INTRODUCTION

Cardiac arrest is the cause of more than 300,000 deaths annually, mostly associated with coronary-artery disease (CAD) (1). Ventricular tachyarrhythmias are reported in approximately 75% of these cases, with polymorphic ventricular tachycardia (PVT), ventricular fibrillation (VF) and monomorphic ventricular tachycardia (VT) observed with nearly equal frequency (2). VT and VF are therefore the leading causes of death in patients with coronary-artery disease. The approach to the patient with VT or VF requires a careful evaluation of the clinical history, mode of presentation, underlying cardiac substrate, and ventricular function. For patients who present with VT, electrocardiographic documentation is extremely important. Although most arrhythmic episodes occur in unmonitored settings, the 12-lead electrocardiogram (ECG) provides valuable diagnostic and prognostic information. The fact that a 12-lead ECG could be recorded during the event generally implies that VT is tolerated by the patient. Secondly, the probable diagnosis of right ventricular outflow-tract (RVOT) tachycardia (Fig. 1) and idiopathic left ventricular tachycardia (Fig. 2) is based upon a characteristic morphology recorded on the ECG. Thirdly, the ECG identifies the region of origin for the exit site of VT when ablative therapy is considered. Finally, in some patients, wide-complex
tachycardia will be caused by supraventricular tachycardia (SVT) with aberrancy rather than VT; an ECG can be helpful in making this diagnosis. Only after complete assessment of relevant clinical data can a proper therapeutic decision be made regarding the treatment of VT. For patients who are resuscitated from VF, a 12-lead ECG obtained post-resuscitation may offer clues to the cause of the arrest (such as acute myocardial infarction (MI), long QT syndrome (LQTS), or Wolff-Parkinson-White syndrome (WPW)).

The purpose of this chapter is to outline these important clinical variables and to provide an algorithm for the management of patients with VT and VF. The chapter is divided into four sections. The first section discusses the long-term therapeutic options available for patients with VT and VF. The second section discusses the management of patients who have monomorphic VT, with particular emphasis on both primary prevention in the high-risk patient and secondary prevention of the patient who has already suffered a sustained arrhythmic episode. The third section discusses approaches to the patient with documented PVT. The fourth section reviews approaches to patients with VF. The final section discusses the role of electrophysiologic testing in patients with VT and VF.

**TREATMENT OPTIONS**

Treatment modalities for patients with VT and VF include both substrate modification techniques, which prevent recurrent episodes of tachycardia, and device therapy, which terminates recurrent episodes by either anti-tachycardia pacing (ATP) or internal shocks.

**Fig. 1.** 12-lead ECG recording of sinus rhythm (left) and VT (right) from a patient with RVOT tachycardia. Note the left bundle-branch block (LBBB) morphology with right inferior frontal axis during VT. NSR = normal sinus rhythm, RVOT = right ventricular outflow tract.