International
DOH-Radiographer
Department of Health – Radiographer Licensure Examination

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Question: 1

The pelvis is comprised of which of the following bones?

A. Hip bone
B. Cranium
C. Conchae
D. Maxillary

Answer: A

Explanation:
The pelvis, a crucial structure in the human body, serves as the foundational region connecting the trunk and the lower limbs. It provides support for the weight of the upper body when sitting and standing and is critical for bearing loads during walking and lifting. Additionally, the pelvis houses and protects various organs, including those of the lower digestive tract and the reproductive organs.
The pelvis is composed of several bones which include the sacrum, coccyx, and two hip bones (each hip bone is often referred to as an os coxae or an innominate bone). The sacrum is a triangular bone situated at the lower part of the vertebral column and wedged between the two hip bones. The coccyx, or the tailbone, is located at the very base of the sacrum and has little direct function in modern humans but is an attachment site for various muscles, tendons, and ligaments.
Each hip bone is formed from three fused bones: the ilium, ischium, and pubis. These bones converge in a region known as the acetabulum, which serves as the socket for the femoral head (the upper part of the thigh bone) creating the hip joint. The ilium is the largest and most superior of the three, forming the broad, wing-like part on each side. The ischium forms the lower and back part of the hip bone, and the pubis forms the lower frontal portion of the hip bone.
In the context of the question provided, the correct answer would be that the pelvis is comprised of the sacrum, coccyx, and two hip bones. Other options such as cranium, conchae, and maxillary are parts of the human skeleton but are not components of the pelvis. The cranium forms the skull minus the mandible, conchae are small bones found within the nasal cavity, and the maxillary bones form the upper jaw. None of these are related to the structure of the pelvis.

Question: 2

Anesthesia is used to do all of the following, except:

A. Block pain in the patient.
B. Relax the patient's body.
C. Cure minor diseases.
D. Make a patient sleepy.

Answer: C

Explanation:
The correct answer to the question "Anesthesia is used to do all of the following, except:" is "Cure minor diseases."
Anesthesia is primarily used in medical settings to block pain and manage a patient's physiological state during surgical procedures. This includes inducing a lack of sensation in a specific area of the body (local anesthesia) or sedation to a point of unconsciousness (general anesthesia). By blocking pain, anesthesia allows surgical and other invasive procedures to be performed without causing undue distress or unbearable pain to the patient.
In addition to pain management, anesthesia can also be used to relax the patient's body. This is beneficial during surgeries where muscle relaxation is needed to allow surgeons to perform procedures that require precision. The use of anesthesia can help in controlling various physiological parameters such as breathing, blood pressure, heart rate, and blood flow, ensuring the patient's safety and stability during operations.
Moreover, anesthesia can make a patient sleepy or fully unconscious, depending on the type and amount administered. This aspect of anesthesia is crucial during major surgeries where the patient needs to be unconscious to ensure that they do not experience pain or any psychological trauma from being aware of the procedure.
However, it is important to clarify that anesthesia does not serve as a treatment for curing diseases, minor or otherwise. While local anesthesia can be used in minor procedures, its role is strictly to numb the area and block pain during the procedure, not to cure the underlying condition causing the pain. Anesthesia itself has no therapeutic properties that affect the course or outcome of diseases. Its primary roles are pain management, patient safety, and comfort during medical procedures.

Question: 3

Which of the following is not a symptom of gastric outlet obstruction?

A. Migraines.
B. Indigestion.
C. Weight loss.
D. Epigastric pain.

Answer: A

Explanation:
The question asks which symptom is not associated with gastric outlet obstruction (GOO). To answer, we need to understand what GOO is and what symptoms it typically presents.
Gastric outlet obstruction refers to any condition that physically prevents the stomach from emptying its contents into the duodenum, which is the first part of the small intestine. This obstruction typically occurs at the pylorus or the initial part of the duodenum. GOO can be caused by both benign and malignant factors. Benign causes might include conditions like gastric polyps or pyloric ulcers, while malignant causes are often related to cancers, such as pancreatic cancer.
The common symptoms associated with GOO include gastric retention (inability of the stomach to empty its contents), bloating, anorexia (loss of appetite), vomiting (often of undigested food), epigastric pain (pain in the upper abdomen), weight loss, and indigestion. These symptoms result from the

stomach's inability to properly pass its contents to the intestine, leading to digestion and nutrition issues.

Given these typical symptoms, we can evaluate the options presented in the

question: 1.

