chapter 21

Anticholinergic Drugs

Objectives

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

1. List characteristics of anticholinergic drugs in terms of effects on body tissues, indications for use, nursing process implications, observation of client response, and teaching clients.
2. Discuss atropine as the prototype of anticholinergic drugs.
3. Discuss clinical disorders/symptoms for which anticholinergic drugs are used.
4. Describe the mechanism by which atropine relieves bradycardia.
5. Review anticholinergic effects of antipsychotics, tricyclic antidepressants, and antihistamines.
6. Discuss principles of therapy and nursing process for using anticholinergic drugs in special populations.
7. Describe the signs and symptoms of atropine or anticholinergic drug overdose and its treatment.
8. Teach clients about the safe, effective use of anticholinergic drugs.

Critical Thinking Scenario

George Wilson, 76 years of age, has been treated for depression with amitriptyline (Elavil) for 5 years. He is admitted to the hospital for elective surgery, after which he becomes acutely confused. The physician prescribes haloperidol (Haldol) PRN to control severe agitation. You note in the drug reference text that both these medications have anticholinergic side effects.

Reflect on:

- Important assessments to detect anticholinergic effects.
- How anticholinergic side effects can be especially significant for the elderly.
- Developing a plan to minimize or manage anticholinergic effects for this client.

DESCRIPTION

Anticholinergic drugs, also called cholinergic blocking and parasympatholytic agents, block the action of acetylcholine on the parasympathetic nervous system (PNS). Most anticholinergic drugs interact with muscarinic cholinergic receptors in the brain, secretory glands, heart, and smooth muscle and are also called antimuscarinic agents. A few anticholinergic drugs, when given at high doses, are also able to block nicotinic receptors in autonomic ganglia and skeletal muscles. Glycopyrrolate (Robinul) is an example of such a medication. The prototype anticholinergic drug is **atropine**, and this drug class includes belladonna alkaloids, their derivatives, and many synthetic substitutes.

Most anticholinergic medications are either tertiary amines or quaternary amines in their chemical structure. Tertiary amines are uncharged lipid-soluble molecules. Atropine and scopolamine are tertiary amines and therefore are able to cross cell membranes readily. They are well absorbed from the gastrointestinal (GI) tract and conjunctiva and they cross the blood–brain barrier. Tertiary amines are excreted in the urine. Some belladonna derivatives and synthetic anticholinergics are quaternary amines. These drugs carry a positive charge and are lipid insoluble. Consequently, they do not readily cross cell membranes. They are poorly absorbed from the GI tract and do not cross the blood–brain barrier. Quaternary amines are excreted largely in the feces. Table 21–1 lists common tertiary amine and quaternary amine anticholinergic drugs.

Mechanism of Action and Effects

These drugs act by occupying receptor sites at parasympathetic nerve endings, thereby leaving fewer receptor sites free to respond to acetylcholine (Fig. 21–1). Parasympathetic response is absent or decreased, depending on the number of