CEODD Dive Medicine Practice Exam (Sample)

Study Guide

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Questions

1. What should divers do if they experience dizziness and lightheadedness underwater?

A. Proceed with the dive

B. Ascend slowly and safely

C. Remain still at the same depth

D. Notify their buddy and continue

2. What typically causes barotrauma?

A. Fluid accumulation in the inner ear

B. Rapid ascent in underwater environments

C. Changes in ambient pressure

D. Excessive noise exposure

3. Which of the following is NOT a symptom of heat exhaustion?

A. Profuse sweating with pale, cool skin

B. Dizziness

C. Seizures

D. Headache

4. What indicates a middle ear squeeze if the eardrum ruptures?

A. Severe pain

B. Brief vertigo

C. Fluid drainage from the outer ear

D. Complete hearing loss

5. Which condition is often mistaken for vertigo due to temperature differences?

A. Middle ear squeeze

B. Caloric vertigo

C. Sinus squeeze

D. Reverse squeeze

6. Which type of diving poses the greatest risk for nitrogen narcosis?

A. Shallow diving

B. Recreational diving

C. Deep diving

D. Freediving

7. What is DCS Type 1 primarily associated with?

A. Nitrogen bubbles in musculoskeletal tissues

B. Sudden heart failure

C. Excessive lung fluid

D. Trapped air in the abdomen

8. Which of the following is NOT a part of the neurological exam?

A. Cranial nerves

B. Test for vision acuity

C. Motor (strength)

D. Deep tendon reflexes

9. What should a diver do if they experience ear pain during descent?

A. Continue descending without stopping

B. Descend more rapidly to relieve pressure

C. Equalize or ascend slightly to relieve discomfort

D. Ignore the pain and continue diving

10. Which medication may be recommended for managing middle ear squeeze?

A. Antibiotics

B. Decongestants

C. Antihistamines

D. Stimulants

Answers

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

Explanations

1. What should divers do if they experience dizziness and lightheadedness underwater?

A. Proceed with the dive

B. Ascend slowly and safely

C. Remain still at the same depth

D. Notify their buddy and continue

When divers experience dizziness and lightheadedness underwater, the safest and most appropriate action is to ascend slowly and safely. These symptoms can indicate a potential problem such as decompression sickness, nitrogen narcosis, or hypoxia; therefore, remaining at the same depth poses a risk of worsening the condition. Ascending allows the diver to move to a shallower depth where pressure changes may alleviate symptoms and increase safety. A slow ascent is crucial to avoid introducing additional risks, such as decompression sickness that could occur from a rapid ascent. The importance of communicating with a dive buddy is also emphasized, but the immediate focus should be on ensuring the diver's safety through proper ascent procedures rather than continuing the dive or remaining still, which could exacerbate the situation.

2. What typically causes barotrauma?

A. Fluid accumulation in the inner ear

B. Rapid ascent in underwater environments

C. Changes in ambient pressure

D. Excessive noise exposure

Barotrauma is primarily caused by changes in ambient pressure. This condition occurs when there is a difference between the pressure in a gas-filled space within the body (such as the ears, lungs, or sinuses) and the surrounding external pressure. When a diver ascends or descends, the pressure changes rapidly, and if the gas-filled space does not equalize to adjust for this change, it can lead to tissue damage or trauma. For instance, during ascent, the surrounding water pressure decreases, but if air in the lungs or sinuses does not expand or exit as needed, it can cause significant physical stress and potential injury to the tissues. This is why equalization techniques are crucial for divers to prevent barotrauma. Changes in ambient pressure not only lead to discomfort but can also result in serious injuries if not properly managed.

