Chapter 6    Drugs for Treating Inflammation

Case Study
Two days ago, Tyler suffered a severe inversion ankle sprain as he landed after going up for a rebound. The team physician was in attendance at basketball practice. After examining Tyler, Dr. Becki gave him Voltaren with instructions for use and dosage. Tyler reports to you that he doesn’t feel the medication is doing anything because he still has all the symptoms he had when the injury occurred. You explain to him that because he has been taking it long enough to achieve a steady state of the drug in his system, you will contact Dr. Becki to see if she has suggestions for another nonsteroidal anti-inflammatory drug (NSAID) that may work better for him. How would you explain to Tyler what NSAIDs do therapeutically and why the Voltaren might not have been working?

Answer: NSAIDs possess anti-inflammatory and analgesic effects. In the case of a sprain such as this, an NSAID would decrease the pain and inflammation associated with the injury. However, you should always remember that NSAIDs, like all other medications, have adverse effects. In particular, the athlete should be aware of the potential for gastrointestinal (GI) adverse effects from use of NSAIDs. There is significant individual variation in response to NSAIDs. Some patients will not respond to one NSAID but another agent in the same class will have appropriate therapeutic benefit. This individual variation is likely the reason why the Voltaren was not working for Tyler. Contacting the physician about a different NSAID would be appropriate in this case. You should also rule out nonadherence to the medication regimen as a potential cause of the poor response.

Exam Questions
1. Which 2 medications are commonly used to prevent recurrent attacks of gouty arthritis?
   a. Abatacept and methotrexate.
   b. Allopurinol and febuxostat.
   c. Prednisone and indomethacin.
   d. Sulfasalazine and aspirin.

2. In patients with rheumatoid arthritis, cytokines contribute to the progression of the disease; therefore, medications have been developed to block their activity. Which of these cytokines is known to be involved in rheumatoid arthritis?
   a. Tumor necrosis factor (TNF).
   b. Bradykinin.
   c. Interleukin-1 (IL-1).
   d. Both TNF and IL-1.

3. Which of the following agents is a cyclooxygenase-2 (COX-2) selective inhibitor?
   a. Indomethacin.
   b. Febuxostat.
   c. Celecoxib.
   d. Ibuprofen.

4. COX-2 selective inhibitors have a lower risk of GI adverse effects compared with nonselective NSAIDs, but they cause an increased risk of:
   a. Heart attack and stroke.
   b. Pancreatitis and renal failure.
   c. Glaucoma and cataracts.
d. Respiratory infections and hepatotoxicity.

5. An athlete asks how topical anti-inflammatory and analgesic products containing methyl salicylate work. What is your best response?
   a. Methyl salicylate is absorbed through the skin and inhibits phospholipase A.
   b. Methyl salicylate blocks the local effects of histamine on its receptors.
   c. **Methyl salicylate acts as a counterirritant and works by distracting the user from the initial pain.**
   d. Methyl salicylate inhibits the activation of T-cells in the area of inflammation.

6. You are an athletic trainer working with high school athletes. One of your athletes has a fever and wants to take aspirin. Why would aspirin not be recommended for this athlete?
   a. Aspirin should not be used in children younger than 19 years due to the association between aspirin use and development of Reye’s syndrome.
   b. Aspirin should not be used in children younger than 19 years due to an increased risk of GI irritation in younger patients.
   c. Aspirin should not be used in children younger than 19 years due to the antiplatelet effect and increased risk of bleeding.
   d. Aspirin should not be used in children younger than 19 years due to an increased risk of infections including serious respiratory infections.

7. An advantage of using naproxen as an anti-inflammatory drug compared with ibuprofen is that:
   a. Naproxen is selective toward inhibition of COX-2.
   b. **Naproxen can be taken less frequently.**
   c. Naproxen causes less GI upset.
   d. Naproxen is Food and Drug Administration approved for use in children.

8. Corticosteroid therapy is associated with many adverse effects, including adrenal suppression with long-term therapy. To avoid the development of complications related to adrenal suppression, the corticosteroid must be:
   a. Stopped abruptly.
   b. **Tapered over a period of time.**
   c. Used as life-long therapy.
   d. Given in combination with an NSAID.

9. An athlete has been prescribed diclofenac for relief of pain and inflammation following an injury. He tells you that he is experiencing mild gastric discomfort when taking the medication. To reduce this side effect, the athlete should:
   a. Take the medication with food or milk.
   b. Discontinue the drug and start taking over-the-counter aspirin.
   c. Reduce the dosing interval to every other day.
   d. Take the medication on an empty stomach.

10. The initial symptom of aspirin overdose is often:
    a. Hyperventilation.
    b. Black, tarry stools.
    c. **Tinnitus.**
    d. Hypoglycemia.