Associations between corpus callosum size and ADHD symptoms in older adults: The PATH through life study.


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Abstract

Neuroimaging studies of attention-deficit/hyperactivity disorder (ADHD) have revealed deviations of the corpus callosum in children and adolescents. However, little is known about the link between callosal morphology and symptoms of inattention or hyperactivity in adulthood, especially later in life. Here, we investigated in a large population-based sample of 280 adults (150 males, 130 females) in their late sixties and early seventies whether ADHD symptoms correlate with callosal thickness. In addition, we tested for significant sex interactions, which were followed by correlation analyses stratified by sex. Within males, there were significant negative correlations with respect to inattention and hyperactivity in various callosal regions, including the anterior third, anterior and posterior midbody, isthmus, and splenium. A thinner corpus callosum may be associated with fewer fibers or less myelination of fibers. Thus, the observed negative correlations suggest impaired inter-hemispheric communication channels necessary to sustain motor control and attention, which may contribute to symptoms of hyperactivity, impulsivity and/or inattention. Interestingly, within females, callosal thickness was positively related to hyperactivity in a small area within the rostral body, suggesting a sexually dimorphic neurobiology of ADHD symptoms. Altogether, the present results may reflect a lasting relationship between callosal morphology and ADHD symptoms throughout life.