Ali Massumi Cardiac Arrhythmia Symposium

Catheter Ablation of Ventricular Tachycardia

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Catheter ablation of ventricular tachycardia (VT) in patients with structural heart disease has been effective in reducing VT burden. Current guidelines from the American College of Cardiology, American Heart Association, and Heart Rhythm Society include considering catheter ablation in patients whose VT recurs despite antiarrhythmic drug therapy.[1] Although the success rates of VT ablation in major trials have ranged from 50% to 70%,[2,3] the long-term prognosis of this patient population is guarded, and it is unknown whether successful ablation alters survival outcomes.

At first, approaches to VT ablation necessitated that patients undergo the induction of VT to enable mapping and ablation. However, most patients do not tolerate VT. Many centers have since adopted a more substrate-based approach, evaluating regions of slow or abnormal conduction while patients are in sinus rhythm. Indications include late potentials, fractionated electrograms, and sites with latent or multiple morphologies during pacing. Higher-density mapping has led to more extensive targets for ablation.[4]

Investigators have evaluated survival prospects after VT ablation.[3,5] Of note in a multicenter study of 1,064 patients undergoing VT ablation,[5] noninducibility of VT after ablation was independently associated with better survival rates; conversely, older age, atrial fibrillation, and diabetes mellitus were associated with higher mortality rates. In a 12-center study of 2,061 patients with ischemic and nonischemic cardiomyopathy who underwent VT ablation,[3] the one-year rate of freedom from recurrent VT was 70%, and it was associated with less all-cause death and better transplant-free survival rates.

In terms of survival rates across New York Heart Association functional classes, all patients benefited after successful VT ablation, especially those in functional class IV—implying that the sickest patients have the most to gain.[6]

In a prospective trial among patients whose VT recurred despite antiarrhythmic drug therapy,[7] patients were randomized to ablation or to escalated drug therapy. During a mean follow-up period of 27.9 ± 17.1 months, there was a significant difference in the overall combined endpoint of death, VT, and implantable cardioverter-defibrillator (ICD) shocks. The ablation group fared significantly better with fewer incidences of VT storm and ICD shocks; however, between-group mortality rates did not differ.

The multicenter observational studies[3,5] suggest improved survival rates after successful VT ablation. This association warrants further clarification in prospective, randomized trials such as that described above.[7] Meanwhile, it is hoped that advances in VT treatment can improve outcomes in the challenging population of patients with drug-refractory VT.

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