BOX isolation versus extensive encircling pulmonary vein isolation in atrial fibrillation ablation

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Introduction: Extensive encircling pulmonary vein isolation (EEPVi) is a gold standard therapy in atrial fibrillation (AF) ablation. Additional ablation (linear ablation, CFAE ablation, low voltage ablation, rotor ablation, and so on) remains controversial, but it is reported that BOX isolation (BOXi; left atrium posterior wall isolation) is effective especially in the cases of persistent AF in several papers.

Methods: Consecutive 200 AF patients who underwent initial radiofrequency catheter ablation from November 2016 to January 2019 in our hospital were retrospectively analyzed. In 121 paroxysmal AF (PAF) patients, BOXi was performed in 36 patients (30.0%). In 79 non PAF patients, BOXi was performed in 71 patients (89.9%). Sinus rhythm maintenance rate (AF free rate) at two years after ablation with the blanking period of 90 days was compared in BOXi group and EEPVi group.

Result: In PAF patients, there was no statistically significant difference in sinus rhythm maintenance rate between BOXi group and EEPVi group (86.5%, 76.1%, respectively, Log-rank p = 0.44, figure left). However, in non PAF patients, sinus rhythm maintenance rate in BOXi group was significantly higher than in EEPVi group (59.0%, 33.3%, respectively, Log-rank p = 0.029, figure right).

Conclusion: In non PAF patients, BOX isolation could be a good strategy in 1st session of AF ablation.