NPTE Cardiopulmonary Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

Questions

1. Which of the following values would be considered a normal platelet count?

A. 100,000 /mm3

B. 250,000 /mm3

C. 500,000 /mm3

D. 700,000 /mm3

2. In which condition might a patient experience decreased breath sounds upon auscultation?

A. Pneumothorax

B. Asthma

C. Pleural effusion

D. COPD

3. Which patient scenario would most warrant questioning dependence on caffeine?

A. A 27-year-old female status post arthroscopic medial meniscectomy

B. A 42-year-old male with premature ventricular contractions

C. A 37-year-old female with restrictive pulmonary disease

D. A 57-year-old male with respiratory alkalosis

4. Where is the aortic valve most appropriately auscultated?

A. Second left intercostal space at the left sternal border

B. Second right intercostal space at the right sternal border

C. Fourth left intercostal space along the lower left sternal border

D. Fifth left intercostal space at the midclavicular line

5. In identifying the femoral artery, which structure does NOT serve as a border for the femoral triangle?

A. sartorius

B. adductor longus

C. gracilis

D. inguinal ligament

6. Which medication class is commonly used as a first-line treatment for asthma?

A. Long-acting beta-agonists

B. Inhaled corticosteroids

C. Xanthines

D. Antileukotrienes

7. What is the primary reason for limited exercise tolerance in a patient with congestive heart failure?

A. Diminished lung volume

B. Arterial oxygen desaturation

C. Insufficient stroke volume during ventricular systole

D. Excessive rise in blood pressure

8. What is the main action of beta-adrenergic receptor agonists during respiratory therapy?

A. Anti-inflammatory

B. Bronchodilation

C. Increased mucus production

D. Decreased heart rate

9. A therapist notes that the pulse of a patient with premature ventricular contractions skips every other beat. This finding is best termed?

A. Couplet

B. Bigeminy

C. Trigemi

D. Quadrigeminy

10. Which period of the cardiac cycle is characterized by ventricular relaxation and filling?

A. atrial systole

B. atrial diastole

C. ventricular systole

D. ventricular diastole

Answers

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

Explanations

1. Which of the following values would be considered a normal platelet count?

A. 100,000 /mm3

B. 250,000 /mm3

C. 500,000 /mm3

D. 700,000 /mm3

A normal platelet count typically ranges from about 150,000 to 450,000 platelets per cubic millimeter of blood. Therefore, a count of 250,000 per cubic millimeter falls comfortably within this normal range. It indicates adequate platelet production and function, which is essential for normal hemostasis and blood clotting processes. The other values fall outside of the normal range. A count of 100,000 per cubic millimeter is indicative of thrombocytopenia, which is a condition characterized by low platelet levels that can increase the risk of bleeding. A count of 500,000 per cubic millimeter indicates thrombocytosis, a condition of elevated platelet levels that might lead to complications such as thrombosis. Lastly, a count of 700,000 per cubic millimeter further emphasizes severe thrombocytosis, increasing the risks associated with high platelet count, including clotting events. Thus, 250,000 per cubic millimeter is the only value that aligns with the established normal range.

2. In which condition might a patient experience decreased breath sounds upon auscultation?

A. Pneumothorax

B. Asthma

C. Pleural effusion

D. COPD

Decreased breath sounds upon auscultation typically occur when the air movement in the lungs is reduced or when there is an obstruction that prevents sound from being transmitted effectively. In the case of pleural effusion, fluid accumulates in the pleural space, which can blunt the normal sounds produced by airflow in the lungs. As fluid collects, it dampens the sounds made by the air moving through the bronchi and the alveoli, leading to diminished or absent breath sounds in the area over the effusion. In contrast, conditions like pneumothorax may also lead to decreased breath sounds, but the mechanism is tied to the presence of air in the pleural space, which can create more harsh sounds rather than muffled ones. Asthma involves wheezing and possibly normal breath sounds during periods of relaxation between exacerbations, and COPD typically presents with a prolonged expiratory phase and may show various abnormal breath sounds but not necessarily a decrease in sounds uniformly. Thus, pleural effusion is the condition in which decreased breath sounds are most characteristically observed.

