NEET Forensic Medicine & Toxicology (FMT) Practice Test (Sample)

Study Guide

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Questions

1. Masochism is defined as what?

A. Seeking pleasure through pain

B. Stalking others

C. Overseeing sexual misconduct

D. Engaging in non-consensual acts

2. Which poison is considered ideal for homicidal purposes?

A. Strychnine

B. Belladonna

C. Aconite

D. Ricin

3. Which drug acts as an antidote for benzodiazepine overdose?

A. Digoxin immune Fab

B. Flumazenil

C. Naloxone

D. Hydroxocobalamin

4. What is the most common antidote used in the case of Acetaminophen toxicity?

A. N-acetylcysteine

B. Activated Charcoal

C. Morphine

D. Digoxin immune Fab

5. Which autopsy method is named after a prominent forensic pathologist?

A. Letulle

B. Ghon

C. Rokitansky

D. Cadaveric

6. What is an incised-looking lacerated wound typically associated with?

A. Sharp object impact

B. Blunt force trauma

C. Explosive trauma

D. Chop mechanism

7. Which type of gun is characterized by a groove in the barrel?

A. Handgun

B. Shotgun

C. Rifle

D. Revolver

8. What is the primary cause of Itai-itai disease?

A. Lead poisoning

B. Cobalamin deficiency

C. Cadmium toxicity

D. Arsenic contamination

9. Which element is indicated by raindrop pigmentation?

A. Lead

B. Arsenic

C. Mercury

D. Cadmium

10. What effect does ergot have when ingested?

A. Hallucinations

B. Cough suppression

C. Psychostimulation

D. Increased appetite

Answers

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

Explanations

1. Masochism is defined as what?

A. Seeking pleasure through pain

B. Stalking others

C. Overseeing sexual misconduct

D. Engaging in non-consensual acts

Masochism is primarily defined as seeking pleasure through pain. This concept is often associated with BDSM (Bondage, Discipline, Dominance, Submission, Sadism, and Masochism) practices, where individuals derive sexual arousal or satisfaction from experiencing pain or humiliation, either inflicted on themselves or given by others consensually. The essence of masochism lies in the psychological and emotional connection between the sensation of pain and the pleasure derived from it, creating a unique dynamic that can enhance intimacy and trust between consenting partners. The other choices present different concepts not related to masochism. Stalking involves the unwanted and obsessive attention towards an individual, which is a serious criminal behavior, while overseeing sexual misconduct refers to the role of authority in managing or addressing inappropriate sexual behavior. Engaging in non-consensual acts pertains to actions taken without consent, which starkly contrasts with the fundamental principle of masochism that emphasizes consent between parties involved in such activities.

2. Which poison is considered ideal for homicidal purposes?

A. Strychnine

B. Belladonna

C. Aconite

D. Ricin

The choice of aconite as the ideal poison for homicidal purposes is based on several factors. Aconite, derived from the plant Aconitum, contains alkaloids that are highly toxic and can lead to rapid onset of symptoms, including cardiovascular failure and respiratory paralysis, which can all occur within minutes after ingestion. This makes it particularly lethal in a short time frame, allowing for a swift act of homicide that can be difficult to trace back to the perpetrator. Toxicity and availability also contribute to its classification as an ideal homicidal poison. Aconite can be found in certain regions and has been historically used both in traditional medicine and as a poison, making it more accessible than some other substances. Moreover, the symptoms of aconite poisoning can mimic other medical conditions, potentially complicating detection and establishing cause of death during an autopsy. In contrast, other poisons such as strychnine, belladonna, and ricin, while also lethal, have different properties that may make them less favorable for such purposes. For example, strychnine causes intense convulsions that are very noticeable, and ricin, while highly toxic, can often be detected through laboratory tests depending on the form used.

