Ablation index guide pulmonary vein isolation can reduce early recurrence of atrial fibrillation: a propensity score-matched analysis

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Background: Ablation index (AI) is a novel marker of ablation lesion quality for radiofrequency ablation (RFA). It has been reported that AI guided pulmonary vein isolation (PVI) reduced pulmonary vein reconnection and late recurrence of atrial fibrillation (AF). However, little is known about the impact of AI guided PVI on early recurrence of AF (ERAF).

Purpose: The aim of this study is to clarify whether AI guided PVI can reduce ERAF.

Methods: From September 2014 to August 2019, consecutive AF patients who underwent 1st session PVI were enrolled. We compared prevalence of ERAF between AI guided PVI group (AI group) and conventional contact force guided PVI group (CF group) using propensity score-matched analysis, which adjusted patient backgrounds (age, sex, and body mass index (BMI)), type of AF, the history of heart failure, hypertension, diabetes and stroke, laboratory findings including estimated glomerular filtration rate (eGFR) and b-type natriuretic peptide (BNP), and echocardiographic parameters including left ventricular ejection fraction (LVEF) and left atrial diameter.

Results: Total 711 patients were enrolled. AI group comprised 233 patients and CF group comprised 233 patients. Prevalence of ERAF were significantly lower in AI group than in CF group significantly (21.5% vs 36.1%, p=0.001, Table).

Conclusions: AI guided PVI can reduce ERAF as compared to conventional method.

	AI group (n=233)	CF group (n=233)	p value
Age	68.2±10.8	68.8±8.7	0.562
Sex male	154 (66.1%)	149 (63.9%)	0.698
BMI	24.4±3.9	24.5±3.7	0.848
Paroxysmal AF	109 (46.8%)	105 (45.1%)	0.780
Heart failure	40 (17.2%)	40 (17.2%)	1.000
Hypertension	143 (61.4%)	145 (62.2%)	0.924
Diabetes	41 (17.6%)	44 (18.9%)	0.810
Stroke	17 (7.3%)	17 (7.3%)	1.000
eGFR (ml/min/1.73mm^2)	66.4±18.2	64.7±18.1	0.328
BNP (pg/ml)	160.1±145.7	177.1±181.3	0.264
LVEF (%)	65.1±11.2	65.3±9.2	0.824
Left atrial diameter (mm)	45.2±6.3	45.2±6.1	0.994
ERAF	50 (21.5%)	84 (36.1%)	0.001