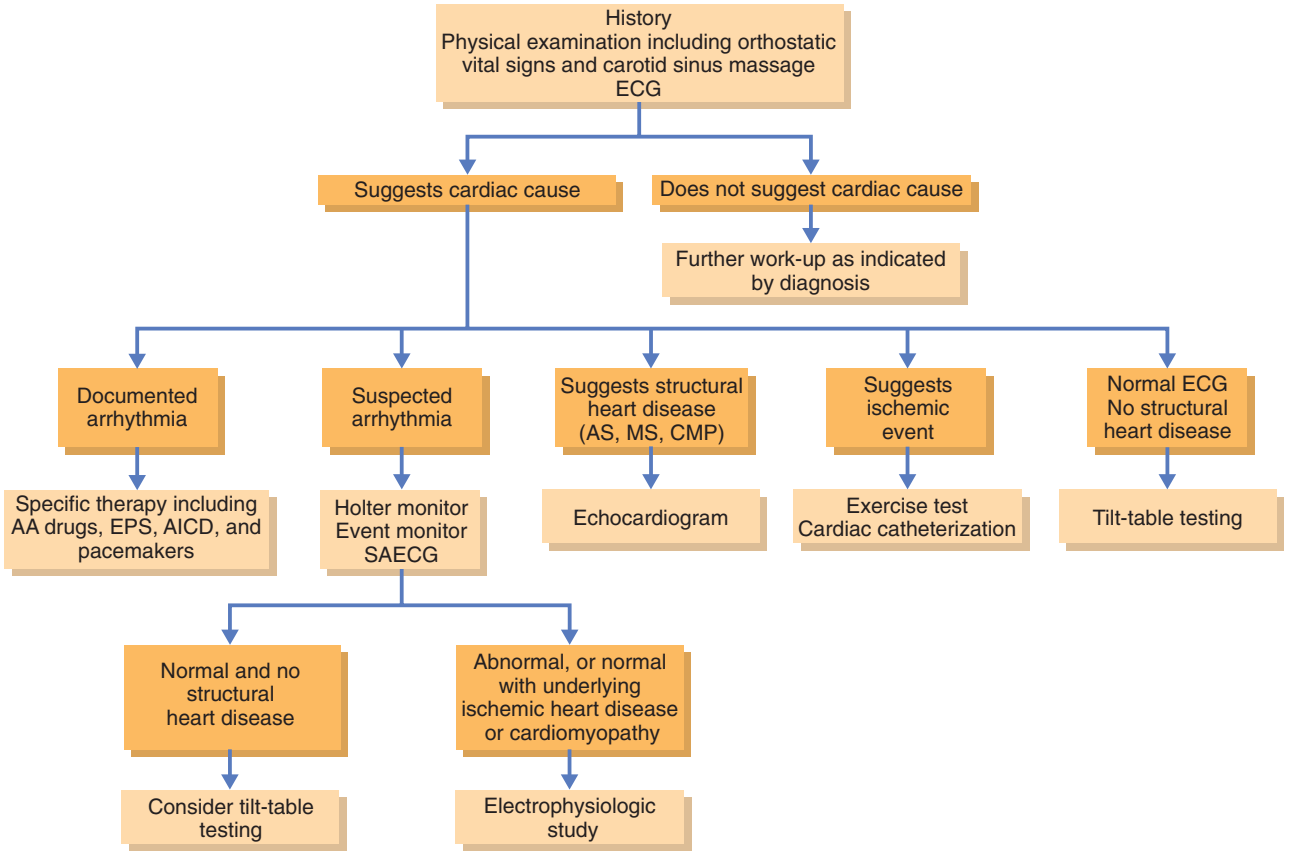


**FIGURE 9-8** Approach to the evaluation of syncope. AA, Antiarrhythmic; AICD, automatic implantable cardioverter-defibrillator; AS, aortic stenosis; CMP, cardiomyopathy; ECG, electrocardiogram; EPS, electrophysiologic study; MS, mitral stenosis; SAECG, signal-averaged ECG.

variable appearance on the ECG than MMVT. TdP is a special form of PMVT that has a repetitive, undulating periodicity and usually implies a long-QT triggered mechanism. VF is the most chaotic form of ventricular ectopy. It is associated with no meaningful cardiac output and usually leads to death unless rapidly treated. The other forms of VT may eventually degrade into VF.

Determining whether a patient has a rhythm of ventricular origin usually is done by 12-lead surface ECG. Ventricular ectopy typically has a wide QRS morphology (Fig. 9-9). Not all wide QRS morphologies are ventricular in origin, and there are criteria for determining whether a wide complex tachycardia is supraventricular or ventricular. SVT may appear as a wide complex tachycardia if it conducts to the ventricle with aberrancy (e,g., bundle branch block) or through an accessory pathway (e.g., WPW syndrome). Features that may help distinguish between SVT and VT include AV dissociation with capture beats and fusion beats and the QRS morphology and duration (Table 9-5). The Brugada algorithm is commonly used for determining the site of origin of wide complex tachycardia. The tachycardia has a ventricular origin in more than 90% of patients with a history of ischemic heart disease.

VT may occur by the same mechanisms as other tachycardias, such as reentry, enhanced automaticity, or triggered activity. VT often occurs as a reentrant tachycardia around an area of prior MI scar in the left ventricle. VT in the chronic phase of ischemic heart disease is mediated by reentry through channels or sheets of surviving myocardium, especially in the partially spared border zone of a region of scar resulting from a prior MI. In these

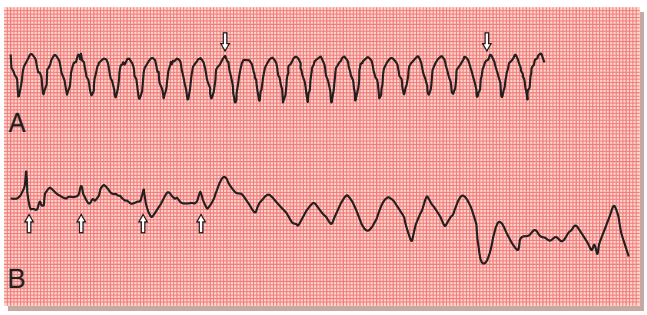


**FIGURE 9-9** Ventricular arrhythmias. **A,** Monomorphic ventricular tachycardia (VT). Notice the wide QRS with a stable appearance with each beat. Detecting P waves during VT is difficult due to the overlying ventricular activity, but it is visible at several points on this tracing, some of which are marked by *arrows*. The AV dissociation is diagnostic of VT and excludes supraventricular tachycardia. **B,** An initially organized agonal (preterminal) rhythm *(arrows)* degenerates into coarse ventricular fibrillation. Notice the irregular baseline and the absence of organized QRS complexes. During ventricular fibrillation, there is no forward cardiac output, and cardiac arrest immediately ensues.

channels, conduction is abnormally slow due to poor coupling between sparse surviving myocytes. Susceptibility to sustained VT increases with worsening left ventricular dysfunction, likely due to the greater extent of ventricular scar.

VT can occur in the absence of ischemic heart disease in the form of idiopathic VT, nonischemic cardiomyopathies, hypertrophic cardiomyopathies, arrhythmogenic RV dysplasia, bundle branch reentry, cardiac ion channel disorders, or electrolyte