Clinical and Echocardiographic Risk Factors Predict Late Recurrence after Radiofrequency Catheter Ablation of Atrial Fibrillation

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Introduction: The benefits of radiofrequency catheter ablation (RFCA) for patients with atrial fibrillation (AF) significantly decrease with late recurrence (LR). We aimed to develop a scoring system to identify patients at high and low risk for LR following RFCA, based on a comprehensive evaluation of multiple risk factors for AF recurrence, including echocardiographic parameters.

Methods: We studied 2,352 patients with AF undergoing first-time RFCA in a single institution. The LR-free survival rate up to 5 years was measured using a Kaplan-Meier analysis. The influence of clinical and echocardiographic parameters on LR was calculated with a Cox-regression analysis.

Result: Duration of AF≥4 years (hazard ratio [HR]=1.75; \(p<0.001\)), non-paroxysmal AF (HR=3.18; \(p<0.001\)), and diabetes (HR=1.34; \(p=0.015\)) were associated with increased risk of LR. Left atrial (LA) diameter≥45 mm (HR=2.42; \(p<0.001\)), E/e’≥10 (HR=1.44; \(p<0.001\)), dense SEC (HR=3.30; \(p<0.001\)), and decreased LA appendage flow velocity (≤40 cm/sec) (HR=2.35; \(p<0.001\)) were echocardiographic parameters associated with increased risk of LR following RFCA. The LR score based on the aforementioned risk factors could be used to predict LR (area under curve=0.717) and to stratify the risk of LR (HR=1.45 per 1 point increase in the score; \(p<0.001\)).

Conclusion: In conclusion, LR after RFCA is affected by multiple clinical and echocardiographic parameters. This study suggests that combining these multiple risk factors enables the identification of patients with AF at high or low risk for having arrhythmia recurrence.