

## **Association between malignant middle cerebral artery infarction and brain natriuretic peptide levels in stroke patients with atrial fibrillation**

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**Background and objective:** Ischemic stroke with atrial fibrillation (AF) leads to large infarction and severe neurological deficits. However, clinical characteristics associated with malignant middle cerebral artery infarction (MMI) in acute stroke patients with AF have not been previously reported. This study was aimed to elucidate the factors correlated with MMI in stroke with AF. **Methods:** Consecutive patients with acute ischemic stroke and AF who underwent magnetic resonance image within 24 hour from onset were retrospectively enrolled. Patients with posterior circulation stroke were excluded. All patients were divided into MMI and non-MMI groups using MMI definition of a National Institutes of Health Stroke Scale score 15 and infarct volume 82 cm<sup>3</sup> on initial diffusion-weighted imaging or ischemic signs 50% of the MCA territory on follow-up brain computed tomography. Multivariate regression analysis was used to identify factors associated with MMI. **Results:** A total of 142 patients were included and MMI was found in 31% of the patients. In univariate analysis, patients with MMI were older and had higher D-dimer and brain natriuretic peptide level. On multiple logistic regression analysis, earlier onset-to-image time (OR 0.85, 95% confidence interval [CI] 0.73-0.98, P=0.025 for 1 hour) and higher brain natriuretic peptide level (OR 1.22, 95% CI 1.07-1.39, P=0.003 for every 100 pg/mL) were independently associated with MMI after adjustment for potential confounders or mediators. **Conclusions:** Plasma brain natriuretic peptide level and onset-to-image time are independently associated with MMI among patients with stroke and AF.