3. Which of the following is NOT a symptom of heat exhaustion?

A. Profuse sweating with pale, cool skin

B. Dizziness

C. Seizures

D. Headache

Heat exhaustion is a heat-related condition that occurs when the body loses excessive amounts of water and salts, primarily through sweating. Symptoms associated with heat exhaustion typically include profuse sweating, weakness, dizziness, headache, faintness, and nausea. Skin may appear pale, cool, and clammy due to vasodilation and increased perspiration as the body attempts to cool itself. Seizures are not a characteristic symptom of heat exhaustion but may be associated with more severe heat-related illnesses like heat stroke or could result from other underlying medical conditions. Heat stroke occurs when the body's temperature regulation fails, leading to a core temperature of 104°F (40°C) or higher, which can result in neurological dysfunction, including seizures. Thus, among the options given, seizures distinctly do not align with the typical manifestations of heat exhaustion.

4. What indicates a middle ear squeeze if the eardrum ruptures?

A. Severe pain

B. Brief vertigo

C. Fluid drainage from the outer ear

D. Complete hearing loss

When considering the indicators of a middle ear squeeze, particularly in relation to what occurs if the eardrum ruptures, it's important to recognize that brief vertigo can occur. This phenomenon is tied to the changes in pressure and fluid dynamics within the inner ear. When the eardrum is intact, the equalization of pressure is maintained; however, a rupture can disrupt this balance and cause fluid from the middle ear to enter the inner ear, leading to temporary vertigo due to disturbances in vestibular function. Severe pain is often associated with the initial stages of a middle ear squeeze, or barotrauma, prior to any rupture, but it does not specifically indicate rupture and subsequent vertigo. Likewise, fluid drainage from the outer ear typically suggests another condition such as otitis media or an external ear infection rather than direct correlational occurrence following a rupture. Complete hearing loss could occur, but this is usually a more extreme manifestation, whereas brief vertigo reflects a more immediate response to the pressure imbalance established when the eardrum fails. Thus, the presence of brief vertigo indicates the physiological consequences that arise from the rupture of the eardrum as it relates to middle ear squeeze, emphasizing the delicate balance required for proper auditory function and the

5. Which condition is often mistaken for vertigo due to temperature differences?

A. Middle ear squeeze

B. Caloric vertigo

C. Sinus squeeze

D. Reverse squeeze

Caloric vertigo is a phenomenon that can be induced by temperature differences, particularly when the vestibular system is exposed to varying temperatures through the ear. This is often tested in medical evaluations by irrigating the ear canal with warm or cold water, which stimulates the vestibular system and can produce vertiginous sensations. In scenarios involving temperature change—such as diving—when one ear may experience differing temperatures from the surrounding water, it can lead to sensations that resemble vertigo. These sensations may result from the resulting imbalances in the inner ear, where the function of one side of the vestibular system is altered compared to the other. While conditions such as middle ear squeeze and sinus squeeze can lead to discomfort or pain, they do not primarily cause the sensation of spinning or dizziness associated with vertigo. Reverse squeeze pertains to pressure occurring in a way that does not involve differential temperature influences on the vestibular system. Thus, caloric vertigo stands out as the condition most closely associated with the specific effects of temperature differences leading to vertiginous symptoms.

6. Which type of diving poses the greatest risk for nitrogen narcosis?

A. Shallow diving

B. Recreational diving

C. Deep diving

D. Freediving

Deep diving poses the greatest risk for nitrogen narcosis because this condition is primarily associated with the increased partial pressure of nitrogen at greater depths. As a diver descends beyond approximately 30 meters (about 100 feet), the pressure increases, and nitrogen dissolved in the body tissues becomes more concentrated. This heightened pressure can lead to a change in the behavior of nitrogen, causing it to affect the central nervous system, similar to an anesthetic effect. The symptoms of nitrogen narcosis can include impaired judgment, euphoria, and other cognitive dysfunctions, which can significantly impair a diver's ability to make decisions and respond effectively in critical situations underwater. While recreational diving and shallow diving are also associated with risks related to other physiological issues, such as decompression sickness, they do not involve the same level of nitrogen pressure that deep diving does. Freediving, on the other hand, relies on breath-holding and does not involve the breathing of compressed gases, thereby minimizing the risk of nitrogen narcosis. Therefore, deep diving is distinctly recognized for its higher susceptibility to nitrogen narcosis due to the physiological effects of elevated nitrogen levels under increased pressure.

