

Massachusetts Neurologic Association

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CALL FOR ABSTRACTS

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The Poster Presentation Session at the MNA Spring Meeting aspires to allow residents and fellows in training to present their research or interesting cases in a poster session. Please follow the following abstract guidelines:

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Title: Atrial Fibrillation is Associated with a Distinct White Matter Hyperintensity Lesion Pattern on MRI in Patients Presenting with Embolic stroke

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Abstract:

Background: Among patients with a cardioembolic stroke, atrial fibrillation (AF) is a common comorbidity that is associated with a worse outcome. Mounting data indicates that AF may relate to stroke pathogenesis through mechanisms other than cerebral thromboembolic complications. This view is supported by observations that AF patients have an increased risk for cerebral small vessel disease related lesions such as greater white matter hyperintensity (WMH) lesion burden. Subcortical WMH spots as well as larger patches are commonly observed in clinical and research MRI but the significance of these different patterns is not known. We sought to identify different WMH patterns between patients with AF vs. non-AF related embolic ischemic strokes.

Methods: We retrospectively analyzed consecutive patients with acute anterior circulation embolic ischemic stroke included in an academic medical center's stroke registry. The stroke etiology was determined using the Causative Classification System of ischemic stroke. WMH lesion burden was assessed according to the Fazekas scale. An independent blinded examiner classified the different WMH-patterns, which included 5 categories: periventricular, subcortical

spots, posterior subcortical patches, anterior subcortical patches, and coalescent. Their association with AF was investigated using multivariable logistic regression (with backward elimination).

Results: Overall, 174 patients (94 with and 80 without AF) were included. In unadjusted analyses, patients with AF had a significantly higher rate of anterior subcortical patches ($p=0.018$) and a lower rate of a periventricular pattern ($p=0.022$). After adjusting for WMH lesion burden, presence of multiple infarcts, infarct volume, the CHA₂DS₂-VASc score as well as pertinent two-way and three-way interactions the presence of anterior subcortical patches (OR 2.80, 95%-CI 1.164-6.76, $p=0.022$) and a higher CHA₂DS₂-VASc score (per point, OR 1.29, 95%-CI 1.08-1.53, $p=0.004$) were independently associated with AF.

Conclusions: We found that AF is associated with specific WMH lesion patterns on MRI. The clinical significance of this observation remains to be clarified; yet it suggests that the well-established link between stroke and AF extends beyond thromboembolism and may reflect an underlying cardiovascular pathology that can be characterized by WMH. If confirmed in future studies further investigation into the underlying pathophysiological mechanisms may provide novel avenues to AF detection and treatment.