Prolongation of Mitral Isthmus Conduction after Cryoballoon Pulmonary Vein Ablation

Kenichi Tokutake
Michifumi Tokuda
Hidenori Sato
Eri Okajima
Hirotugu Ikewaki
Hirotsuna Oseto
Masaaki Yokoyama
Ryota Isogai
Kenichi Yokoyama
Mika Kato
Shinichi Tanigawa
Seigo Yamashita
Seiichiro Matsuo
Satoru Miyanaga
Kenichi Sugimoto
Michihiro Yoshimura
Teiichi Yamane

Introduction: Cryoballoon ablation is an effective therapy to isolate pulmonary vein (PV). During cryoballoon PV ablation, its influence on structures other than PV remains to be determined. We evaluated the impact on mitral isthmus (MI) conduction after Cryoballoon PV ablation.

Methods: Cryoballoon ablation was performed in 102 patients with atrial fibrillation. Multipolar electrode catheter was positioned in the coronary sinus (CS). Pacing from distal CS, activation of CS was assessed before and after PV isolation. The length of MI was measured on 3D-computed tomography.

Result: The conduction time from distal CS to proximal CS was prolonged after cryoballoon PV ablation compared with baseline (47.7±11.3 vs 52.5±13.8ms, p<0.001). Conduction block and delay (>10ms) were observed in 3(2.9%) and 9(8.8%) patients, respectively (Figure). The length of MI was shorter in patients with conduction block or delay than those without (23.8±3.0 vs 30.0±7.5mm, P=0.01). Atrial tachycardia after the procedure did not occurred in patients with conduction block or delay.

Conclusion: Cryoballoon left PV ablation can affect the conduction of MI.