Migraines are severe headaches often accompanied by nausea, light sensitivity, and other neurological symptoms. They are not a direct symptom of GOO. 2. Indigestion can include symptoms such as discomfort in the stomach, bloating, and nausea, which can overlap with some symptoms of GOO. 3. Weight loss is a common symptom of GOO due to decreased food intake and poor absorption of nutrients. 4. Epigastric pain is a typical symptom directly related to issues in the stomach area, including GOO.

Thus, the correct answer is Migraines. Migraines are not a symptom of gastric outlet obstruction. They are a neurological condition and, while they might coexist with gastrointestinal issues due to associated nausea, they are not caused by the mechanical blockage that characterizes GOO.

Question: 4

Risk and complications of anesthesia are based on an individual's what?

A. Response to medications.
B. Health.
C. Age.
D. All of the above.

Answer: D

Explanation:

The risks and complications associated with anesthesia are influenced by multiple factors specific to each individual undergoing a surgical procedure or treatment requiring anesthesia. These factors play a crucial role in determining the overall safety and effectiveness of the anesthesia administered. Let's explore why each factor is significant:

Age: The age of a patient is a critical factor because the physiology of younger and older individuals can affect how they metabolize and respond to anesthetic agents. For instance, elderly patients might have reduced organ function which can influence drug metabolism and elimination, increasing the risk of prolonged sedation or complications. Similarly, very young patients, such as infants, have different metabolic rates and may require adjustments in dosing.

Health: The overall health of a person is another vital consideration. Individuals with pre-existing health conditions such as heart disease, respiratory issues, or diabetes may face increased risks during and after anesthesia. For example, a person with respiratory problems might be more susceptible to complications like pneumonia post-surgery.

Response to Medications: Each individual's unique physiological response to medications, including anesthetics, can vary widely. Some may metabolize drugs faster or slower than others, affecting efficacy and risk of side effects. Genetic factors can also play a role, as certain genetic markers can influence how a person responds to specific medications.

Type of Anesthesia: The specific type of anesthesia used also impacts risks. General anesthesia, which renders a person completely unconscious, carries risks such as respiratory or cardiac complications, postoperative confusion, and pneumonia. Local anesthesia, which numbs a small area, might be less risky overall but can still cause complications if it affects the heart or brain. Spinal

anesthesia, used commonly in lower body procedures, can lead to headaches and, in rare cases, more severe issues like nerve damage.
Given these varied factors - age, health status, individual response to medications, and the type of anesthesia chosen - comprehensively assessing all these elements is crucial. Therefore, when considering the risks and complications of anesthesia, one must take into account "All of the above" factors to ensure a safe and effective anesthetic plan tailored to the individual's specific needs and conditions.

Question: 5

Which of the following is not typically a complication of Crohn’s disease?

A. Bowel obstruction.
B. Fistulas.
C. High cholesterol.
D. Ulcers.

Answer: C

Explanation:
The question asks which of the listed conditions is not typically a complication of Crohn’s disease. The options provided are bowel obstruction, fistulas, ulcers, and high cholesterol. To determine the correct answer, it's essential to understand the common complications associated with Crohn's disease and whether each of the listed options fits into these complications.
Crohn's disease is a chronic inflammatory condition primarily affecting the gastrointestinal tract. It can cause a range of symptoms and complications due to the inflammation that characteristically spreads deep into the affected bowel tissue. Common complications from Crohn's disease include: - **Bowel obstruction**: This occurs when the inflammation thickens the wall of the intestine, narrowing the passage and potentially blocking the flow of digestive contents. It is a frequent complication in Crohn's disease patients. - **Fistulas**: These are abnormal connections that can form between different parts of the intestine, the intestine and other organs, or the intestine and the skin. Fistulas occur because the inflammation can extend completely through the intestinal wall, prompting the formation of these problematic pathways. - **Ulcers**: Chronic inflammation can lead to open sores or ulcers forming anywhere along the digestive tract, from the mouth to the anus. These ulcers can be painful and contribute to bleeding and infection.
However, high cholesterol is not commonly listed as a direct complication of Crohn's disease. While Crohn's can affect the body’s ability to absorb nutrients, leading to various deficiencies and complications, there is no direct link between Crohn's disease itself and the development of high cholesterol. High cholesterol is typically associated with diet, genetics, and other lifestyle factors, rather than the inflammatory processes seen in Crohn’s disease.
Therefore, the correct answer to the question is "High cholesterol," as it is not typically a complication of Crohn’s disease unlike bowel obstruction, fistulas, and ulcers, which are direct complications stemming from the inflammatory nature of the disease.

