Clinical Characteristics and Outcomes of Catheter Ablation for Ventricular Tachycardia in Cardiac Sarcoidosis: Significant Role of Aneurysm for Arrhythmogenic Substrate

Keita Mamiya  
Yasuya Inden  
Toshifumi Nakagomi  
Koichi Furui  
Shuro Riku  
Kazumasa Suga  
Hiroya Okamoto  
Toshiro Tomomatsu  
Aya Fujii  
Satoshi Yanagisawa  
Rei Shibata  
Toyoaki Murohara

Introduction: Ventricular tachycardia (VT) in patients with cardiac sarcoidosis is commonly observed. However, data of the catheter ablation for VT is limited. The purpose of this study was to evaluate the characteristics and outcomes of catheter ablation for VT in patients with cardiac sarcoidosis.

Methods: Eleven patients with a diagnosis of cardiac sarcoidosis based on the guidelines for Diagnosis and Treatment of Cardiac Sarcoidosis (The Japanese Circulation Society 2016) who underwent catheter ablation for VT were included. Endocardial radiofrequency ablation was initially performed in all patients (right ventricular in 3 patients, left ventricular in 8).

Result: All patients (mean age 60.8 ± 11.8 years) received antiarrhythmic drugs (mean 2.0 ± 1.1 drugs) before the ablation. The mean left ventricular ejection fraction was 34.8 ± 14.6%. Eight patients (73%) had an aneurysm detected with the echocardiography or left/right ventriculography; and 6 patients showed an extended low-voltage area (LVA) within the aneurysm. In the 5 patients who underwent enhanced cardiac magnetic resonance imaging, delayed enhancement in aneurysm was observed in each patient. The mean 2.7 ± 2.5 VTs (mean cycle length 408 ± 81ms) were induced during the electrophysiologic study. The scar-related VT within the aneurysm was identified in all patients with aneurysm and LVA. The VT-free survival rate after the first procedure was 45% at the 6-month follow-up. Four patients underwent a second procedure, and 3 of 4 patients had no-VT recurrence. One patient required a third ablation by epicardial approach.

Conclusion: Management of VT in patients with cardiac sarcoidosis was difficult, although catheter ablation was effective in some patients. The presence of the aneurysm can be a potential arrhythmogenic substrate for VT occurrence in cardiac sarcoidosis.