Prediction models for AF recurrence after catheter ablation using serologic markers and imaging parameters

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Introduction: Atrial fibrosis can be an arrhythmogenic substrate which limits the efficacy of catheter ablation for atrial fibrillation (AF). Using the serologic and imaging tests which have been known to be associated with cardiac fibrosis, we aimed to develop the predictive models for recurrence.

Methods: A total of 75 patients were prospectively included for single AF catheter ablation (53.3% paroxysmal AF). We examined echocardiography, cardiac MR for late gadolinium enhancement, and blood samples for galectin-3, NT-pro BNP, von Willebrand factors (vWF:Ag), and d-dimer. Predictive models were built using multivariate logistic modeling.

Result: During a median follow-up period of 13.6 months after AF ablation, there were 20 recurrences. Non-paroxysmal AF and serum galectin-3 were predictors of recurrence [HR (95% CI), 3.0 (1.2–7.9) and 1.4 (1.1–1.7), respectively]. Final model built with AF type, age, LAA flow velocity, galectin-3, and vWF:Ag showed c-statistics of 0.82 for prediction of recurrence. Compared with model lacking serologic markers, the final model showed better performance in the net reclassification improvement and integrated discrimination improvement.

Conclusion: Adding serologic markers to the predictive model would help selecting AF patient with lower risk of recurrence following catheter ablation.