Fornix injury

Little is known about the relation between fornix injury and memory impairment in diffuse axonal injury (DAI). In the current study, we attempted to investigate fornix injury in patients with memory impairment following DAI, using diffusion tensor imaging (DTI). Nine patients with DAI and nine age- and sex-matched control subjects were recruited. The DTIs were acquired using a sensitivity-encoding head coil on a 1.5 T. Five regions of interest (ROI) were drawn manually on a color fractional anisotropy (FA) map: two ROIs for each column, one ROI for the body, and two ROIs for each crus. The FA and apparent diffusion coefficient (ADC) were measured in each of the ROIs. Cognitive function was evaluated using the Memory Assessment Scale, Wechsler Intelligence Scale, and Mini-Mental State Exam. In the DAI group, the FA value in the fornix body was significantly decreased compared with that of the control group. In contrast, we did not find significant differences in the column and crus of the fornix. Among all of the cognitive function scales, only the Memory Assessment Scale scores were significantly correlated with the FA values of the fornix body in the DAI group. We found that memory impairment in patients with DAI is closely related to neuronal injury of the fornix body among the three fornix regions that we assessed. DTI could be useful in the evaluation of patients with memory impairment following DAI [1].

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