Sex differences in the predictors of recurrent atrial fibrillation after catheter ablation: insights from the Kansai Plus Atrial Fibrillation (KPAF) registry

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Background: The impact of sex differences on the clinical outcomes of radiofrequency catheter ablation (RFCA) of atrial fibrillation (AF) is controversial. We previously reported that females experienced more frequent AF recurrences than males after the index and last RFCA procedures.

Purpose: To identify the risk factors associated with recurrent AF in females and males after RFCA of AF.

Methods: We conducted a large-scale, prospective, multicenter, observational study (Kansai Plus Atrial Fibrillation Registry). We enrolled 5010 consecutive patients who underwent an initial RFCA of AF at 26 centers (64±10 years; 1369 [27.3%] females; non-paroxysmal AF, 35.7%). The median follow-up duration was 2.9 years.

Results: The incidence of AF recurrences after a single procedure was 43.3% in females and 39.0% in males. After a multivariate adjustment at baseline, the significant predictors of AF recurrence in females after the index RFCA were non-paroxysmal AF (hazard ration [HR],1.59; 95% confidence interval [CI],1.31–1.93, $p<0.0001$), a history of AF $\geq$2 years (HR,1.47; 95% CI,1.24–1.74, $p<0.0001$), coronary artery disease (HR,1.43; 95% CI,1.03–1.98, p=0.0035), and an estimated glomerular filtration rate (eGFR)$<$60 mL/min/1.73m^2 (HR,1.46; 95% CI,1.10–1.95, p=0.0086). On the other hand, significant predictors of AF recurrence in males after the index RFCA were non-paroxysmal AF (HR,1.54; 95% CI,1.37–1.73, $p<0.0001$), a history of AF $\geq$2 years (HR,1.40; 95% CI,1.26–1.56, $p<0.0001$), the number of antiarrhythmic drugs (HR,1.06; 95% CI,1.003–1.13, p=0.040), a left atrial diameter$\geq$40mm (HR,1.13; 95% CI,1.007–1.27, p=0.038), and dilated cardiomyopathy (HR,1.55; 95% CI,1.07–2.26, p=0.021), however, an eGFR$<$60 mL/min/1.73m^2 was not associated with AF recurrence in males (HR, 1.00; 95% CI, 0.88–1.13, p=0.97).

Conclusion: The Kansai Plus Atrial Fibrillation Registry revealed a distinct sex difference in terms of the predictors of recurrent AF after RFCA. Non-Paroxysmal AF and a long history of AF were common risk factors both in females and males. However, renal dysfunction was a significant predictor of AF recurrence in females, while it was not a risk of recurrence in males.