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Comparison of ischemic stroke risk in atrial fibrillation patients with or without myocardial infarction
a propensity score matched study

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Background:
Stroke risk in atrial fibrillation (AF) is commonly associated with myocardial infarction (MI). The risk of stroke in AF correlates well with the CHA2DS2-VASc score but still have some heterogeneous aspect.

Objective:
We investigated whether the presence of prior MI increases stroke risk in AF patients with similar risk degree.

Methods:
This study included consecutive 5,585 patients who was diagnosed with AF in a tertiary hospital from 2007 to 2017. Patients were divided into two groups according to presence of MI (group 1, AF patients with MI, n=308; group 2: AF patients without MI, n=5,277). Propensity score matching to adjust relevant risk factors including age, sex, and CHA2DS2-VASc score was performed to account for the difference between the two groups (Standardized Difference of all variables<0.005).

Results:
In the initial study population (mean 66±13 years old, 41.1% female, mean 77 ± 42 follow-up months), after 1:5 propensity matching for age, sex and CHA2DS2-VASc score, the mean CHA2DS2-VASc score for each group was not significantly different (2.4±1.5 vs. 2.4±1.5, p=0.446). The proportion of heart failure (p=0.762), hypertension (p=0.077) and vascular disease (p=0.367) were similar between the two groups. However, group 1 had higher proportion of diabetes mellitus than group 2 (27.3% vs. 17.8%, p=0.002). In the matched groups, group 1 showed a significant increased incidence of ischemic stroke than group 2 (41.6% vs. 23.8%, p=0.001). The proportion of oral anticoagulation (p=0.162) and antiplatelet agent treatment (p=0.453) showed no significant difference between the groups. Cox-regression using a relevant risk factors revealed that MI (HR 2.39, 95% CI 1.11-5.15, p=0.026) was significantly associated with ischemic stroke.

Conclusions:
In real-world, the history of MI had association with increased stroke rates in AF patients even after adjustments of other risk factors. Much more concern of prior MI event may help to reduce the stroke risk in AF patients.
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