3. Which drug acts as an antidote for benzodiazepine overdose?

A. Digoxin immune Fab

B. Flumazenil

C. Naloxone

D. Hydroxocobalamin

Flumazenil is recognized as an antidote specifically for benzodiazepine overdose. Benzodiazepines work by enhancing the effect of the neurotransmitter gamma-aminobutyric acid (GABA) at the GABA-A receptor, leading to their sedative and anxiolytic effects. However, an overdose of benzodiazepines can lead to severe sedation, respiratory depression, and even coma. Flumazenil is a competitive antagonist at the GABA-A receptor and works by reversing the effects of benzodiazepines. It can restore normal consciousness and respiratory function in an individual who has overdosed on these drugs. Its efficacy depends on the timing of administration, as it may not be effective in reversing the effects if the benzodiazepine has been in the system for an extended period. The other substances listed do not serve to counteract benzodiazepine effects. Digoxin immune Fab is an antidote for digoxin toxicity, naloxone is used for opioid overdose, and hydroxocobalamin is primarily used for cyanide poisoning. Each of these antidotes targets specific toxicological emergencies, underscoring the importance of administering the proper antidote based on the substance involved in the overdose.

4. What is the most common antidote used in the case of Acetaminophen toxicity?

A. N-acetylcysteine

B. Activated Charcoal

C. Morphine

D. Digoxin immune Fab

N-acetylcysteine is the most common antidote used for acetaminophen toxicity because it works specifically to replenish glutathione levels in the liver, ultimately helping to detoxify the harmful metabolites produced during an overdose. In cases of acute acetaminophen toxicity, the liver's ability to process the drug becomes overwhelmed, leading to cellular damage. N-acetylcysteine acts as a precursor to glutathione, which is a critical antioxidant that helps to neutralize the toxic byproducts of acetaminophen. Timely administration of N-acetylcysteine, ideally within 8 to 10 hours of ingestion, is crucial for preventing severe liver damage and potential liver failure. It can effectively prevent the progression of liver injury if given early enough, which emphasizes its role as the first-line treatment. Other antidotes mentioned, such as activated charcoal, can serve as a treatment option to limit absorption if administered shortly after ingestion but do not actively counteract the toxicity. Morphine is an opioid pain medication not related to acetaminophen toxicity and would not be used to treat overdose situations. Similarly, digoxin immune Fab is specific for digoxin poisoning and is not relevant in cases of acetaminophen toxicity. Therefore, N-ac

5. Which autopsy method is named after a prominent forensic pathologist?

A. Letulle

B. Ghon

C. Rokitansky

D. Cadaveric

The method named after a prominent forensic pathologist is the Rokitansky method. This technique was developed by Karl Rokitansky, who was a significant figure in forensic medicine during the 19th century. The Rokitansky method is characterized by a systematic approach to performing autopsies, where major organs are removed as a block from the body to provide a comprehensive examination. This method allows forensic pathologists to efficiently assess the cause of death while minimizing tissue damage and preserving the evidence required for legal investigations. The other methods mentioned are named after different individuals or represent different procedures. The Letulle method, for example, focuses on a different practical approach for autopsies, often involving a more dissection-based technique. The Ghon method is primarily associated with the study of tuberculosis and its effects, rather than the broader scope of autopsy techniques. Cadaveric is a general term that relates to the study of corpses but does not refer to any specific autopsy method named after a prominent individual. Hence, the identification of the Rokitansky method as named after Karl Rokitansky makes it the correct answer.

6. What is an incised-looking lacerated wound typically associated with?

A. Sharp object impact

B. Blunt force trauma

C. Explosive trauma

D. Chop mechanism

An incised-looking lacerated wound typically suggests an injury that has characteristics similar to those produced by a sharp object, even though it is technically a laceration inflicted by a blunt force. Such injuries can occur when a blunt object strikes the skin with sufficient force to cause a tearing effect that resembles the clean, defined edges of an incised wound. This phenomenon may occur because the force of the blunt object produces a strong impact that breaks the skin and underlying tissues, leading to a sharp appearance at the edges of the wound. The confusion often arises because both incised and lacerated wounds can appear similar externally. However, the underlying mechanism differentiates them. While blunt force trauma is responsible for lacerations, incised wounds are typically the result of sharp objects cutting through the skin. Therefore, the term "incised-looking" laceration here acknowledges that despite being classified as a laceration due to the mechanism of injury (blunt force), it presents with the visual characteristics often associated with cuts made by sharp instruments.

