Microvolt T-Wave Alternans for Risk Stratification in Athletes with Ventricular Arrhythmias: Correlation with Programmed Ventricular Stimulation

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Background: Aim of our study is to evaluate the role of T-wave alternans (TWA) to stratify the risk of sudden cardiac death in athletes (Ath) with complex ventricular arrhythmias (VA), and to document a possible correlation between TWA and electrophysiological testing (EPS) results.

Methods: We studied 85 Ath with VA (61 M, mean age 32 ± 11 years). In all cases a cardiological evaluation was performed, including TWA and EPS. The patients were evaluated during a follow-up of 30 ± 21 months. The end point was the occurrence of sudden death (SD) or malignant ventricular tachyarrhythmias (VT).

Results:TWA was negative in 57 Ath (68%), positive in 15 (18%) and indeterminate in 13 (14%). All subjects with negative TWA did not show induction of VT at EPS, with significant correlation between negative TWA and negative EPS ($P < 0.001$). All Ath with positive TWA also had VT induced by a EPS, with significant correlation ($P < 0.001$). By contrast, our data did not show significant correlation between indeterminate TWA and positive or negative EPS. However, there was significant correlation between abnormal TWA test (positive + indeterminate) and inducibility of VT at EPS ($P < 0.001$). During follow-up we observed a significant difference in end point occurrence (VT or SD) between Ath with negative or abnormal TWA and between Ath with negative or positive EPS.

Conclusion: TWA confirm its role as a simple and noninvasive test, and it seems useful for prognostic stratification of Ath with VA.

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