3. Which patient scenario would most warrant questioning dependence on caffeine?

A. A 27-year-old female status post arthroscopic medial meniscectomy

B. A 42-year-old male with premature ventricular contractions

C. A 37-year-old female with restrictive pulmonary disease

D. A 57-year-old male with respiratory alkalosis

Caffeine is a stimulant that can increase heart rate and may affect cardiac rhythms. In the case of a 42-year-old male with premature ventricular contractions (PVCs), it is particularly important to assess dependence on caffeine. PVCs are extra beats that disrupt the regular heart rhythm and can lead to more serious arrhythmias in certain situations. Caffeine can provoke or exacerbate these arrhythmias due to its stimulatory effects on the heart. In this scenario, questioning caffeine dependence is warranted because reducing or managing caffeine intake could help mitigate the frequency or severity of PVCs. Health professionals often recommend monitoring and potentially limiting caffeine consumption in patients with arrhythmias to see if symptoms improve. The other scenarios may involve different concerns but do not highlight the same level of potential cardiovascular impact from caffeine. For example, while pulmonary issues or post-surgical recovery are important, they do not generally place as much immediate emphasis on caffeine intake in relation to cardiac rhythm disturbances as with premature ventricular contractions.

4. Where is the aortic valve most appropriately auscultated?

A. Second left intercostal space at the left sternal border

B. Second right intercostal space at the right sternal border

C. Fourth left intercostal space along the lower left sternal border

D. Fifth left intercostal space at the midclavicular line

The correct location for auscultating the aortic valve is at the second right intercostal space along the right sternal border. This is due to the anatomical position of the aortic valve, which is located more towards the right side of the thoracic cavity, right above the heart's base. Sound produced by the closure of the aortic valve travels primarily upwards and will be best detected at this site. In clinical practice, the second right intercostal space is commonly recognized as the position for auscultating not only the aortic valve but also the heart sounds related to the valves in general. This approach helps clinicians assess not just the aortic valve function but also provides relevant information about potential aortic conditions. It's also important to highlight the typical locations for other heart valves to clarify why the other choices are less appropriate: the second left intercostal space at the left sternal border is the typical location for the pulmonic valve, the fourth left intercostal space is aligned with the tricuspid valve, and the fifth left intercostal space at the midclavicular line corresponds to the mitral valve. Understanding these locations helps in effective cardiovascular assessments and identification of possible heart issues.

5. In identifying the femoral artery, which structure does NOT serve as a border for the femoral triangle?

A. sartorius

B. adductor longus

C. gracilis

D. inguinal ligament

In the context of identifying the femoral artery, it is crucial to accurately delineate the boundaries of the femoral triangle. The femoral triangle is formed by three anatomical structures: the sartorius muscle laterally, the adductor longus muscle medially, and the inguinal ligament superiorly. These structures create a defined area in the anterior thigh where important neurovascular structures, including the femoral artery, are located. The gracilis, while an important muscle in the medial compartment of the thigh, does not contribute to the borders of the femoral triangle. Instead, it lies deeper and is located below the adductor longus. Its position does not define the lateral or medial aspects of the triangle, thus making it separate from the primary boundaries established by the sartorius, adductor longus, and inguinal ligament. Understanding these relationships is essential for identifying and accessing the femoral artery and understanding the surrounding anatomy, particularly in clinical settings like vascular examinations or surgical procedures.

6. Which medication class is commonly used as a first-line treatment for asthma?

A. Long-acting beta-agonists

B. Inhaled corticosteroids

C. Xanthines

D. Antileukotrienes

Inhaled corticosteroids are commonly recognized as the first-line treatment for asthma because they effectively reduce inflammation within the airways. Asthma is primarily characterized by chronic airway inflammation and hyperreactivity, and inhaled corticosteroids directly address the underlying inflammation. By minimizing swelling, mucus production, and the overall reactivity of airway smooth muscle, these medications help to improve lung function and reduce the frequency and severity of asthma attacks. Inhaled corticosteroids are also advantageous because they have a favorable safety profile, especially when compared to systemic steroids. Their localized action within the lungs minimizes systemic side effects while still providing significant control over asthma symptoms. This class of medication is typically prescribed for long-term management of asthma as part of a comprehensive asthma action plan, often in conjunction with a rescue inhaler for acute symptoms. When utilized as directed, inhaled corticosteroids can dramatically improve the quality of life for individuals with asthma by effectively controlling symptoms and minimizing exacerbations.