Question: 6

A 60 year old patient has a suspected hip fracture. Which of the following is a sign that most likely represents a hip fracture?

A. An internal spheroid
B. An external foot rotation
C. A hip synchondrosis
D. A hip joint flexion

Answer: B

Explanation:
The most indicative sign of a hip fracture in a 60-year-old patient is an external foot rotation. This specific sign is critical because it directly relates to the mechanics and the displacement caused by the fracture in the hip area. Hip fractures are common in the elderly due to increased bone fragility and a higher risk of falling. When a hip fracture occurs, the normal anatomical alignment of the hip joint and the upper leg is disrupted, often resulting in the outward (external) rotation of the foot on the affected side.
Upon observing a patient with a suspected hip fracture, healthcare providers look for physical signs such as pain in the hip or groin area, inability to move immediately after a fall, and notably, the position of the foot. External foot rotation occurs due to the muscle imbalance and the pull of muscles around the hip that occurs after the bone structure is altered by the fracture. This sign is not only a clinical observation but can also be detected on radiographic images, where the misalignment and the direction of the foot provide clues about the nature and location of the fracture.
Additionally, the presence of the lesser trochanter in radiographic imaging can further confirm the diagnosis of a hip fracture. The lesser trochanter, a bony prominence on the femur, becomes more prominent or visible when there is a fracture that displaces the hip structure. Radiographic examination, therefore, plays a crucial role in confirming the initial assessment made based on physical examination and patient history.
In the context of medical imaging, it's important to handle the affected limb with care. If a hip fracture is suspected based on external signs such as foot rotation, medical imaging technicians are advised against internally rotating the hip for better imaging angles, as this might exacerbate the injury. Normally, an anteroposterior (AP) pelvic radiograph requires some degree of internal rotation of the hip, but this standard procedure is modified in cases where a fracture is suspected to prevent further harm to the patient.
In conclusion, the presence of an external foot rotation is a significant indicator of a hip fracture in elderly patients. This clinical sign, supported by imaging findings and careful patient handling, guides the diagnostic and treatment process for optimal patient care and recovery.

Question: 7

For a magnetic resonance imaging procedure, what position is the patient most likely placed?

A. Supine
B. Prone
C. Decubitus
D. Lateral recumbent

Answer: A

Explanation:
The correct position for a patient during a magnetic resonance imaging (MRI) procedure is typically the supine position. In this position, the patient lies flat on their back with their face directed upwards towards the ceiling. This positioning is preferred because it allows for a stable and uniform alignment of the body, which is essential for producing clear and detailed images.
In the supine position, the natural curvature of the spine is supported, and the limbs are comfortably aligned along the body, reducing any potential movement that might blur the MRI images. This position also helps in evenly distributing the patient's weight, thereby minimizing pressure points that could cause discomfort during the procedure, which sometimes lasts for an extended period.
Moreover, the supine position is advantageous for the MRI technologists as it provides easy access to insert intravenous lines if contrast agents are needed, and it simplifies the process of positioning the coils that are used to enhance the MRI signal. These coils can be more effectively placed around the area of interest, such as the chest, abdomen, or brain, when the patient is supine.
It is important for the technologist to explain to the patient that they might experience slight movements of the MRI table automatically adjusting to obtain the best possible images during the scan. Patients are usually instructed to remain as still as possible to prevent any motion artifacts that could affect the quality of the imaging.
In summary, the supine position is most commonly used for MRI procedures due to its numerous practical advantages in terms of patient comfort, ease of access for the technologist, and effectiveness in achieving high-quality images. It is the standard practice for ensuring that the procedure goes smoothly and yields the most accurate diagnostic information.

Question: 8

The name of a medication that is established by the manufacturer of the drug is called:

A. Generic name
B. Nonproprietary name
C. Brand name
D. Contraindications

Answer: C

Explanation:
In the realm of pharmaceuticals, the terminology used to describe a medication varies based on its classification. One key classification system for drug names includes the chemical name, the generic name, and the brand name. Each of these names serves a distinct purpose in identifying and differentiating drugs.
The chemical name of a drug provides a detailed description of the drug's chemical composition and molecular structure. It is often complex and primarily used by health professionals and researchers who require detailed chemical information about the substance.
The generic name, on the other hand, is a standardized name given to a drug that is universally accepted and used to identify it regardless of the manufacturer. It is typically less complex than the chemical name, making it more accessible for healthcare providers and the public. Generic names are assigned by

