Adolescent Attention-Deficit/Hyperactivity Disorder: Understanding Teenage Symptom Trajectories

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Abstract

Symptoms of attention-deficit/hyperactivity disorder (ADHD) run a variable course through adolescence. While most affected individuals show some improvement, particularly of hyperactivity-impulsivity, symptoms of inattention are more persistent, and some individuals may meet diagnostic criteria for the first time during adolescence. Genetic factors affect adolescent symptom trajectories; those showing persistence likely carry a greater burden of common risk alleles. Rare structural genomic variants, such as copy number variants and point mutations, might also play a role. Although psychostimulant medication is associated with better functional outcomes, an impact on underlying adolescent symptom trajectories has been hard to demonstrate. At a neural level, several studies report that adolescents whose childhood ADHD symptoms have remitted are indistinguishable from neurotypical individuals. This finding could reflect the "carrying forward" of relatively typical childhood neural features among those destined for adolescent remission or the correction of early childhood anomalies with a convergence toward typical dimensions. Other studies have noted unique, possibly compensatory patterns of neural activity among adolescents whose ADHD has improved. Finally, different neural processes might occur in different brain regions. Thus, some functional imaging studies find that subcortical anomalies reflect the onset of ADHD and remain throughout life regardless of symptom change, whereas the variable clinical course of adolescent ADHD is determined by plasticity of the cerebral cortex. Integrating an understanding of the neural processes with genomic risk could elucidate the mechanisms underlying the complex course of adolescent ADHD.

Keywords: Adult outcome; Attention-deficit/hyperactivity disorder; Brain function; Brain structure; Prognosis; Recovery.