

Sustained Ventricular Tachycardia in Apparently Normal Hearts

Medical Therapy Should be the First Step in Management



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KEYWORDS

• Ventricular tachycardia • Premature ventricular complexes • Medical therapy • Catheter ablation

KEY POINTS

- Idiopathic VT has a favorable prognosis and treatments based on symptom burden should be offered with appropriate care.
- Medical therapies for some forms of idiopathic VT may be less effective than catheter ablation, but carry a reasonable efficacy and suitable safety record appropriate for first-line therapy.
- Although catheter ablation is an effective and reasonably safe therapy, it does carry some risk and should be considered carefully when treating relatively benign conditions, such as idiopathic VT.

INTRODUCTION

Ventricular tachycardia (VT) occurring in structurally normal hearts, without significant ventricular dysfunction or myocardial scar, is referred to as idiopathic VT. The prevalence of idiopathic VT is estimated at 7% to 38% of all patients referred for evaluation of VT.¹

The causes of idiopathic VT are classified in the following manner: outflow tract VT, fascicular VT, intramural VT, annular VT, and epicardial VT. **Fig. 1** shows an anatomic-based classification of the various forms of idiopathic VT. By far, the most common etiologies of idiopathic VT are outflow tract and fascicular VT. These account for approximately 90% of all idiopathic VT.

Although the mechanisms of the various forms of idiopathic VT are different and include cAMP-mediated delayed afterdepolarizations, automaticity, and microreentry for outflow tract VT² and macroreentry for some forms of

fascicular VT,³ one common defining feature of all causes of idiopathic VT is that they share a favorable prognosis. Because of the high prevalence and increased mortality risk of VT in the context of structural heart disease, there have been extensive clinical trials and cohort studies on the treatment and management of VT associated with cardiomyopathy. The same cannot be said for idiopathic VT, which is less prevalent and is associated with a favorable prognosis. Therefore, guidelines for treatment are based on the known complications associated with idiopathic VT, the efficacy and risks of medical therapies, and the relative efficacy and risks of invasive therapies.

CURRENT GUIDELINES

As a starting point, the most recent American College of Cardiology/American Heart Association/European Society of Cardiology guidelines

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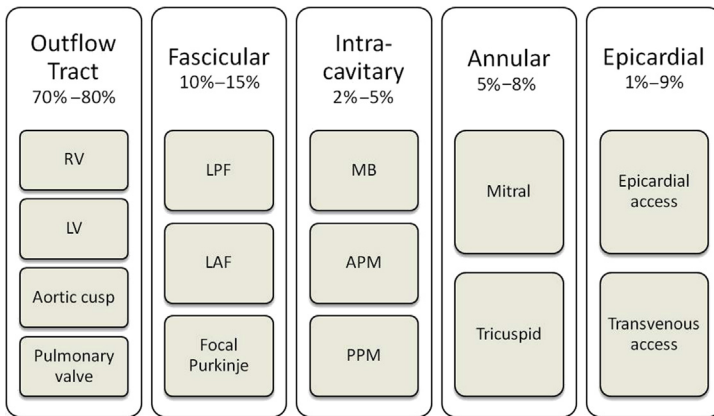


Fig. 1. Classification and prevalence of idiopathic VT. APM, anterior papillary muscle; LAF, left anterior fascicle; LPF, left posterior fascicle; LV, left ventricle; MB, moderator band; PPM, posterior papillary muscle; RV, right ventricle.

for the management of ventricular arrhythmias date back to 2006⁴ with an expert consensus update by the European Heart Rhythm Association/Heart Rhythm Society/Asia Pacific Heart Rhythm Society in 2014⁵ and a European Society of Cardiology guideline from 2015.⁶ The European Heart Rhythm Association/Heart Rhythm Society/Asia Pacific Heart Rhythm Society expert consensus update suggests that the primary indication for treatment of sustained idiopathic VT is largely based on symptoms. It offers three main options, which are all reasonable: (1) pharmacologic therapy with β -blockade or nondihydropyridine calcium channel blockade; (2) antiarrhythmic therapy with sotalol, flecainide, mexiletine, propafenone, or amiodarone; or (3) catheter ablation. They do not recommend a specific first-line therapy but highlight that low-risk drugs, such as β -blockade and calcium channel blockade, have modest efficacy; that more effective antiarrhythmic medications carry a greater side effect profile; and that the efficacy of catheter ablation largely depends on the inducibility of the arrhythmia.

However, the European Society of Cardiology 2015 guidelines favor a slightly less invasive approach citing a Class I recommendation with Level B evidence that catheter ablation for right ventricle outflow tract VT should only be performed in symptomatic patients failing antiarrhythmic drug therapy or with a decline in left ventricle (LV) function. Moreover, for higher risk etiologies of idiopathic VT (eg, LV outflow tract, aortic cusp VT, or epicardial VT), sodium channel blockers are recommended as the therapy of choice with catheter ablation only as an option for experienced operators after drug therapy has failed. We now explore the evidence and rationale behind these recommendations.

IDIOPATHIC VENTRICULAR TACHYCARDIA HAS A FAVORABLE PROGNOSIS

In determining the best course of action for a patient with any diagnosis, the potential treatments must be weighed carefully by comparing their relative risks with their potential for efficacy. Perhaps more importantly, these risks and benefits must first be weighed against the potential for harm of the diagnosis itself. For instance, when dealing with high-risk diagnoses, such as lung cancer, one accepts toxic and high-risk treatments, such as chemotherapy and radiation therapy. Idiopathic VT, fortunately, does not portend the same level of mortality or morbidity.

The most common form of idiopathic VT, outflow tract VT, is known to have a benign natural history. Long-term data on 133 patients with sustained outflow tract VT and a median follow-up of 11.3 years (range, 29–248 years) demonstrated that with no invasive treatments, there were zero deaths from cardiac disease.⁷ Similarly, with the second most common form of idiopathic VT, fascicular VT, the long-term prognosis is equally favorable with zero cardiac deaths among 33 patients followed for a mean of 5.7 ± 4.7 years in one cohort⁸ and only one unexplained death in another cohort of 37 patients followed for 5.8 years (range, 1–13 years).⁹ The less common etiologies of idiopathic VT, such as papillary muscle, moderator band, annular, and epicardial, have no reported long-term data, but have not been reported to be associated with malignant outcomes.

Although there are reports of uncommon malignant forms of idiopathic VT, such as short-coupled outflow tract premature ventricular complexes leading to polymorphic VT,¹⁰ there are clinical features that identify these exceptional patients who require more attention and more aggressive management. Such features include a short

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