7. Which type of gun is characterized by a groove in the barrel?

A. Handgun

B. Shotgun

C. Rifle

D. Revolver

A rifle is characterized by a groove in the barrel, which is known as rifling. This rifling consists of helical grooves that are cut into the barrel's interior, allowing the bullet to spin as it travels down the barrel and exit at high velocity. The spin stabilizes the bullet in flight, improving accuracy over longer distances. This feature is fundamental to rifles, as they are primarily designed for precision shooting and long-range accuracy. In contrast, shotguns typically have smooth barrels without rifling, which allows for the firing of multiple pellets (shot) rather than a single bullet. Handguns and revolvers can also feature rifled barrels, but they are not specifically defined by this characteristic in the same way that rifles are. Thus, the defining feature of grooves in the barrel clearly identifies the rifle.

8. What is the primary cause of Itai-itai disease?

A. Lead poisoning

B. Cobalamin deficiency

C. Cadmium toxicity

D. Arsenic contamination

Itai-itai disease is primarily caused by cadmium toxicity. This condition is characterized by severe pain and skeletal deformities, resulting from excessive accumulation of cadmium in the body, particularly affecting the bones and kidneys. The disease was first identified in Japan, where it was linked to the ingestion of rice and water contaminated with cadmium from industrial pollution, specifically from mining activities. Cadmium is a heavy metal that can accumulate in the body over time, leading to renal failure and osteoporosis. Symptoms include severe joint pain, which is why the disease is named "Itai-itai," translating to "ouch-ouch" in Japanese, indicating the intense suffering associated with it. Chronic exposure to cadmium also results in a condition known as "itai-itai syndrome," where the bones become fragile and are more prone to fractures. In contrast to the other options, lead poisoning, cobalamin deficiency, and arsenic contamination are associated with different health issues and do not cause the symptoms or conditions characteristic of Itai-itai disease. Lead poisoning often affects cognitive function and causes neurological problems, cobalamin deficiency primarily leads to anemia and neurological disorders, and arsenic poisoning presents a different set of symptoms such as skin lesions and peripheral neuropathy. Therefore, cad

9. Which element is indicated by raindrop pigmentation?

A. Lead

B. Arsenic

C. Mercury

D. Cadmium

Raindrop pigmentation is primarily associated with arsenic exposure. This specific finding refers to a distinctive pattern of skin discoloration that appears as pale areas resembling raindrops on the skin, particularly in individuals who have been chronically exposed to arsenic. This pigmentation occurs due to arsenic's effects on melanin production and distribution in the skin. Arsenic is known to induce various skin changes, and raindrop pigmentation is considered a classic sign of arsenic poisoning. It is essential for medical professionals and toxicologists to recognize this condition as it can indicate long-term exposure to arsenic, which can be found in contaminated water, certain pesticides, and industrial processes. The other elements listed—lead, mercury, and cadmium—do cause various health effects but are not associated with raindrop pigmentation. Lead exposure can lead to a range of symptoms including neurological issues and anemia; mercury is linked to tremors and other neurological symptoms; cadmium exposure is primarily associated with kidney damage and lung issues. Each of these toxic metals has its unique clinical manifestations that differ from those seen with arsenic.

10. What effect does ergot have when ingested?

A. Hallucinations

B. Cough suppression

C. Psychostimulation

D. Increased appetite

Ergot is derived from a fungus that grows on certain grains, particularly rye, and contains compounds known as ergot alkaloids. These compounds have significant physiological effects, particularly on the nervous system. When ingested, ergot can lead to a range of symptoms including vasoconstriction, and most notably, it is known to have hallucinogenic properties due to its influence on serotonin and dopamine receptors in the brain. This results in the experiences of hallucinations, which can be visual or auditory in nature. The other effects listed, such as cough suppression, psychostimulation, and increased appetite, are not characteristic of ergot ingestion. Cough suppression is more typically associated with certain medications like antitussives, while psychostimulation relates to substances that enhance alertness or energy, such as caffeine. Increased appetite usually pertains to substances that affect metabolism or hormone levels in ways that stimulate hunger. Therefore, the primary and most well-known effect of ergot ingestion remains its ability to induce hallucinations.