The outcome of ablation for non-paroxysmal atrial fibrillation targeting spatiotemporal electrogram dispersion compared with ganglionated plexi ablation

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Background: Although catheter ablation targeting ganglionated plexi (GP) playing an important role in formation of triggers and substrates of atrial fibrillation (AF) has been reported as one of the effective ablation strategies in non-paroxysmal AF (non-PAF) patients, its effectiveness varies among the study groups. More recently, ablation targeting spatiotemporal electrogram dispersion (STED) areas, assumed to contain AF drivers in forms of rotational activation is proposed. However, the optimal ablation strategy for non-PAF is still controversial since the exact mechanisms of non-PAF are not well understood.

Purpose: To investigate the effectiveness of GP ablation for autonomic modification and STED ablation for modulation of AF drivers.

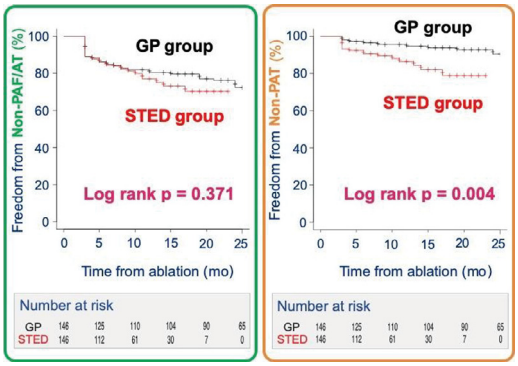
Methods: Consecutive 149 non-PAF patients who underwent STED ablation in our center were enrolled. We detected STED areas within the whole left and right atrium during AF using PentaRay®, and ablated them. If AF was terminated during STED ablation, we finished the procedure without burning the remaining STED areas. If not, electrical cardioversion was applied. The outcome was compared with that in consecutive 156 non-PAF patients undergoing GP ablation previously in our center.

Results: (1) The clinical characteristics were comparable between two groups (see Table). (2) A Kaplan-Meier curve showed that there was no significant difference between the freedom rates from non-PAF/non-paroxysmal atrial tachycardia (non-PAT) after single procedure in STED group and GP group (Figure, left). (3) However, the freedom rates from non-PAT in STED group was significantly lower than that GP group (Figure, right).

Conclusions: The recurrence type of atrial arrhythmia after ablation was remarkably different between ablation of STED and GP. STED ablation might eliminate fibrillatory conduction and control AF driver in patients with non-PAF.

Patient characteristics

	STED group (N=149)	GP group (N=156)	p value
Age, mean ± S.D., Y	66±10	67±10	0.322
Male, n (%)	107 (72)	114 (73)	0.898
Long-standing persistent atrial fibrillation, n (%)	69 (46)	73 (47)	1
Echocardiographic parameters			
Left ventricle ejection fraction, mean ± S.D., %	56.5±9.2	57.4±10	0.404
Left atrial diameter, mean ± S.D., mm	43.6±5.4	43.8±5.5	0.704
Computerized tomography parameter			
Left atrial volume, mean ± S.D., mL	176±44	171±37	0.217
Previous session, n (%)	21 (14)	17 (11)	0.488



Freedom from atrial arrhythmia

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