The Clinical and Electrophysiological Characteristics of Nonsustained Repetitive Monomorphic Ventricular Tachycardia from the Left His-Purkinje system

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Introduction: Repetitive monomorphic ventricular tachycardia (RMVT) arising from the left His-Purkinje system can occasionally be encountered during clinical practice. We describe 7 such cases as a unique entity in this study to characterize their clinical and electrophysiological features.

Methods: Seven patients with frequent palpitation (5 men with a median age of 23 years; IQR, 12–50) were included in the study from January, 2003 to July, 2018. 12-lead ECG, Holter and Echocardiographic tests were performed after medical history interrogations and physical examinations. Antiarrhythmic drug therapy was essential to all patients and catheter ablation would be attempted if the patients could not tolerate or were not responsive to the drug therapy.

Result: No patients had the history of syncope and the family history of sudden cardiac death. ECG recording was characterized by frequent ventricular extrasystoles, ventricular couplets, and salvos of nonsustained VT competitive with sinus rhythm. The QRS morphology of ectopic beats was in the right bundle branch block pattern with severe left axis deviation. The width of QRS complex was 135ms (120–140) during ventricular tachycardia. Verapamil had no effect on VT except for one case with partial effectiveness. The enlargement of the left ventricle was found in 2 patients. Three out of 5 were successful with catheter ablation treatment.

Conclusion: RMVT arising from the left His-Purkinje system is a special arrhythmic entity and non-verapamil sensitive. Its electrophysiological mechanism looks to be focal firing and the electropharmacological study is further needed. Catheter ablation can be a treatment option in symptomatic and high burden patients.