White Matter Alterations in Chronic Migraine: A Diffusion Tensor Imaging and Structural Connectivity Study
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BACKGROUND & OBJECTIVES
Diffusion Magnetic Resonance Imaging (MRI) studies have been widely used to identify white matter alterations in migraine patients with respect to healthy controls. However, no differences between Episodic Migraine (EM) and Chronic Migraine (CM) patients have been found using diffusion MRI (dMRI).

Structural connectivity in migraine has not been as widely studied as generalized white matter alterations. It has been reported that brain in migraine tends to be clustered. No specific structural connectivity analysis between EM and CM patients was found.

With a final sample of 50 Healthy Controls, 54 EM and 56 CM patients, our objectives were:
1. Investigate whether there are significant differences between CM and EM, and between these groups and healthy controls. To that end, Tract-Based Spatial-Statistics (TBSS) was employed as dMRI analysis technique.
2. Investigate whether there are significant structural connectivity differences between CM and EM, and between these groups and healthy controls. To that end, whole-brain structural connectomics was employed as a dMRI analysis technique.

METHODS
A summary of the whole processing MRI pipeline is shown here:

CONCLUSIONS
1. AD values (CM < EM) → Transition from EM to EM → Possible axonal impairment
2. Structural connectivity alterations in migraine with respect to healthy controls
2.1. Increased number of streamlines in migraine → Regions related to pain processing
A) Reinforcement in connections
B) Possible counterbalance to axonal impairment

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REFERENCES