The Impact of Dissociated Pulmonary Vein Activity Following Pulmonary Vein Isolation in Patients with Non-Paroxysmal Atrial Fibrillation

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Introduction: Dissociated pulmonary vein activity (DPVA) is observed in the isolated PV in some patients. Although the focal ablation targeting DPVA could be performed, the endpoint of ablation of PV was commonly defined as electrical PV isolation (PVI) from left atrium (LA). We evaluated electrophysiological features and clinical impacts on long-term outcome of DPVA in non-PAF patients.

Methods: The present study was consisted of 111 non-PAF patients who underwent segmental PVI. PVs were isolated from left atrium with use of a circular mapping catheter during sinus rhythm. In patients presenting AF at the beginning of procedure, substrate modification ablation consisted of linear ablation or electrogram-based ablation was added to PVI following restoration of sinus rhythm by direct current cardioversion.

Result: Of 111 patients, DPVA was observed in 43 patients. There was no significant difference in clinical characteristics between patients with and without DPVA. No ablation strategies including mitral isthmus linear ablation, cavotricuspid isthmus ablation, coronary sinus ablation and non-PV trigger ablation but roof line were associated with incidence of DPVA. Roof line ablation was more frequently performed in patients with DPVA than those without (29.4% vs. 9.3%, p=0.01). During follow-up (mean 12±1 months), survival free rate from arrhythmia recurrence was significantly lower in patients demonstrating DPVA compared to those without DPVA (44.2% vs. 61.8%, p<0.05). In multivariate analysis, DPVA was the independent predictor for recurrence of AF (HR 2.56, 95% CI 1.11-5.89, p=0.03).

Conclusion: The presence of DPVA was associated with linear ablation between superior PVs and independently predicted AF recurrence following catheter ablation in non-PAF patients.