

Diffusion Tensor Imaging (DTI) And Morphometric Assessment In Patients With Neuro Cognitive Impairment.

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PURPOSE:

This study evaluates differences in DTI parameters between patients with MCI and normal age matched healthy patients in the Malaysian population.

METHODOLOGY:

Patients were recruited from the UMMC Geriatrics Clinic. Clinical data and cognitive assessments (MMSE, MoCA and VCAT). They were then divided into mild cognitive impairment (MCI) and control matched group. Both groups underwent MRI within 6 months after the evaluation was done. Imaging sequences of the brain included T1W FSPGR 3D, axial T2W, coronal FLAIR cube and diffusion tensor imaging (DTI), using a 3-Tesla MRI. The DTI parameters: Fractional anisotropy (FA), mean diffusivity (MD), axial diffusivity (AD) and radial diffusivity (RD) scores were obtained from selected white matter tracts using an analytical software.

RESULTS:

There were 10 participants in the MCI groups and 10 age matched controls in the normal group (aged 65 to 84 years). The MCI groups had cerebral atrophy predominantly in the temporal and parietal lobes with 6 patients having an MTA score of 2, 2 patients with MTA score of 1 and 2 patients with MTA score of 0. In comparison, only 1 control had an MTA score of 2, 1 control with MTA score 1, and 7 controls with MTA score 0. The DTI parameters MD, AD and RD values were lower in the hippocampal part of the bilateral cingulum in the MCI groups when compared to the normal group. There were no significant differences in the FA values between the MCI and normal groups.

CONCLUSION:

There is white matter tract compromise in patients with MCI involving the hippocampal part of the cingulum. These findings correlate with the hippocampal atrophy often seen later on in Alzheimer's and to a lesser extent MCI patients. DTI is therefore useful in detecting white matter tract compromise seen early on in patients with cognitive impairment, potentially halting the disease.