Clinical Impact of Acute Termination as an Endpoint for Induced Tachyarrhythmia after Pulmonary Vein Isolation in Paroxysmal Atrial Fibrillation

Introduction: The effect of additional substrate modification for inducible atrial arrhythmia after pulmonary vein isolation (PVI) during radiofrequency catheter ablation (RFCA) of paroxysmal atrial fibrillation (PAF) in reducing the incidence of recurrent atrial arrhythmia is controversial. We sought to assess the impact of procedural termination of inducible atrial arrhythmia after PVI in comparison with PVI alone and failed termination of inducible atrial arrhythmia after PVI.

Methods: Among patients who underwent RFCA for PAF, we enrolled 149 patients who were in sinus rhythm after PVI (PVI alone), 169 patients who achieved termination of inducible atrial arrhythmia after pulmonary-vein isolation (TIAA), and 27 patients who failed to terminate inducible atrial arrhythmia after PVI (non-TIAA). The incidence of recurrent atrial arrhythmia were compared between the three groups. The primary end point was 3-year atrial arrhythmia freedom after a single ablation procedure. The secondary endpoints were all-cause death and stroke.

Result: After 3 years, 74.9% of patients in PVI alone group were free from recurrent atrial arrhythmia, as compared with 66.8% of patients in TIAA and 71.4% of patients in Non-TIAA group (log rank, P=0.51). There were also no significant differences among the three groups for the secondary end points. Procedure time was significantly longer in non-TIAA group than in the other two groups (P=0.028) and fluoroscopy time was shortest in the patients with PVI alone (P=0.013).

Conclusion: Acute termination of induced atrial arrhythmia after PVI of PAF would not provide an additional benefit of reducing recurrence compared to PVI alone or failed termination of inducible atrial tachyarrhythmia after PVI. Therefore, the termination of inducible atrial tachyarrhythmia may not be a reliable strategy for the endpoint during substrate modification after PVI in the patients with PAF.