Chapter 7    Drugs for Treating Pain

Case Study
Ella, a 21-year-old senior and your intercollegiate women’s team’s star soccer goalie, suffers from chronic tension headaches. Because the school is now giving midterm exams, her headaches have increased to what she rates as 7 on a 10-point scale. Her physician told her that he thought an over-the-counter (OTC) medication would be sufficient to take care of her headache. However, he did not give Ella any additional information on what she should take. She comes to you asking about the kinds of OTC medications that are available for her pain and the pros and cons of each. How would you respond?

Answer: Ella needs an OTC analgesic that would be taken orally to control her pain. There are 4 OTC options: aspirin, ibuprofen, naproxen, and acetaminophen. Acetaminophen has the advantage of having fewer adverse effects and drug interactions compared with nonsteroidal anti-inflammatory drugs (NSAIDs). However, it has a short half-life. Overdose with acetaminophen causes hepatotoxicity, so Ella needs to monitor how much she takes. Acetaminophen is also found in several combination products, which increases the risk of unintentional overdose. Aspirin, ibuprofen, and naproxen are NSAIDs, so they possess anti-inflammatory activity in addition to analgesic activity. Naproxen has a longer half-life and therefore a longer duration of action compared with the other OTC analgesics. All of the NSAIDs have adverse effects that need to be considered when selecting an analgesic. In particular, there is a risk of gastrointestinal (GI) adverse effects. Also, because there is an effect on platelets with the NSAIDs, these drugs interact with other medications that affect blood clotting.

Exam Questions
1. The maximum daily dose of acetaminophen in adults is _____ mg.
   a. 1000.
   b. 2000.
   c. 3000.
   d. 4000.

2. An athlete has been prescribed an opioid analgesic for control of pain following an injury. A common adverse effect that the athlete should be educated about is:
   a. Bleeding.
   b. Constipation.
   c. Hepatotoxicity.
   d. Insomnia.

3. Most opioid analgesics are controlled substances. One exception to this is:
   a. Nalbuphine.
   b. Methadone.
   c. Hydromorphone.
   d. Codeine.

4. An athlete asks you if it is okay to drink alcohol when taking acetaminophen. Which of the following would be the best response?
   a. Yes, it is okay to combine them because acetaminophen is not a central nervous system depressant.
   b. No, it is not okay to combine them because alcohol increases the risk of liver injury.
   c. Yes, it is okay to combine them because acetaminophen does not increase bleeding risk.
d. No, it is not okay to combine them because alcohol increases the risk of gastric ulcers.

5. A local anesthetic can be combined with a medication such as epinephrine that causes vasoconstriction to:
   a. Decrease the risk of cardiovascular adverse effects from the local anesthetic.
   b. Reduce the risk of hypersensitivity reactions from the local anesthetic.
   c. Expand the therapeutic uses to include topical applications.
   d. Increase the duration of the anesthetic action.

6. An athlete with migraine headaches wants to use an OTC analgesic. A disadvantage to using an OTC NSAID is that:
   a. NSAIDs cause hepatotoxicity in overdose.
   b. There is a risk of physical dependence from NSAIDs.
   c. **NSAIDs cause GI adverse effects, including ulcers.**
   d. Constipation is a common adverse effect of NSAIDs.

7. Acetylcysteine is the antidote used in the management of overdose from:
   a. Aspirin.
   b. **Acetaminophen.**
   c. Morphine.
   d. Naproxen.

8. In addition to use as an analgesic, codeine is also used as a(n):
   a. **Antitussive.**
   b. Antipyretic.
   c. Anti-inflammatory.
   d. Local anesthetic.

9. Tolerance develops to most of the effects of the opioids. An exception is that tolerance does not develop to:
   a. Respiratory depression.
   b. Orthostatic hypotension.
   c. Analgesic effects.
   d. **Constipation.**

10. An athlete using a counterirritant to relieve pain should be educated to:
    a. Apply a heating pad to the area after applying the counterirritant.
    b. **Not use an occlusive bandage to wrap the area.**
    c. Apply the agent liberally on abraded skin.
    d. Use the counterirritant every hour for maximal effect.