The gut-brain axis in attention deficit hyperactivity disorder: the role of the microbiota


Abstract

INTRODUCTION:
Attention deficit hyperactivity disorder (ADHD) has a complex etiology, mainly attributed to a number of susceptibility genes and environmental factors. Genetic association studies, however, have been inconsistent and have identified genetic variants with a moderate effect that explain a small proportion of the estimated inheritability of the disorder (< 10%). Recent studies suggest that the gut microbiota and diet play an important role in the development and symptoms of different mental disorders. Nevertheless, no clear evidence exists on the issue. This project proposes an alternative approach to identify mechanisms by which the intestinal microbial ecosystem and diet could contribute to the presence of ADHD.

AIM:
To identify biomarkers for ADHD by examining the gut microbiota.

SUBJECTS AND METHODS:
We conducted a cross-sectional study of adult patients with ADHD (n = 100) and control subjects (n = 100). Measures of ADHD evaluation and eating habits were performed in both groups. Samples of fecal material were obtained from which to extract bacterial DNA, then used to characterize the participants' gut microbiota. A meta-genomic association study was later performed to attempt to correlate the bacterial composition of the intestine with the clinical subtypes of the disorder.

RESULTS AND CONCLUSIONS:
Comparing the gut microbiota profiles of subjects with ADHD and controls is expected to help account for the clinical heterogeneity of the disorder and identify new mechanisms involved in its development.