A Gut Feeling: A Hypothesis of the Role of the Microbiome in Attention-Deficit/Hyperactivity Disorders

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Abstract

Attention-deficit/hyperactivity disorder (ADHD) is a neurologic disorder characterized by hyperactivity/impulsivity and/or inattentiveness, with genetic and environmental factors contributing to the disorder. With the growing recognition of the microbiome’s role in many neurological disorders, the authors propose that it may also be implicated in ADHD. Here, we describe several evolving areas of research to support this hypothesis. First, a unique composition of gut bacteria has been identified and linked to behaviors in ADHD. Second, our research found an increased incidence of 2 gastrointestinal symptoms (constipation and flatulence) in children with ADHD, as compared to controls. Finally, emerging data may be interpreted to suggest that immune dysregulation in ADHD be associated with an altered microbiome, low-grade inflammation, and gastrointestinal dysfunction. Although more studies are needed to elucidate exact mechanisms and causality, we propose that an altered microbiome, gastrointestinal symptoms, and immune dysregulation may be associated with the ADHD phenotypes.