The Additional Effect of Inferior Ganglionated Plexi Ablation on Pulmonary Vein Isolation in Patient with Non-Paroxysmal Atrial Fibrillation

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Introduction: Pulmonary vein isolation (PVI) has been used as the cornerstone strategy of atrial fibrillation (AF) therapy. However, PVI alone cannot cure all patients with AF. Although the adjunctive therapy (e.g., complex fractionated atrial electrogram ablation [CFAE] or linear ablation) was conducted to the patient with non-paroxysmal AF (non-PAF) in addition to the PVI, that additional effect has been reported to be little. On the other hand, the ganglionated plexi (GP) ablation was well known as another adjunctive therapy, but the additional effect on PVI was not still elucidated. The purpose of this study is to investigate the additional effect of the inferior GP ablation for non-PAF.

Methods: Ninety-one consecutive patients with non-PAF who were conducted radiofrequency catheter ablation from September 2017 to March 2019 were retrospectively enrolled. The patient with conducting PV isolation using a contact force or an ablation index of CARTO system were included in this study. Conversely, the patients with conducting PV isolation using EnSite NavX system or RHYTHMIA system were excluded. Moreover, the patients with prior cardiac surgery, 2nd session or empirically conducting any linear ablation or CFAE ablation were also excluded. Our strategy against non-PAF is ablating the GP positive site in addition to PVI plus non-PV foci ablation. Our PVI line was designed to include the marshall tract GP, superior left GP and anterior right GP. For that reason, in our strategy against non-PAF, we searched for the inferior GP (inferior left GP and inferior right GP [inf GP]) by 50 Hz high frequency stimulation and ablated the site where the GP response was positive in addition to PVI and non-PV foci ablation. However, if the durable lesion of PVI was not completed, we conducted internal cardioversion for easily detecting the ablation gap and completed PVI during sinus rhythm. Although we tried to induce AF, if AF not induced, we performed PVI and non-PV foci alone. We divided the non-PAF into three groups (PVI and non-PV foci ablation for non-PAF, PVI and non-PV foci ablation plus inf GP ablation for persistent AF [Per AF] and PVI and non-PV foci ablation plus inf GP ablation for long standing persistent AF [LSAF]) and evaluated the additional effect of inferior GP ablation.

Result: Sixty-eight patients were male, mean age were 64.8±11.6 year old. 50 patients were PerAF and 41 patients were LSAF. 41 patients were PVI + inf GP for Per AF, 37 patients were PVI + inf GP for LSAF, and 13 patients were PVI alone. Although there was not significant difference in three groups for survival rate (Figure), The effect of inf GP was high for PerAF.

Conclusion: The PVI and non-PV foci ablation in addition to inf GP ablation was 97.6% at high event free rate. The inf GP ablation might be effective for Per AF but might not be effective for LSAF.