7. What is DCS Type 1 primarily associated with?

A. Nitrogen bubbles in musculoskeletal tissues

B. Sudden heart failure

C. Excessive lung fluid

D. Trapped air in the abdomen

DCS Type 1, or Decompression Sickness Type 1, is primarily associated with nitrogen bubbles forming in the musculoskeletal tissues. When a diver ascends too quickly, the reduction in pressure can cause dissolved nitrogen to form bubbles in the tissues and bloodstream. This typically leads to symptoms including joint pain, commonly referred to as "the bends," fatigue, and other musculoskeletal issues. Understanding why nitrogen bubbles in musculoskeletal tissues are the key component of DCS Type 1 is crucial, as it affects the treatment approach, which often involves reintroducing pressure in a hyperbaric chamber to help dissolve the bubbles back into the tissue. The other options do not accurately represent the characteristics of DCS Type 1. Sudden heart failure, excessive lung fluid, and trapped air in the abdomen relate to different medical conditions, not directly associated with the primary presentation of DCS Type 1. Recognizing the specific symptoms and mechanisms of DCS is essential for dive medicine practitioners.

8. Which of the following is NOT a part of the neurological exam?

A. Cranial nerves

B. Test for vision acuity

C. Motor (strength)

D. Deep tendon reflexes

The correct answer focuses on an aspect that is not typically included in a neurological examination. While the evaluation of cranial nerves, motor strength, and deep tendon reflexes are fundamental components of a neurological assessment, testing for visual acuity, although important in overall health assessments, does not specifically align with the focused assessment of neurological function. In a neurological exam, the evaluation of cranial nerves assesses the functionality of the nerves that control various sensory and motor functions. The motor strength test helps determine the performance of various muscle groups, which is essential for understanding potential motor deficits. Deep tendon reflexes evaluate spinal cord and peripheral nervous system function. Visual acuity testing may be part of a comprehensive physical examination but is not a specific component of a neurological exam. This distinction is crucial for correctly understanding what is encompassed in a neurological assessment, focusing more on neuromuscular function rather than sensory capabilities like vision.

9. What should a diver do if they experience ear pain during descent?

A. Continue descending without stopping

B. Descend more rapidly to relieve pressure

C. Equalize or ascend slightly to relieve discomfort

D. Ignore the pain and continue diving

When a diver experiences ear pain during descent, the appropriate action is to equalize the pressure in the ears or ascend slightly to alleviate the discomfort. This is essential because ear pain often indicates that pressure is not being equalized effectively, which can lead to barotrauma—an injury caused by the pressure difference across the eardrum. Equalizing techniques, such as the Valsalva maneuver or the Frenzel maneuver, should be employed to balance the pressure in the middle ear with the external water pressure. If the pain persists despite equalizing efforts, ascending slightly allows the diver to decrease the external pressure and provide relief from the discomfort. Continuing the descent without addressing the ear pain can result in significant injury, such as potential rupturing of the eardrum. This approach is consistent with safe diving practices and emphasizes the importance of maintaining equal pressure in the ear during changes in depth, thereby preventing serious complications.

10. Which medication may be recommended for managing middle ear squeeze?

A. Antibiotics

B. Decongestants

C. Antihistamines

D. Stimulants

Decongestants are often recommended for managing middle ear squeeze, a condition that can occur during diving or changes in altitude. This condition arises when pressure differentials create discomfort or pain in the middle ear, typically due to Eustachian tube dysfunction. Decongestants work by reducing the swelling of the nasal and Eustachian tube mucosa, helping to facilitate the equalization of pressure in the middle ear with the external environment. This action can significantly relieve symptoms associated with middle ear squeeze, making it easier for air to flow and equalize pressure, thus alleviating the discomfort experienced by the diver. In contrast, while antibiotics may be useful in treating infections, they do not address the pressure-related issues directly responsible for middle ear squeeze. Antihistamines may reduce allergy symptoms or nasal congestion but are not specifically effective for pressure equalization and could potentially thicken secretions in the Eustachian tubes. Stimulants do not have a role in managing middle ear conditions and do not assist with the physiological issues related to pressure changes.