7. What is the primary reason for limited exercise tolerance in a patient with congestive heart failure?

A. Diminished lung volume

B. Arterial oxygen desaturation

C. Insufficient stroke volume during ventricular systole

D. Excessive rise in blood pressure

Limited exercise tolerance in a patient with congestive heart failure primarily stems from insufficient stroke volume during ventricular systole. Congestive heart failure is characterized by the heart's inability to pump effectively, leading to reduced cardiac output. When the stroke volume—the amount of blood ejected by the heart with each beat—falls short, the body struggles to meet the increased demands for oxygen and nutrients during physical activity. As a result, any exertion leads to fatigue and limitations in exercise capacity. In individuals with heart failure, the compromised pump function can be attributed to factors such as weakened heart muscle, valve dysfunction, or impaired electrical conduction, all of which contribute to inadequate blood flow. Consequently, when patients with heart failure engage in exercise, they often experience symptoms such as shortness of breath, fatigue, and rapid heart rates due to the heart's inability to increase stroke volume adequately. Other factors, such as diminished lung volume and arterial oxygen desaturation, can contribute to limitations in exercise performance; however, they are not the primary reasons for the reduced exercise tolerance observed in heart failure. Additionally, while an excessive rise in blood pressure can occur during exertion, it is more a secondary response rather than a primary constraint in this patient population. Thus, insufficient stroke volume

8. What is the main action of beta-adrenergic receptor agonists during respiratory therapy?

A. Anti-inflammatory

B. Bronchodilation

C. Increased mucus production

D. Decreased heart rate

The main action of beta-adrenergic receptor agonists during respiratory therapy is bronchodilation. These medications work by stimulating beta-2 adrenergic receptors in the smooth muscles of the airways. When these receptors are activated, they cause relaxation of the bronchial smooth muscle, leading to dilation of the airways. This is particularly important in conditions such as asthma and chronic obstructive pulmonary disease (COPD), where airway constriction can impede breathing. By promoting bronchodilation, beta-adrenergic receptor agonists effectively improve airflow and reduce symptoms such as wheezing, shortness of breath, and chest tightness. This makes them a cornerstone of asthma management and acute respiratory distress situations. The other options do not reflect the primary purpose of beta-adrenergic agonists. Although these medications can have some secondary effects, their primary role in respiratory therapy is clearly the facilitation of bronchodilation, making breathing easier for patients experiencing obstructive airway conditions.

9. A therapist notes that the pulse of a patient with premature ventricular contractions skips every other beat. This finding is best termed?

A. Couplet

B. Bigeminy

C. Trigemi

D. Quadrigeminy

The term that most accurately describes the pattern of a pulse that skips every other beat, as noted in the case of the patient with premature ventricular contractions, is bigeminy. This condition is characterized by a repeated pattern where a normal heartbeat is followed by a premature contraction, resulting in an alternating rhythm of normal and abnormal beats. In bigeminy, the sequence typically goes normal beat, PVC, normal beat, PVC, and so on, creating the perception of a pulse that seems to "skip" every other beat. This is significant in understanding arrhythmias and their effects on hemodynamic stability. The other terms have specific meanings in the context of cardiac rhythms. A couplet refers to two consecutive PVCs occurring together, while trigeminy would indicate a pattern where a normal beat is followed by two consecutive PVCs (normal, PVC, PVC). Quadrigeminy describes a situation involving four beats in a similar alternating pattern to bigeminy, where a normal beat occurs followed by three PVCs. Hence, recognizing the distinctive nature of bigeminy is essential for accurate diagnosis and understanding of the patient's cardiac condition.

10. Which period of the cardiac cycle is characterized by ventricular relaxation and filling?

A. atrial systole

B. atrial diastole

C. ventricular systole

D. ventricular diastole

The correct answer is characterized by the phase in the cardiac cycle known as ventricular diastole. During this period, the ventricles of the heart are in a state of relaxation following contraction. This relaxation allows the ventricles to fill with blood from the atria due to the pressure difference created by the blood volume returning to the heart. As ventricular diastole progresses, the atrioventricular (AV) valves open, which facilitates passive filling until the ventricles are sufficiently filled with blood. This is critical for effective cardiac function, as it ensures that there is enough blood available to be ejected during the next contraction (ventricular systole). In contrast, the other phases focus on different activities of the cardiac cycle such as contraction or filling of the atria. Understanding these dynamics is essential for recognizing how the cardiac cycle maintains an efficient blood flow throughout the body.