

VizQuiz Answers

2014 ACMT Annual Scientific Meeting

1. B)Elemental Mercury
2. *Solanum dulcamara*, known as woody or climbing nightshade, or bittersweet. However, symptoms were not felt to be consistent with this plant, which primarily causes GI upset. Solanine is the primary toxin, which has been shown in vitro to have acetylcholinesterase inhibition; there have been no reports of cholinergic toxicity, however. This patient's sister had a history of being on carbamazepine, and he had detectable levels in his serum.
3. Answer: He had been using a wheel-cleaning solution containing sulfuric acid and ammonium bifluoride. Hydrofluoric acid is a weak acid formed when ammonium bifluoride is dissolved in water. The pain caused by the rapid dermal absorption of fluorides is due to the tissue precipitation of calcium fluoride, causing local irritation and intense pain from hypocalcemia. Stronger acids such as sulfuric acid cause coagulative necrosis, manifested in this patient's thickened, leathery skin.
4. Answer: He was given 500mg of 10% IV fluorescein solution instead of 10mg while getting a diagnostic retinal angiogram for grading of his retinopathy.
5. Answer: Immature crabapple (*Malus baccata*). This wild version of the apple is bitter even when ripe, due to high content of malic acid (the source of the sour flavor in green apples). Eating unripe apples of any variety in large enough amounts will lead to the "green apple quick-step" – diarrhea, vomiting, abdominal cramping, and general GI upset. The seeds of apples, as with all Rosaceae, contain amygdalin, a cyanogenic glycoside. Approximately 50 seeds may be lethal to an adult if chewed or ground up.
6. Answer: Acrodynia, which is thought to be an autoimmune reaction to chronic mercury toxicity. His serum mercury level was 13 mcg/L (normal < 9 mcg/L). A broken bottle of elemental mercury was found in the duffle bag that he took to camp. Air mercury concentrations in his bedroom where he keeps the bag were measured at > 40,000 ppm.
7. Answer: *Phytolacca americana*, American pokeweed. The root is white and tapered and may or may not be branched. The base of the stem is pink, and full-grown poke in the autumn has distinctive pink stems with dark purple berries that are safe to eat when ripe. The root contains the largest concentration of the mitogenic phytolaccatoxins. Ingestion leads to mouth and throat burning, hemorrhagic gastroenteritis, and hypotension. Deaths have been reported from intractable vomiting, cardiac dysrhythmias, and seizures. A prominent plasmacytosis is often seen following recovery, which causes no symptoms and resolves spontaneously after 2 months.
8. D) The antibiotic structure has a para-amino group and metabolism results in formation of a hydroxylamine
9. A) *Apis mellifera* (honeybee)

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10) Answer 1 is correct: The patient has quinine-induced thrombocytopenia. Drug-induced thrombocytopenia typically develops 5-7 days after xenobiotic exposure; commonly in dependent areas first. Early on, there may be no other symptoms. Answer 2: Doxycycline is associated with photosensitive vasculitis. The rash occurs in sun exposed areas, so unlikely isolated to a patient's legs in the winter months. Answer 3: Antivenom-induced serum sickness occurs approximately 7-14 days after antivenom treatment and is commonly associated with flu-like illness: fever, myalgias, and arthralgias. Answer 4: Vasculitis associated with levamisole most commonly involves the face and is painful.

11. A)

12. B) Although their use may be supported by a paucity of poorly controlled studies, the other answers are not contraindicated. The use of class IA (quinidine, procainamide, disopyramide, and moricizine) and class IC (flecainide, propafenone) antidysrhythmics is absolutely contraindicated because they have similar pharmacologic actions to CAs and thus may worsen the sodium channel inhibition and exacerbate cardiotoxicity.

13. Answer: Hydrogen peroxide. Other possible complications include viscous perforation, cerebral air embolism leading to neurologic signs, laryngeal edema, death.

14. Answer: This is a pod from the black locust tree (*Robinia pseudoacacia* L.). The native range of this tree includes the Appalachian and Ozark Mountains. It can now be found throughout the contiguous US as well as much of Canada. The bark, seeds and leaves all contain robin, a plant lectin similar to ricin. Poisoning due to ingestion of black locust is rare. Gastrointestinal effects predominate. Management is generally supportive with assessment and treatment for dehydration and electrolyte disturbances.

15. Answer: *Amanita smithiana*. *A. smithiana* is found in the conifer forests of western North America, including British Columbia, Washington, Oregon, and Idaho. It is often mistaken for the matsutake, or pine mushroom (*Tricholoma magnivelare*), which looks similar to and grows in the same habitat as *A. smithiana*, although subtle differences exist. Matsutake mushrooms have brown staining of the cap and stipe. *A. smithiana* are white in color and can have a partial veil or ring on the stipe of young mushrooms, but mature mushrooms can lack the veil. Matsutake mushrooms are popular in Japanese cooking and can be sold for up to \$100-\$600 per pound. Because of the profit margin, there is potential for mistaken *A. smithiana* mushrooms to be exported to other areas despite its limited geographic range. The toxin of *A. smithiana* is allelic norleucine (2-amino-4,5-hexadienoic acid). It results in the onset of nausea, vomiting, diarrhea and abdominal pain 8-14 hours after ingestion, although this can be significantly reduced to 30 minutes when eaten raw. There can be early transient liver injury that resolves quickly and normalizes within one week. *A. smithiana* poisoning characteristically results in delayed renal toxicity with impairment evident within 1-4 days. The renal dysfunction often requires temporary hemodialysis, with return of renal function and cessation of hemodialysis within a few weeks of ingestion. Renal toxicity from *A. smithiana* may be confused with that seen by orellanine-containing *Cortinarius* mushrooms. However, onset of renal failure from orellanine poisoning is more delayed compared to *A. smithiana*, occurring 4-15 days after ingestion (median 8.5 days). The onset of GI symptoms is also more delayed in orellanine poisoning, occurring from 36 hours to 3 weeks.

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16. Answer: Isosulfane blue. The anesthesiologist had requested methylene blue from the pharmacy and had received isosulfan blue. As there have been many medication shortages recently, providers have been forced to use products that may have different packaging or branding. Thus although the vial was not of normal appearance it was not double checked. Isosulfan blue is a dye used for sentinel node delineation during oncology surgeries. It is typically given subcutaneously. There are no known reports of giving it IV in a human. Most adverse events associated with isosulfan blue are allergic reactions ranging from blue hives to anaphylaxis. There is a case report of a patient having emerald green appearing blood after subcutaneous injection of isosulfane blue.

17. Answer: Bidirectional ventricular tachycardia – Digoxin (or other cardiac glycoside)

18. B)Epinephrine. The ECG shows tachycardia, QRS widening, QTc prolongation, and a terminal R wave in AVR consistent with cocaine intoxication. Since cocaine is a norepinephrine reuptake inhibitor, treating hemodynamic collapse with epinephrine is thought to worsen hemodynamic function. While there is no significant human data, there is a study that demonstrates that catecholamines appear to potentiate the effect of cocaine toxicity.

19. Answer – Concentrated hydrogen peroxide produced air gas embolism and CNS ischemia. After hyperbaric oxygen therapy his deficits resolved.