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## Original Article

### Reduced white matter connectivity in the corpus callosum of children with Tourette syndrome

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## Abstract

**Background:** Brain imaging studies have revealed anatomical anomalies in the brains of individuals with Tourette syndrome (TS). Prefrontal regions have been found to be larger and the corpus callosum (CC) area smaller in children and young adults with TS compared with healthy control subjects, and these anatomical features have been understood to reflect neural plasticity that helps to attenuate the severity of tics.

Method: CC white matter connectivity, as measured by the Fractional Anisotropy (FA) index from diffusion tensor images, was assessed in 20 clinically well-defined boys with Tourette syndrome and 20 age- and gender-matched controls.

Results: The hypothesis that children with TS would show reduced measures of connectivity in CC fibers was confirmed for all subregions of the CC. There was no significant interaction of TS and region. Reductions in FA in CC regions may reflect either fewer interhemispheric fibers or reduced axonal myelination. FA values did not correlate significantly with the severity of tic symptoms. Group differences in measures of connectivity did not seem to be attributable to the presence of comorbid ADHD or OCD, to medication exposure, or group differences in IQ.

Conclusion: Our findings of a reduced interhemispherical white matter connectivity add to the understanding of neural connectivity and plasticity in the brains of children who have TS.