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REDUCED WM INTEGRITY IN ANTERIOR CORPUS CALLOSUM AND ITS RELATIONSHIP WITH CLINICAL SYMPTOMS IN BIPOLAR DISORDER: A DTI TRACTOGRAPHY STUDY

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Background: In bipolar disorder (BD), reduced white matter (WM) integrity in the corpus callosum has been reported, but its detailed localization difference has not been clarified. In this study, we examined fiber integrity in 7 segments of the corpus callosum and their relationships with clinical symptoms in BD.
Methods: Patients with BD (BD group, n = 17) and age-matched healthy controls (HC group, n = 24) were examined using diffusion tensor imaging tractography. The corpus callosum was divided into 7 segments (orbital frontal, anterior frontal, superior frontal, superior parietal, posterior parietal, temporal, and occipital) based on their cortical projection zones, and fractional anisotropy (FA) value of each segment was estimated. Differences in FA of each segment between the groups were examined using ANOVA with repeated measures. Correlations between FA of each segment and clinical symptoms (HAM-D, YMRS) were assessed using Spearman's rank correlation test in the BD group.
Results: The BD group showed reduced FA in the orbital frontal, superior frontal, and posterior parietal-callosal segments compared to the HC group. In addition, the BD group showed a significant negative correlation between FA in the orbital frontal-callosal segment and HAM-D scores.
Conclusions: Our results suggest that WM integrity in the anterior part of the corpus callosum is reduced in BD and that orbital frontal-callosal disintegrity may be related with severity of bipolar depression.

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