chapter 36

Tetracyclines, Sulfonamides, and Urinary Agents

Objectives

AFTER STUDYING THIS CHAPTER, THE STUDENT WILL BE ABLE TO:

1. Discuss major characteristics and clinical uses of tetracyclines.
2. Recognize doxycycline as the tetracycline of choice for use in clients with renal failure.
3. Discuss characteristics, clinical uses, adverse effects, and nursing implications of selected sulfonamides.
4. Recognize trimethoprim-sulfamethoxazole as a combination drug that is commonly used for urinary tract and systemic infections.
5. Describe the use of urinary antiseptics in the treatment of urinary tract infections.
6. Teach clients strategies for preventing, recognizing, and treating urinary tract infections.

Critical Thinking Scenario

Faye Sullivan, 15 years of age, comes to the walk-in clinic with symptoms of urgency, frequency, and dysuria. A routine urinalysis indicates the presence of infection. The urinary tract infection (UTI) is treated with Bactrim for 10 days.

Reflect on:

- Factors that increase the incidence of UTI for adolescent girls.
- Important information to include when teaching Faye about Bactrim therapy.
- Strategies to prevent future UTIs.
- Data to collect to determine if Faye's UTI is responding to treatment.

OVERVIEW

Tetracyclines and sulfonamides are older, broad-spectrum, bacteriostatic drugs that are rarely used for systemic infections because of microbial resistance and the development of more effective or less toxic drugs. However, the drugs are useful in selected infections. Urinary antiseptics are used only in urinary tract infections (UTI). These drugs are described later in this chapter and listed in the Drugs at a Glance tables.

The tetracyclines are similar in pharmacologic properties and antimicrobial activity. They are effective against a wide range of gram-positive and gram-negative organisms, although they are usually not drugs of choice. Bacterial infections caused by *Brucella* and *Vibrio cholerae* are still treated by tetracyclines. The drugs also remain effective against rickettsiae, chlamydia, mycoplasma, some protozoa, spirochetes, and others. They are widely distributed into most body tissues and fluids. The older tetracyclines are excreted mainly in urine; doxycycline is eliminated in urine and feces, and minocycline is eliminated mainly by the liver.

Sulfonamides are bacteriostatic against a wide range of gram-positive and gram-negative bacteria, although increasing resistance is making them less useful. Susceptibility should be documented, but sulfonamides may be active against *Streptococcus pyogenes*, some staphylococcal strains, *Haemophilus influenzae*, *Nocardia*, *Chlamydia trachomatis*, and toxoplasmosis. The combination of trimethoprim-sulfamethoxazole is useful in UTIs due to Enterobacteriaceae, bronchitis, and *Pneumocystis carinii infection* (in high doses). Individual drugs vary in extent of systemic absorption and clinical indications. Some are well absorbed and can be used in systemic infections; others are poorly absorbed and exert more local effects.