Validation of risk scoring system predicting for progression of atrial fibrillation: the Fushimi AF Registry

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Background: Atrial fibrillation (AF) increases the risks of thromboembolism and death. Progression from paroxysmal to sustained types (persistent or permanent) of AF is sometimes seen in clinical practice. We recently reported that progression of AF was associated with increased risk of clinical adverse events in Japanese AF patients. However, risk stratification schemes of predicting the progression of AF has not been fully established.

Methods: The Fushimi AF Registry, a community-based prospective survey, was designed to enroll all of the AF patients in Fushimi-ku, Kyoto, which is a typical urban district of Japan with a population of 283,000. Follow-up data were available for 4,454 patients. We investigated the risk factors of AF progression and validated the performance of various risk scoring systems predicting for progression of AF, such as APPLE, BASE-AF2, HATCH, and MB-LATER score, using data from 995 paroxysmal AF patients (mean age: 72.6±11.4 years, female: 42.2%, mean CHA2DS2-VASc score; 3.26±1.67) whose echocardiogram data were obtained at baseline.

Results: Of 995 AF patients, during the median follow-up of 1,477 days, progression from paroxysmal to sustained AF occurred in 160 patients (16.1%; 4.0 per 100 person-years). On a multivariate model, we indicated that history of AF =2 years (odds ratio [OR] 1.83; 95% confidence interval [CI] 1.28-2.61), left atrial diameter =40 mm (OR 1.45; 95%CI 1.02-2.08), daily drinker (OR 1.56; 95%CI 1.24-2.81), and cardiomyopathy (OR 2.58; 95%CI 1.17-5.69) were significantly associated with higher incidence of AF progression. Our model had better predictive potential for AF progression (area under curve [AUC] 0.612; 95%CI 0.566-0.658) than the APPLE (AUC 0.553; 95%CI 0.508-0.598; p=0.06), BASE-AF2 (AUC 0.571; 95%CI 0.526-0.617; p=0.04), CHADS2 (AUC 0.508; 95%CI 0.462-0.554; p<0.01), CHA2DS2-VASc (AUC 0.501; 95%CI 0.453-0.548; p<0.01), HATCH (AUC 0.502; 95%CI 0.456-0.548; p<0.01), and MB-LATER (AUC 0.528; 95%CI 0.483-0.572; p<0.01) score.

Conclusion: We identified 4 risk factors which may be useful to predict for progression of AF in Japanese patients. External validation of our model in other cohorts is needed.