Impact of Balloon-based Atrial Fibrillation Ablation on Cardiac Autonomic Nerve Activity: a Comparison between Cryoballoon and HotBalloon Ablation

Takehito Sasaki
Kohki Nakamura
Wataru Sasaki
Yoshinori Okazaki
Shingo Yoshimura
Shohei Kishi
Inoue Mitsuhiro
Hiroyuki Motoda
Katsura Nijima
Kentaro Minami
Koji Goto
Yuko Miki
Yutaka Take
Shigeto Naito

Introduction: We aimed to evaluate the impact of cryoballoon and HotBalloon ablation (CBA/HBA) on cardiac autonomic nerve activity (CANS) in patients with paroxysmal atrial fibrillation (PAF).

Methods: This study prospectively enrolled 34 patients undergoing balloon-based pulmonary vein isolation (PVI) (CBA, 10; HBA, 24). All patients underwent a 24-hour Holter monitoring before and 1 month after the ablation to analyze the heart rate (HR) variability (HRV).

Result: A PVI was successfully performed in all patients. The mean HR significantly increased, and low frequency components (LF), high frequency components (HF), and root mean square of successive NN interval differences (RMSDD) significantly decreased after the ablation in both the CBA and HBA groups. These parameters did not significantly differ between the two groups both before and after the ablation. In 29 patients with a follow-up period of >3 months, 28 patients (96.5%) maintained sinus rhythm.

Conclusion: Both the CBA and HBA patients revealed a similar degree of change in the CANS, and similar clinical outcomes after the ablation.