

Motor recovery after ischemic stroke: Clinical and diffusion tensor imaging study

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Background: The severity of stroke-induced disruption to the corticospinal tract (CST) would be predictable to affect motor outcome. Diffusion Tensor Imaging (DTI) is a noninvasive technique that can be applied to assess the structural integrity of the CST.

Aim of the work: To assess the value of DTI in patients early presenting with acute ischemic stroke as a prognostic modality to predict the clinical outcome.

Patients and Methods: Thirty-four patients with acute ischemic stroke underwent clinical assessment using the National Institutes of Health Stroke Scale (NIHSS), Modified Rankin Scale (mRS), Medical Research Council (MRC) score, Morticity Index (MI), and DTI to detect the degree of reduction of Fractional Anisotropy (FA), and pattern of CST at baseline and after 6 months follow up. Seventeen age, sex matched controls underwent DTI assessment.

Results: The stroke patients showed a significant reduction in the baseline FA values of the CSTs on the affected sides compared to the contralateral sides and controls. Moreover, they showed lower mean baseline FA lesion side and FA ratio(rFA) compared to follow up. The patients with high baseline FA, rFA showed good recovery response with cut off values of 0.483, 0.948 respectively. There was a significant negative correlation between baseline FA on the lesion side, rFA and follow up NIHSS, and MRS scores and they had a significant positive correlation with follow up MI scores.

Conclusion: Patients with higher baseline FA, rFA values were correlated with better motor recovery, and could predict the motor recovery in ischemic stroke patients.