

Predicting the Recurrence of Ventricular Tachyarrhythmias from T-Wave Alternans Assessed on Antiarrhythmic Pharmacotherapy: A Prospective Study in Patients with Dilated Cardiomyopathy

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Background: Microvolt T-wave alternans (TWA) has been proposed as a useful index to identify patients at risk of ventricular tachyarrhythmias. Recent studies have demonstrated that antiarrhythmic drugs, such as amiodarone and procainamide, decrease the prevalence of TWA. In this study, we tested whether TWA in patients on antiarrhythmic pharmacotherapy significantly predicts the recurrence of ventricular tachyarrhythmias in patients with dilated cardiomyopathy.

Methods: To evaluate the ability to predict the recurrence of ventricular tachyarrhythmias, determinate TWA and left ventricular ejection fraction (LVEF) were prospectively assessed in 49 patients with ischemic or nonischemic dilated cardiomyopathy on antiarrhythmic pharmacotherapy for sustained ventricular tachycardia (VT) or ventricular fibrillation (VF). The pharmacotherapy consisted of class I (17 patients), III (29 patients), and IV (3 patients) antiarrhythmic drugs. The study endpoint was the first recurrence of sustained VT or VF on treatment during the follow-up period.

Results: TWA was positive on antiarrhythmic pharmacotherapy in 30 patients (61%). During a follow-up of 13 ± 11 months, the sustained VT or VF recurred in 21 of the 41 patients (51%) with available follow-up data. The sensitivity of TWA and LVEF for predicting recurrence of ventricular tachyarrhythmias was 76 and 38%, specificity was 60 and 70%, positive predictive value was 67 and 57%, and negative predictive value was 71 and 52%. Kaplan-Meier event-free analysis revealed that TWA was a significant risk stratifier ($P = 0.02$), whereas LVEF was not.

Conclusions: This prospective study suggests that TWA significantly predicts the recurrence of ventricular tachyarrhythmias, even on antiarrhythmic pharmacotherapy, in patients with dilated cardiomyopathy. TWA may also be a useful marker for evaluating the efficacy of antiarrhythmic drugs for ventricular tachyarrhythmias. A.N.E. 2001;6(3):203-208

T-wave alternans; ejection fraction; ventricular tachyarrhythmia; antiarrhythmic drugs; dilated cardiomyopathy

The prevention of serious ventricular tachyarrhythmias responsible for sudden cardiac death

remains a therapeutic target in patients with dilated cardiomyopathy. Microvolt T-wave alternans

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