

Antidysrhythmic Drugs

Objectives

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

1. Differentiate between supraventricular and ventricular dysrhythmias in terms of etiology and hemodynamic effects.
2. Describe nonpharmacologic measures to prevent or minimize tachydysrhythmias.
3. Discuss the roles of beta-adrenergic blocking agents, calcium channel blockers, digoxin, and quinidine in the management of supraventricular tachydysrhythmias.
4. Discuss the effects of lidocaine in the management of ventricular tachycardia.
5. Describe adverse effects and nursing process implications related to the use of selected antidysrhythmic drugs.

Critical Thinking Scenario

Seventy-nine-year-old Elmer Fitzgerald was recently diagnosed with atrial fibrillation. His heart rate is irregularly irregular, ranging between 120 and 160 beats per minute. At times, Mr. Fitzgerald is very symptomatic, experiencing weakness, dizziness, and syncope. His health care provider prescribes verapamil, a calcium channel blocker.

Reflect on:

- ▶ The emotional impact experienced with a diagnosis of a serious cardiac problem, such as a dysrhythmia.
- ▶ How atrial fibrillation affects cardiac function and the ability to oxygenate effectively.
- ▶ How the resulting symptoms of weakness, dizziness, and syncope may affect Mr. Fitzgerald's daily functioning.
- ▶ How verapamil acts to improve cardiac function.

OVERVIEW

Antidysrhythmic agents are diverse drugs used for prevention and management of cardiac dysrhythmias. Dysrhythmias, also called arrhythmias, are abnormalities in heart rate or rhythm. They become significant when they interfere with cardiac function and ability to perfuse body tissues. To aid in understanding of dysrhythmias and antidysrhythmic drug therapy, the physiology of cardiac conduction and contractility is reviewed.

CARDIAC ELECTROPHYSIOLOGY

The heart is an electrical pump. The “electrical” activity resides primarily in the specialized tissues that can generate and conduct an electrical impulse. Although impulses are conducted through muscle cells, the rate is much slower.

The mechanical or “pump” activity resides in contractile tissue. Normally, these activities result in effective cardiac contraction and distribution of blood throughout the body. Each heartbeat or cardiac cycle occurs at regular intervals and consists of four events. These are *stimulation* from an electrical impulse, *transmission* of the electrical impulse to adjacent conductive or contractile tissue, *contraction* of atria and ventricles, and *relaxation* of atria and ventricles, during which they refill with blood in preparation for the next contraction.

Automaticity

Automaticity is the heart's ability to generate an electrical impulse. Any part of the conduction system can spontaneously start an impulse, but the sinoatrial (SA) node normally has the highest degree of automaticity and therefore the