Ablation Index-guided catheter ablation for paroxysmal atrial fibrillation could improve the durability of pulmonary vein isolation.

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Introduction: Pulmonary vein isolation (PVI) has established the standard strategy for paroxysmal atrial fibrillation (PAF), and the reconnection of LA-PV conduction is also considered its primary mechanism of recurrence of PAF after ablation. We investigated whether PVI using Contact Force and Ablation Index (AI) could improve the durability of pulmonary vein isolation and resulted to better long term AF free rate.

Methods: Consecutive 339 patients with PAF (64.9 ± 12.7 years old, male 220 patients) who underwent initial radiofrequency catheter ablation at our institute from April 2016 to March 2018 were analyzed. 232 patients were performed PVI using contact force guided ablation [AI (-) group] and 107 patients using contact force sensing and AI guided additionally [AI (+) group] were compared with the mechanism of AF recurrence were analyzed on the 2nd ablation session retrospectively.

Result: The recurrence rate of all atrial tachy-arrhythmias at a mean follow-up period of 12.3 months after initial ablation without blanking period 3months after ablation session are 14.2% (n=33) in AI (-) group vs. 9.3% (n=10) in AI (+) group, which was a significant decrease in AI (+) group (P <0.05). In the evaluation at the 2nd session regarding to the estimated recurrence mechanism of AF, the durable rate of both pulmonary vein isolation was significantly higher in AI (+) group than that of AI (-) group [50% (4/8) vs. 28.6% (6/21)]. In AI (+) group during 2nd session, AF was induced originating from non-pulmonary vein focus in 3 patients (37.5%) and radiofrequency application targeting the focus was performed.

Conclusion: Ablation Index guided PVI ablation using contact force sensing could improve the chronic durability of pulmonary vein isolation, and non-pulmonary vein foci has become more important as a major mechanism of AF recurrence after initial PVI.