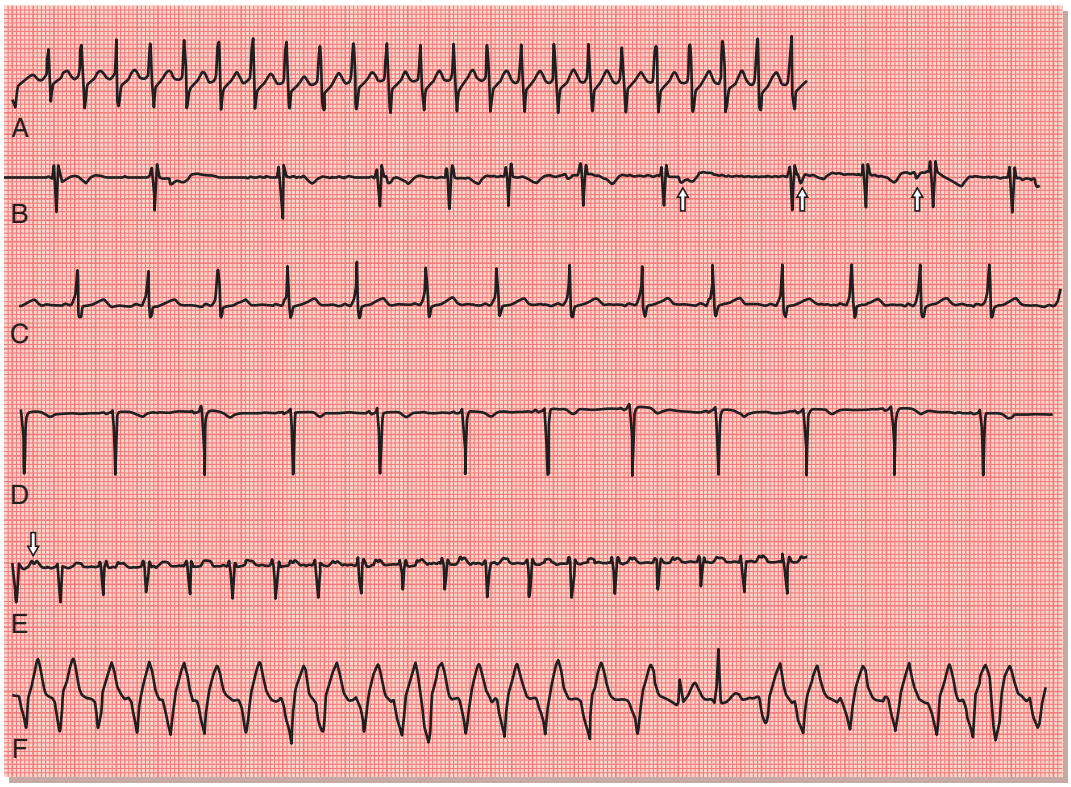

FIGURE 9-5 Atrioventricular (AV) nodal (junctional) rhythm disturbances. **A,** Supraventricular tachycardia. The lack of visible P waves during tachycardia suggests that they are concealed within the QRS complex, a pattern indicative of underlying AV nodal reentrant tachycardia. **B,** Automatic junctional tachycardia. Notice the AV dissociation during tachycardia. The P waves *(arrows)* are dissociated from the QRS complexes. **C,** Sinus rhythm with a short PR interval due to the presence of delta waves in a patient with Wolff-Parkinson-White (WPW) syndrome. The slurred QRS upstroke of the delta wave results from early activation of the ventricle by the extranodal bypass tract, followed by fusion with rapid conduction down the normal conduction system and resulting in narrowing of the terminal QRS. **D,** Sinus rhythm with a short PR interval but no delta waves. Despite the short PR, the P wave is normally vectored, excluding a junctional rhythm that appears similar but with an inverted P wave. A short PR interval in sinus rhythm without delta waves is caused by an abnormally rapid AV nodal conduction and is described as a Lown-Ganong-Levine pattern. **E,** Supraventricular tachycardia. Unlike tracing **A**, there is a clear P wave *(arrow)* inscribed immediately after each QRS in the ST segment. This pattern is seen most commonly with orthodromic AV reciprocating tachycardia in a patient with WPW syndrome. The early P wave in WPW is caused by retrograde conduction up the accessory pathway after ventricular activation during tachycardia. **F,** Preexcited atrial fibrillation (AF) in a patient with WPW syndrome. Notice the rapid and irregular ventricular response with widening of the QRS due to preexcitation. This pattern results from rapid conduction of the AF down the accessory pathway, bypassing the normal conduction system. As in this arrhythmia, occasional conduction down the AV node may occur during ongoing tachycardia, resulting in periods with a narrow QRS complex.

promote tachycardia, accounting for the absence of symptoms. These patients have a favorable prognosis, particularly if spontaneous and abrupt cessation of preexcitation occurs with exercise or during ambulatory monitoring. In most cases, no specific therapy is required.

Occasionally, patients participating in high-risk activities with WPW pattern may be subjected to invasive electrophysiologic testing for risk stratification. Patients with delta waves demonstrating SVT or suggestive arrhythmic symptoms are said to have WPW syndrome, and invasive electrophysiologic testing is ordinarily recommended in these patients. Testing helps to stratify the risk of SCD.

Curative ablation is highly effective, with a success rate of 95%, and poses a low risk of procedural complications. Chronic therapy with antiarrhythmic drugs that prolong the accessory pathway refractory period (i.e., class IA, IC, or III agents) may be effective, but the potential for adverse drug effects has made accessory pathway ablation the treatment of choice for symptomatic patients.

The use of agents that slow AV nodal conduction in patients with WPW syndrome warrants special mention. Digoxin, β-blockers, and calcium-channel blockers should not be used in patients with WPW because they slow conduction through the AV node, resulting in preferential excitation of the ventricles over the accessory pathway. In the setting of AF or atrial flutter, this may cause rapid ventricular rates and hemodynamic instability.

Wolff-Parkinson-White Syndrome and Atrial Fibrillation

WPW syndrome is associated with a 0.25% per year risk of SCD, which is related to the development of AF with rapid antegrade conduction over the accessory pathway and to VF. This risk is greatest for patients demonstrating very short preexcited RR intervals during AF. For some WPW patients, SCD may be the initial presentation. Successful catheter ablation of the accessory pathway eliminates this possibility.

Patients with WPW and rapidly conducted AF have the characteristic electrocardiographic findings of a rapid, irregularly