University of Central Florida (UCF) ZOO3733C Human Anatomy Practice Exam 3 (Sample)

Study Guide

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Questions

1. What is the space between the breast and the pectoral muscle called?

   A. Intercostal space

   B. Retromammary space

   C. Submammary cavity

   D. Pectoral recess

2. Which of the following is true about intercostal nerves?

   A. They only innervate the diaphragm

   B. They supply intercostal muscles

   C. They arise only from cervical spine

   D. They have no role in respiration

3. What surrounds the thoracic cavity and contains vital organs such as the heart and lungs?

   A. Thoracic cage

   B. Diaphragm

   C. Rib cage

   D. Sternum

4. Which of the following nerves provides sensation to the skin over the lateral thoracic area?

   A. Vagus nerve

   B. Intercostal nerves

   C. Radial nerve

   D. Femoral nerve

5. Which tool is used to measure the static volumes of the lung?

   A. Ventilator

   B. Spirometer

   C. Respirometer

   D. Endoscope

6. What type of nerve is associated with pain from cuts or burns?

A. Autonomic nerve

B. Motor nerve

C. Somatic nerve

D. Sensory nerve

7. What structure drains the lymphatics of the heart?

A. Thoracic duct

B. Subpericardial plexus

C. Left lymphatic channel

D. Right lymphatic channel

8. Which nerve is NOT involved in the innervation of the diaphragm?

A. Phrenic nerve

B. Intercostal nerves

C. Subscapular nerve

D. L1 nerve

9. The anterior and lateral cutaneous branches of the intercostal nerves provide innervation to which regions?

A. The back and abdomen

B. The anterior and lateral sides of the thorax

C. The upper limbs

D. The neck and face

10. What is an open pneumothorax?

A. Air enters the pleural cavity and does not leave

B. Parietal pleura is punctured, allowing outside air in

C. Collapse of the lung without external injury

D. Fluid accumulation in the pleural cavity

Answers

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

Explanations

1. What is the space between the breast and the pectoral muscle called?

A. Intercostal space

B. Retromammary space

C. Submammary cavity

D. Pectoral recess

The space between the breast and the pectoral muscle is known as the retromammary space. This area functions as a potential space, providing a cushion that allows for the movement of the breast over the underlying pectoral muscle. It contains loose connective tissue and is clinically significant, as it can be a route for the spread of breast cancer and other diseases. Understanding this anatomical feature is crucial for medical professionals when considering surgical interventions or assessing diseases related to the breast.

2. Which of the following is true about intercostal nerves?

A. They only innervate the diaphragm

B. They supply intercostal muscles

C. They arise only from cervical spine

D. They have no role in respiration

Intercostal nerves primarily serve the function of supplying the intercostal muscles, which are essential for the mechanics of breathing. These nerves emerge from the thoracic spinal cord and run along the spaces between the ribs, directly innervating the intercostal muscles. When these muscles contract, they help to expand and contract the rib cage during respiration, thus playing a crucial role in breathing. Understanding the functionality of intercostal nerves also highlights their importance in the overall respiratory process, as they aid not only in the movement of ribs but also assist in ensuring effective lung ventilation. This relevance to respiration underscores why the correct choice focuses on their role in innervating the intercostal muscles specifically, which correlate directly to respiratory mechanics.

3. What surrounds the thoracic cavity and contains vital organs such as the heart and lungs?

A. Thoracic cage

B. Diaphragm

C. Rib cage

D. Sternum

The thoracic cavity is encased by the thoracic cage, which consists of the ribs, thoracic vertebrae, sternum, and associated cartilages. This structure provides a protective enclosure for vital organs within the thoracic cavity, including the heart and lungs. The thoracic cage plays a crucial role in both protecting these organs and facilitating the mechanics of breathing by allowing the chest to expand and contract during inhalation and exhalation. While the diaphragm is an essential muscle that separates the thoracic cavity from the abdominal cavity and aids in breathing, it does not surround the thoracic cavity itself. The rib cage is a component of the thoracic cage, as it refers specifically to the ribs that form part of the structure, but it does not encompass the whole assembly that includes the sternum and vertebral components. The sternum is a flat bone at the front of the thoracic cage, providing attachment points for ribs but not forming a complete enclosure by itself. Therefore, the thoracic cage is the most comprehensive and accurate term to describe the structure that surrounds and protects the thoracic cavity and its vital organs.

4. Which of the following nerves provides sensation to the skin over the lateral thoracic area?

A. Vagus nerve

B. Intercostal nerves

C. Radial nerve

D. Femoral nerve

The intercostal nerves are responsible for providing sensory innervation to the skin over the lateral thoracic area. These nerves emerge from the thoracic spinal nerves and run between the ribs, supplying the skin and muscles in the costal and thoracic regions. Each intercostal nerve innervates the area of skin directly below each rib, allowing for sensation such as touch, pain, and temperature. In this context, the intercostal nerves play a crucial role in the sensory feedback from the lateral thoracic skin, making them the correct answer for this question. Understanding the role of intercostal nerves is important for comprehending how the body receives and processes sensory information from specific anatomical regions.

