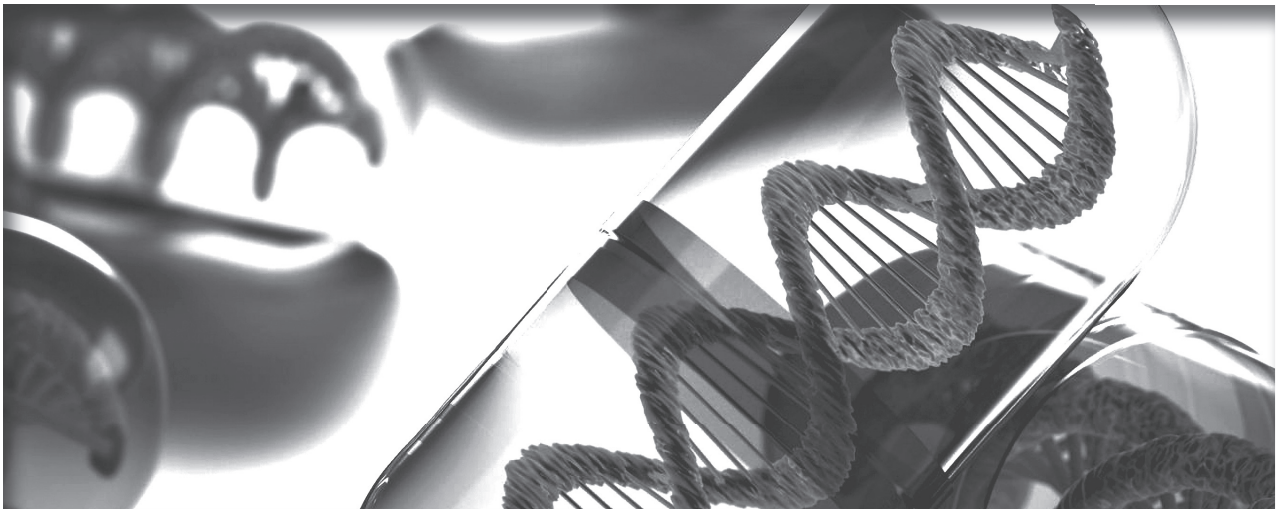

CHAPTER 26

Supraventricular Arrhythmias

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Drugs may induce a variety of supraventricular arrhythmias that may be associated with symptoms, hemodynamic instability, stroke, and, in some cases, an increased risk of death. Supraventricular arrhythmias that may be induced by drugs include sinus bradycardia, atrioventricular (AV) node block, atrial fibrillation or flutter, atrial tachycardia, and AV nodal re-entrant tachycardia.

SINUS BRADYCARDIA/ ATRIOVENTRICULAR BLOCK

Sinus bradycardia is defined as a sinus rate <60 bpm.[1] Drugs that inhibit sinus node function resulting in sinus pauses or sinus arrest are also included in this section. Sinus pauses occur when the function of the sinus node is impaired transiently, leading to "pauses" without P-waves on the electrocardiogram.[1-3] Sinus pauses are also known as periods of sinus arrest.

AV block occurs when conduction of impulses from the atria to the ventricles through the AV node is inhibited.[3] AV block is classified as first, second, or third degree. First-degree AV block is defined as prolongation of the PR interval to >0.2 seconds. Second-degree AV block is a progression of AV nodal dysfunction to the point at which some impulses are not conducted from the atria to the ventricles. Third-degree AV block, often referred to as complete heart block or AV dissociation, is defined by the absence of a relationship between atrial and ventricular depolarization. During third-degree AV block, atrial depolarization and ventricular depolarization occur independently, as a result of the complete inability of the AV node to conduct impulses.[3]

CAUSATIVE AGENTS

Sinus bradycardia with or without sinus pauses may be associated with a wide variety of drugs (**Table 26-1**).[4-522] In addition to occurring as a result of drugs administered orally or intravenously, sinus bradycardia and sinus pauses may be induced by drugs administered as eye drops. Numerous cases of sinus bradycardia associated with topical adrenergic β-receptor antagonists (β-blockers) have been reported.[523,524] The incidence of sinus bradycardia associated with topical timolol is significantly

Table 26-1 Agents Implicated in Drug-Induced Sinus Bradycardia

Drug	Incidence	Level of Evidence[a]
Adenosine[4-6]	1–8%	A
Amiodarone[7-14]	3–20%	A
Amisulpride[15]	NK	C
Baclofen[16-24,b]	NK	C
β-blockers[25-35]	0.6–25%	A
Bupivacaine[36-43]	2–32%	A
Capecitabine[44,45]	NK	C
Carbamazepine[46,47]	NK	C
Cimetidine[48-54]	NK	C
Cisplatin[55-60]	NK	B
Citalopram[61-65]	0.1–2.4%	B
Clonidine[66-99]	5–17.5%	A
Clozapine[100,101]	NK	C
Cocaine[102,103]	23–48%	B
Cytarabine[106-109]	NK	C
Dexamethasone[110-113]	NK	B
Dexmedetomidine[114-144]	4.4–55%	A
Diazepam[50,b]	NK	C
Digoxin[145-151,b]	0–7%	B
Diltiazem[152-165]	4.2–16%	A
Dipyridamole[166-172,c]	0.5–6.7%	B
Disopyramide[173-177]	0–4%	B
Donepezil[177-186]	0.6–48% HR 1.4 (95 % CI 1.1–1.6)	A
Dronedarone[187-190]	0.7–2.3% OR 1.45 (95% CI 1.02–2.08)	A
Dovitinib[191]	5%	B
Escitalopram[192-194]	NK	C
Fingolimod[195-215]	0.5–37%	A
Flecainide[216-223]	2–13.2%	B
Fludarabine[224]	NK	C
5-fluorouracil[225-227]	12%[d]	B
Fluoxetine[228-234]	NK	B
γ-hydroxybutyric acid[235-240]	NK[e]	B
Granisetron[241,242]	NK	A
Halothane[243-246]	11–24%	A
Ibutilide[247-250]	0–4.5%	B
Idarubicin[251]	NK	C
Irinotecan[252,253]	NK	C
Isradipine[254,c]	NK	C
Ivabradine[255-267]	3.7–15.7% OR 6.54 (95% CI 3.3–012.9)	A
Ketamine[268-273]	0–5.5%[f]	B