an authoritative body, such as the International Nonproprietary Names (INN) system maintained by the World Health Organization. The generic name is also not protected by trademark, meaning that any pharmaceutical company can produce and sell a drug using its generic name once the original patent expires.
The brand name, which is also known as the trade name, is the name given to a drug by its manufacturer. This name is usually easy to pronounce, memorable, and designed to be appealing to both healthcare providers and patients. Unlike the generic name, the brand name is protected by trademark, which means that it can only be used by the company that owns the rights to it. This exclusivity often exists for a period during which the company aims to recover the research and development costs associated with bringing the drug to market.
Therefore, when referring to the name of a medication that is established by the manufacturer of the drug, it is known as the "brand name." This name not only helps in differentiating the drug from its competitors but also often carries connotations of quality and effectiveness marketed by the owning company. The brand name is crucial for a company's marketing strategy and plays a significant role in the commercial aspect of pharmaceutical sales.

Question: 9

Which of the following is a contraindication of an angiographic procedure?

A. Bleeding
B. Blood clot formation
C. Infection at the site of puncture
D. Reaction to the contrast media

Answer: D

Explanation:
Angiography is an imaging procedure that uses contrast media to visualize blood vessels and assess their structural integrity. This procedure is crucial in diagnosing and managing various vascular diseases. However, it comes with potential risks, complications, and contraindications that need to be carefully considered before proceeding.
One of the primary contraindications for an angiographic procedure is an allergic reaction to the contrast media. Contrast media, or dye, is essential for creating clear images of blood vessels during angiography. Some individuals may have or develop an allergic reaction to this substance, which can range from mild itching or rash to severe reactions like anaphylactic shock. Therefore, patients known to have hypersensitivity to the dye used in angiography are typically advised against undergoing this procedure.
Other contraindications may include severe renal function impairment. The kidneys are responsible for filtering out the contrast dye from the bloodstream. If a patient has significantly reduced kidney function, the dye might not be adequately cleared, leading to further renal complications or toxic reactions. In such cases, alternative diagnostic methods that do not involve contrast media are considered.
While not contraindications, there are several risks and complications associated with angiography that patients should be aware of. These include bleeding at the puncture site where the catheter is inserted, which is usually minor but can occasionally be significant. Formation of blood clots, or thrombosis, at the catheter site or in a blood vessel is another risk, which can lead to more severe issues like embolus

formation, where a clot moves to other parts of the body. Tearing or dissection of the blood vessel and infections at the puncture site are additional potential complications.
Given these risks and contraindications, it is essential to evaluate each patient's medical history and condition thoroughly before recommending an angiographic study. In cases where the risks outweigh the benefits, alternative diagnostic approaches should be explored to ensure patient safety and effective care.

Question: 10

A patient who has a tear in the lower gastrointestinal tract should be administered:

A. Oral, water soluble iodinated media
B. Single-contrast barium
C. Double-contrast barium
D. Infused lipid based iodinated media

Answer: A

Explanation:
A patient who has a tear in the lower gastrointestinal tract should be administered oral, water-soluble iodinated media. This recommendation stems from the necessity to avoid complications such as barium peritonitis, which can occur if barium-based contrast agents are used in cases where there is a potential or existing intestinal perforation.
Peritonitis, the inflammation of the peritoneum (the lining of the abdominal cavity), is a serious and potentially life-threatening condition. The peritoneum also covers the organs within the abdomen. When substances like barium used in certain diagnostic imaging tests escape into the peritoneal cavity through a tear or perforation in the intestines, they can cause chemical peritonitis. This is because barium is not easily absorbed by the body and can irritate the peritoneum, leading to inflammation. Patients suffering from peritonitis might experience severe abdominal pain, tenderness that worsens with movement or touch, swelling due to fluid accumulation, fatigue, and shortness of breath among other symptoms. These symptoms arise due to the body's response to irritation or infection within the peritoneal cavity.
In contrast, using a water-soluble iodinated contrast medium in a patient with suspected or known perforation in the intestines is safer. These contrast agents are absorbed by the body or can be readily excreted if they escape into the peritoneal cavity, thereby reducing the risk of inducing peritonitis. They provide the necessary imaging to diagnose the condition of the patient without the associated risks of using barium sulfate in such scenarios.
Therefore, in cases of gastrointestinal perforations, it is crucial to opt for water-soluble iodinated media rather than barium sulfate-based agents (whether single-contrast, double-contrast, or infused lipid-based), to avoid the severe complication of barium peritonitis. The focus should always be on the safest approach for diagnosing and managing the patient's condition effectively.

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