

## **WHITE MATTER DIFFUSION PARAMETERS IN MIGRAINE WITH AURA: EVIDENCE FOR DEGENERATIVE AND PLASTIC PROCESS**

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**Objective:** Formerly we showed disintegration of white matter in a mixed group of migraine patients with or without aura (Szabo et al 2010). Here we aimed to explore white matter alterations in a homogeneous group of patients with migraine with aura and to delineate possible relationships between white matter changes and clinical variables.

**Methods:** Nineteen patients with aura (MwA), thirty-five migraine patients without aura (MwoA) and forty-one controls were scanned on a 1.5T MRI scanner. Diffusivity parameters of the white matter were estimated and compared between patients' groups and controls using a whole-brain tract based spatial statistics. Correlation analysis was conducted between diffusivity parameters from the altered regions and clinical variables.

**Results:** In white matter, widespread increased fractional anisotropy (FA)( $p < 0.007$ ), decreased mean (MD)( $p < 0.007$ ) and radial diffusivity (RD) ( $p < 0.006$ ) was found in MwA compared to controls. MwoA showed no alteration compared to MwA and controls. FA showed negative ( $p < 0.044$ ,  $R = 0.480$ ), MD ( $p < 0.031$ ,  $R = 0.508$ ) and RD ( $p < 0.030$ ,  $R = 0.511$ ) showed positive correlation with the attack duration. Subjective pain intensity showed positive correlation with MD ( $p < 0.039$ ,  $R = 0.489$ ) and RD ( $p < 0.044$ ,  $R = 0.480$ ). The diffusion parameters did not correlate with allodynia score, disease duration, age and attack frequency.

**Conclusions:** These results in comparison with our former results show that migraine is a heterogeneous disease. We propose that degenerative and maladaptive plastic changes coexist in the disease and the diffusion profile is a resultant of these processes.