Clinical and Electrophysiological Characteristics of Radiofrequency Catheter Ablation in Patients with Clinically Significant Sinus Node Dysfunction and Atrial Fibrillation

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Backgrounds: We evaluated the electrophysiological characteristics and clinical outcomes of atrial fibrillation (AF) with sinus node dysfunction (SND) after radiofrequency catheter ablation (RFCA). Methods: Among 428 patients (male, 77.3%; 56.0±11.0 years old; paroxysmal AF, 69.4%) who underwent RFCA for AF, 50 patients (11.7%) who had ECG documented symptomatic SND (28 Tachybrady (T-Bs) and 22 sick sinus syndrome; SSS) were compared with 378 patients without SND.

Results: 1. The patients with SND were older (60.3±16.1 vs. 55.4±11.1 years, p=0.003) and had higher E/E’ (12.4±6.1 vs. 9.9±6.1, p=0.002) than those without SND. 2. Effective refractory period (ERP) at high right atrium (RA) was longer (ERP; 244.1±26.1 vs. 232.2±28.2 ms, p=0.033) and endocardial voltage at posterior left atrium (LA) was higher (1.2±0.8 vs. 0.9±0.8 mV, p=0.041) in patients with SND than those without it. 3. The recurrence rate was not different significantly between groups (28.0% vs. 20.0%, p=0.623) during 12.7±5.9 months. A patient with SSS (4.5%) and a patient with T-Bs (3.6%) were implanted pacemaker because of recurrent symptomatic bradycardia after RFCA. Conclusion: AF is associated with SND more often in patients with old age, diastolic dysfunction, and high RA ERP. RFCA results in comparable clinical outcome in those patients, but 4% of them required pacemaker implantation due to AF recurrence and symptomatic bradycardia.

Keywords: atrial fibrillation, ablation, sinus node dysfunction