

Plasma natriuretic peptide level is an independent determinant of major clinical outcomes in atrial fibrillation patients without heart failure: the Fushimi AF Registry

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Background: Atrial fibrillation (AF) increases the risk of death, stroke/systemic embolism and heart failure (HF). Plasma natriuretic peptide (NP) level is an important prognostic marker in HF patients. However, little is known regarding the prognostic significance of plasma NP level in AF patients without HF.

Purpose: The aim of this study is to investigate the relationship between plasma NP level and clinical outcomes such as all-cause death, stroke/systemic embolism and HF hospitalization during follow-up period in AF patients without HF.

Methods: The Fushimi AF Registry is a community-based prospective survey of AF patients in our city. The inclusion criterion of the registry is the documentation of AF at 12-lead electrocardiogram or Holter monitoring at any time, and there are no exclusion criteria. We started to enroll patients from March 2011, and follow-up data were available for 4,466 patients by the end of November 2019. From the registry, we excluded 1,220 patients without a pre-existing HF (defined as having one of the following; prior hospitalization for HF, New York Heart Association class ≥ 2 , or left ventricular ejection fraction $< 40\%$). Among 3,246 AF patients without HF, we investigated 1,189 patients with the data of plasma BNP (n=401) or N-terminal pro-BNP (n=788) level at the enrollment. We divided the patients according to the quartile of each plasma BNP or NT-pro BNP level and compared the backgrounds and outcomes between these 4 groups stratified by plasma NP level.

Results: Of 1,189 patients, the mean age was 72.1 ± 10.2 years, 454 (38%) were female and 684 (58%) were paroxysmal AF. The mean CHADS2 and CHA2DS2-VASc score were 1.6 ± 1.1 and 2.9 ± 1.5 , respectively. Oral anticoagulants were prescribed in 671 (56%) at baseline. The median (interquartile range) BNP and N-terminal pro-BNP level were 84 (38, 176) and 500 (155, 984) pg/ml, respectively. Patients with high plasma NP level were older, and demonstrated lower prevalence of paroxysmal AF, higher CHADS2 and CHA2DS2-VASc scores and higher prevalence of chronic kidney disease and oral anticoagulants prescription (all $P < 0.01$). A total of 165 all-cause death, 114 stroke/systemic embolism and 103 HF hospitalization occurred during the median follow-up period of 5.0 years. Kaplan-Meier curves demonstrated that higher plasma NP level was significantly associated with the incidences of all-cause death, stroke/systemic embolism and HF hospitalization in AF patients without HF (Figure 1A). Multivariable Cox regression analysis revealed that plasma NP level could stratify the risk of clinical outcomes even after adjustment by type of AF, CHA2DS2-VASc score, chronic kidney disease and oral anticoagulant prescription (Figure 1B).

Conclusion: Plasma NP level is a significant prognostic marker for all-cause death, stroke/systemic embolism and HF hospitalization in AF patients without HF, suggesting the importance of measuring plasma NP level in AF patients even without HF.

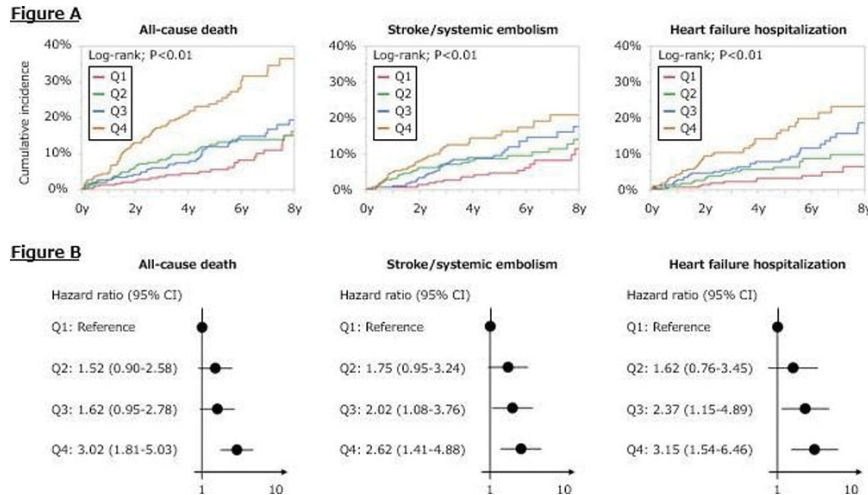


Figure 1