Teasers in Toxicology

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1. A 16-year-old female presents to the emergency department with agitation, confusion, tremors, and hyperreflexia. The patient is currently treated for depression. Fluoxetine (Prozac) was adjusted yesterday prior to presentation because of increased depressive episodes. Her mother is currently taking thioridazine (Mellaril) for psychosis. What is the most likely cause of the patient’s current condition?
   a. Fluoxetine (Prozac)
   b. Acute ingestion of Thioridazine
   c. Mania
   d. MDMA (ecstasy)
   e. Psychotic break with paranoia

2. The American Academy of Pediatrics Committee on Injury, Violence, and Poison Prevention recommends the following with regard to accidental home ingestions:
   a. Keep a 1 oz bottle of syrup of ipecac for acute ingestions and call Poison Control Center prior to administration.
   b. Give activated charcoal for acute ingestion.
   c. Do not give syrup of ipecac, but call the Poison Control Center for all suspected toxic exposures.
   d. A and B

3. A 15-year-old teenage girl presents to the emergency department after her mother reports that her daughter has been having nausea and vomiting for the last 3 hours. The patient is scared and reports to taking a mouth full of acetaminophen. Her current blood level of acetaminophen is pending, but liver transaminases are elevated. What is the next most appropriate step in the treatment of this patient?
   a. Gastric lavage
   b. Administer activated charcoal
   c. Administer N-acetylcysteine (NAC)
   d. Psychiatric consultation

4. A 7-year-old male, whose father is a migrant worker, presents to the emergency department with acute onset of vomiting, diarrhea, salivation, and urinary incontinence. On physical exam, the child is anxious and restless with a heart rate 65 beats/min. Lung exam is significant for wheezing and his pupils are dilated. What is the mechanism of action for the antidotes that should be administered to this patient? (Select as many answers as are correct.)
   a. Competitive antagonist of acetylcholine at the muscarinic receptors.
   b. Selective competitive agonist of acetylcholine at the nicotinic receptors
   c. Cleavage of the phosphate moiety from the phosphorylated enzyme and organophosphate complex.
   d. Irreversible antagonist of acetylcholine at the nicotinic receptors
5. A 13-year-old female was prescribed nitrofurantoin and phenazopyridine for a urinary tract infection. She presented to the emergency department 3 days later for dizziness and cyanosis. Methyline blue was administered and had no effect on the patient’s condition. What are possible causes of the patient’s persistent cyanosis?
   a. NAPPH methemoglobin reductase deficiency
   b. G6PD deficiency
   c. Sulfhemoglobinemia secondary to phenazopyridine
   d. All of the above
   e. None of the above

6. Which of the following cardiac effects are seen with TCA overdose?
   a. QRS prolongation, atrioventricular block
   b. Sinus tachycardia
   c. Ventricular tachycardia, Monomorphic
   d. Torsades de Pointes
   e. All of the above
   f. A, B, C, but not D

7. A 16-year-old male is brought to the emergency department by his friends after they found him unresponsive. Physical exam is significant for a Glasgow scale of 4, respiratory rate of 7, and pupils constricted. What is the next most appropriate step in his treatment?
   a. Administer thiamine and dextrose
   b. Begin ventilating the patient, intubate if necessary
   c. Administer naloxone
   d. Perform a gastric lavage
   e. All of the above

8. Of the following statements concerning sniffers and toxic inhalation, which are TRUE?
   a. Sudden stress, hypercapnea, hypokalemia, and hypoxia predisposes a sniffer to greater cardiac toxicity
   b. Methylene chloride, found in various paint strippers, is metabolized rapidly to glyceraldehyde, which has toxic effects on the body
   c. The most common cause of death after sniffing is hypoxia and direct toxicity to the lungs.
   d. Benzene can cause aplastic anemia

9. A 4-year-old female was playing in the garage with her older brother when she developed an unsteady gait, ataxia, myoclonic jerks, and started vomiting. Her mother noted a green puddle of automotive fluid on the floor where the children were playing and immediately took her to the local emergency room where she was evaluated. Which metabolite of the ingested agent causes tissue injury?
   a. Glycolic Acid
   b. Glycoaldehyde
   c. Oxalate
   d. Glyceraldehyde
10. A 16-year-old male kennel worker at a local veterinary clinic presented to the emergency department with a history of confusion, slurred speech, and unsteady gait. The patient reportedly was fine when he went to school and work today. While in the emergency department, the patient became violent and had to be restrained. Physical exam was remarkable for vertical nystagmus, tachycardia, and drooling. Which of the following might have been the ingested agent? (Hint: there may be more than one correct answer.)
   a. Angel Dust (Phencyclidine or PCP)
   b. Telazol- (Tiletamine and Zolazepam), a veterinary anesthetic
   c. Crystal Methamphetamine
   d. Diazepam

11. Gastric lavage is contraindicated in each of the following ingestions except:
   a. Liquid plumber
   b. Gasoline
   c. Tricyclic Antidepressant (TCA)
   d. Clonidine patches
   e. None of the above

12. Which of the following statements regarding arsenic poisoning are TRUE (there may be more than one)?
   a. Mees lines are white lines on the fingernails indicating chronic arsenic poisoning
   b. If exposed to arsenic gas, the most common presenting symptoms are abdominal pain, hematuria, and jaundice along with diminished mental status.
   c. Arsenic impairs cellular respiration by inhibiting mitochondrial enzymes and uncoupling oxidative phosphorylation and can also block pyruvate dehydrogenase.
   d. Arsenic can be found in herbicides, fungicides, wood preservatives, and desiccants.

13. An 8-year-old girl was playing near a factory dumpsite when she developed the following signs and symptoms: rotten egg smell, keratoconjunctivitis, and upper airway irritation with coughing and confusion. Her mother also noticed that her silver earrings and charm bracelet were blackened. What is the most likely diagnosis?
   a. Arsenic exposure
   b. Cyanide exposure
   c. Hydrogen Sulfide exposure
   d. Carbon Monoxide exposure

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