5. Which tool is used to measure the static volumes of the lung?

A. Ventilator

B. Spirometer

C. Respirometer

D. Endoscope

The spirometer is specifically designed to measure the static volumes of the lungs, such as tidal volume, expiratory reserve volume, and inspiratory reserve volume. It provides vital information about lung function and capacity, which is essential for evaluating respiratory health. By measuring the amount of air that can be inhaled and exhaled, the spirometer helps in diagnosing conditions such as asthma, chronic obstructive pulmonary disease (COPD), and restrictive lung disease. Using a spirometer, a patient can perform various breathing exercises that allow the device to quantify lung volumes accurately. This is critical for monitoring respiratory conditions and assessing the effectiveness of treatment protocols. The simplicity and focus of the spirometer make it the go-to tool for assessing lung volumes in both clinical and research settings.

6. What type of nerve is associated with pain from cuts or burns?

A. Autonomic nerve

B. Motor nerve

C. Somatic nerve

D. Sensory nerve

The type of nerve associated with pain from cuts or burns is classified as a sensory nerve. Sensory nerves are responsible for transmitting sensory information from the body to the central nervous system, allowing us to perceive pain, temperature, touch, and other sensations. When the skin is cut or burned, sensory receptors specifically sensitive to pain (nociceptors) are activated, and they send signals through sensory nerves to the brain, where the sensation of pain is processed and interpreted. In the context of pain perception, sensory nerves play a crucial role because they directly mediate the sensations that arise from physical injuries. This neuronal pathway is essential for the body's ability to react to and protect itself from harmful stimuli. Understanding the role of sensory nerves is important in anatomy and physiology, particularly regarding how the body responds to injuries and the mechanisms behind pain perception.

7. What structure drains the lymphatics of the heart?

A. Thoracic duct

B. Subpericardial plexus

C. Left lymphatic channel

D. Right lymphatic channel

The subpericardial plexus is the structure responsible for draining the lymphatics of the heart. This plexus is located within the pericardial sac and consists of a network of lymphatic vessels that collect lymphatic fluid from the myocardium and the pericardium. This drainage system is essential for maintaining fluid balance and facilitating immune responses within the cardiac environment. The lymph collected ultimately drains into the larger lymphatic vessels, eventually contributing to the thoracic duct. The subpericardial plexus is specifically adapted to the anatomical position and functional requirements of the heart, making it the primary structure for its lymphatic drainage. The other choices refer to larger or different lymphatic structures that do not directly serve the heart's lymphatic drainage. The thoracic duct is the main lymphatic vessel in the body but serves a much broader area beyond just the heart. The left and right lymphatic channels are also larger vessels that collect lymph from other regions and do not specifically drain the lymphatics of the heart like the subpericardial plexus does.

8. Which nerve is NOT involved in the innervation of the diaphragm?

A. Phrenic nerve

B. Intercostal nerves

C. Subscapular nerve

D. L1 nerve

The subscapular nerve is not involved in the innervation of the diaphragm, making it the correct answer. The diaphragm is primarily innervated by the phrenic nerve, which originates from the cervical spinal cord segments C3, C4, and C5. This nerve is crucial for the motor control of the diaphragm, allowing it to function during respiration. The intercostal nerves, which arise from the thoracic spinal cord segments, also play a role in providing sensory innervation to the diaphragm's lower pleural surface, though they do not directly innervate the muscle itself. The L1 nerve primarily serves the lower abdominal region and is not associated with the diaphragm's motor or sensory functions. Thus, the subscapular nerve, which innervates muscles in the shoulder region and is not anatomically related to the diaphragm, clearly does not participate in its innervation.

9. The anterior and lateral cutaneous branches of the intercostal nerves provide innervation to which regions?

A. The back and abdomen

B. The anterior and lateral sides of the thorax

C. The upper limbs

D. The neck and face

The anterior and lateral cutaneous branches of the intercostal nerves specifically innervate the skin on the anterior and lateral aspects of the thorax. The intercostal nerves originate from the thoracic spinal nerves and travel along the ribs, providing sensory innervation to the skin in these regions. The anterior cutaneous branches primarily supply the skin over the sternum and nearby structures, while the lateral cutaneous branches extend laterally, innervating the skin on the sides of the thorax. This distribution is consistent with the anatomical arrangement of the intercostal nerves and their branches, which aim to supply sensation to the thoracic wall, a critical area for various functions including respiration and protecting underlying structures.

10. What is an open pneumothorax?

A. Air enters the pleural cavity and does not leave

B. Parietal pleura is punctured, allowing outside air in

C. Collapse of the lung without external injury

D. Fluid accumulation in the pleural cavity

An open pneumothorax occurs when the parietal pleura, which lines the chest wall, is punctured, allowing outside air to enter the pleural cavity. This condition can happen due to a traumatic injury such as a stab or gunshot wound, creating a direct channel for air to flow from the atmosphere into the pleural space. As air enters the pleural cavity, it disrupts the negative pressure that normally keeps the lung expanded, potentially leading to lung collapse on the affected side. In an open pneumothorax, the imbalance created by the influx of air can compromise respiratory function and can be life-threatening if not treated promptly. The condition is characterized by the inability of the lung to fully expand due to this introduction of external air, leading to difficulty in breathing and reduced oxygenation of the blood.