

Toxicology

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Toxicology Final Exam
Fifth year
Date: 01/06/2013
Time: 120 minutes
Total marks: 50

Students Name:

Answer the following questions:

Question1: A 33-year-old unemployed man was brought to the emergency department one morning after drinking alcohol and ingesting 60 tablets of an OTC painkiller 6 hours earlier on the previous evening. The man was also consumed 5 diclofenac pills (50 mg each). He was unconscious and in shock. Blood pressure was 54/34 and he had a tachycardia at 122 beats/minute. He was in deep coma with small pupils and he was lacking in spontaneous limb movements or response to painful stimuli. Arterial blood gases showed a severe metabolic acidosis. Chemistries were significant for renal impairment. The patient was intubated and administered activated charcoal via a nasogastric tube. Resuscitation was effected with a combination of crystalloid and colloid. These restored blood pressure and urinary flow. Nevertheless, his acidosis worsened (pH dropped to 6.88) and he manifested cardiac instability. He became very bradycardiac and hypotensive. Bicarbonate was slowly infused with improvement in his acidosis. His coma resolved in about 24 hours at which time he was extubated. His acidosis persisted for an additional 12 hours. Eventually, he recovered fully with renal function returning to normal. He was discharged on the 3rd hospital day.

A. What was the OTC painkiller which he ingested?

- a) Acetaminophen.
- b) Aspirin.
- c) Ibuprofen.

B. What effects do you think that alcohol and diclofenac have on the signs and symptoms the patient experienced?

Question2:

- A. Explain how the mechanism of toxicity of aspirin relates with the signs and symptoms of aspirin?
- B. How could you differentiate between acute and chronic toxic effects of aspirin?
- C. Explain the role of toxicokinetics of acetaminophen in the toxic effects produced
- D. What is the antidote for acetaminophen poisoning? Explain its role in the treatment of acetaminophen poisoning?

Question3:

- A. "I.V injection of heroin causes " a rush" not experienced by the same person using the same amount of morphine". Why?
- B. "The combination "Fen-Phen" has been withdrawn from the market in 1997". Why?
- C. "Crack cocaine is more toxic than crystalline cocaine salt". Why?
- D. What are the factors responsible for the popularity of crack cocaine over other forms of cocaine?
- E. "Psychotherapist raise objection over FDA placement of ecstasy on Schedule in 1985". Why?
- F. "Whatever the toxicity of marijuana, it is generally recognized as being significantly less than all or most other drugs of abuse. Nevertheless, it is not totally innocuous". Explain?
- G. What are the factors which govern the toxic dose of drugs of abuse?

Question4: A 13-month-old child was brought to a local emergency department after his parents found him with an open bottle of "a commercial insecticide". Some of the bottle's contents had spilled on the child's face and clothes. At home he had vomited and had a seizure. He became very somnolent while on the way to the hospital and shortly after arrival. There, he underwent another seizure. Phenobarbital was administered for the seizure. He was endotracheal intubated when his respirations became labored. After intubation, his blood gases improved substantially. The child was transferred to ICU where his condition improved gradually over the next 4 days. He was then discharged home without any apparent residual effects from this poisoning.

What kind of insecticide is likely to have been in the bottle?

- a) Organophosphate.
- b) Carbamate.
- c) Another insecticide.

Question 5:

- A. How do pralidoxime and atropine differ as antidotes in regard to their actions in therapy of organophosphate poisoning?
- B. How nerve gases differ from organophosphate and carbamate insecticides?
- C. What are the consequences of inadequate dosing of pralidoxime when it is used in the treatment of organophosphate poisoning?
- D. "Pralidoxime should be used early and empirically for suspected cholinesterase inhibitor poisoning". Why?
- E. Could atropine and pralidoxime used together in the treatment of organophosphate poisoning? Explain.
- F. "Sometimes, the toxic effects arise as a result of the use of chlorophenoxy herbicide compounds is not only due to these compounds". Explain?
- G. What are the toxic effects of the herbicide 2,4-D when humans exposed dermally to this compound?
- H. What makes a rodenticide to be effective, yet safe?
- I. Give the toxic dose and signs and symptoms of poisoning with zinc sulphide?
How could you treat a poisoned patient ingested inadvertently zinc sulphide?

Question 6:

- A. Give the different sources for exposure of humans to cyanide?
- B. How could you correlate carbon monoxide concentrations in the inspired air with the development of signs and symptoms of toxicity?
- C. Give the general principles involved in chelation therapy?
- D. Comment on the use of deferoxamine as an antidote for metal poisoning?
- E. Give the chronic toxic effects of lead?
- F. How do phallotoxins and amatoxins differ?
- G. Comment on the use of antivenin in treatment of snake venom poisoning?

Good Luck

Dr. Mohammed Shbair