in the lumbar spine and can result from various factors, such as degenerative changes or a fracture in the bony part of the vertebra, known as the pars interarticularis. When a vertebra slips forward over the one below it, it can lead to symptoms like lower back pain, nerve compression, and potential issues with mobility. Understanding spondylolisthesis is important in the context of chiropractic care, as it can affect spinal alignment and overall function of the musculoskeletal system. Recognizing this condition is essential for proper diagnosis and treatment strategies, which may include adjustments, exercises, or referrals for further medical evaluation.

8. When details are lacking due to insufficient density, the radiograph is described as?

A. Underexposed

B. Overexposed

C. Correctly exposed

D. Excessively bright

When a radiograph is described as lacking details due to insufficient density, the term "underexposed" applies. This occurs when the film or digital receptor does not receive enough radiation during the imaging process, resulting in a dark image that fails to show the necessary contrast and detail needed for accurate interpretation. Underexposure can obscure important anatomical structures and make it challenging to diagnose conditions accurately. Proper exposure is essential in radiography. If the radiographic image does not have sufficient density, it indicates that the amount of radiation reaching the film or detector was inadequate. This can happen due to various factors, such as inadequate mAs settings, incorrect positioning, or malfunctioning equipment. In such cases, the resultant image often appears too light (or even white), preventing the viewer from seeing critical details. By understanding the implications of exposure levels, radiologic technologists can make informed decisions to adjust settings and improve image quality, ensuring that diagnostic images provide the clarity required for patient assessment and care.

9. What is the impact of using a higher kVp on radiographic exposure?

- A. Decreases exposure**
- B. Increases exposure**
- C. No impact on exposure**
- D. Fluctuates exposure**

Using a higher kilovolt peak (kVp) setting when producing radiographs generally leads to decreased exposure. This occurs because a higher kVp increases the energy of the X-rays produced, resulting in better penetration through the body tissues. Consequently, higher energy photons are less likely to be absorbed by structures and tissues, decreasing the overall exposure required for imaging. In clinical practice, this means that while the quality of the radiographic image can improve due to better penetration and decreased scatter, the amount of radiation exposure to the patient is often lower when employing higher kVp techniques, depending on the specific imaging situation. Therefore, the understanding of kVp settings is crucial for optimizing image quality while minimizing radiation dose, which is a fundamental principle of radiological practice.

10. The "scotty dog" sign is primarily viewed in which lumbar view?

- A. Lateral**
- B. Oblique**
- C. Anteroposterior**
- D. Flexion**

The "scotty dog" sign is a radiographic feature that occurs in the oblique view of the lumbar spine. In this specific view, the lumbar vertebrae are positioned at an angle that allows the anatomy of the vertebrae, particularly the pars interarticularis, to be visualized in a way that resembles a scotty dog with the dog's head, neck, and body represented by different components of the vertebrae. When performing the lumbar oblique view, the technologist rotates the patient's body at a specific angle (typically 45 degrees), allowing for the assessment of the facet joints and the pars interarticularis. This is particularly useful in diagnosing conditions such as spondylolysis and spondylolisthesis, where abnormalities of the scotty dog sign can indicate changes or fractures in the pars interarticularis. The other views, such as lateral, anteroposterior, and flexion, do not provide the specific angles and perspectives needed to visualize the scotty dog sign effectively. Consequently, those views would not typically reveal the characteristic appearance associated with the scotty dog, making the oblique view the correct choice for identifying this sign.