Peripheral brain-derived neurotrophic factor in attention-deficit/hyperactivity disorder: A comprehensive systematic review and meta-analysis.


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Abstract

BACKGROUND:
Studies suggest that dysfunction of BDNF is a possible contributor to the pathology and symptoms of attention-deficit/hyperactivity disorder (ADHD). Several studies have found changes of peripheral BDNF levels in ADHD, but findings are not always consistent. The aim of our study was to assess the association between peripheral BDNF levels and ADHD by using a meta-analysis.

METHODS:
A systematic search of Pubmed, Web of Science and China National Knowledge Infrastructure identified 10 articles encompassing a sample of 1183 individuals for the meta-analysis. Meta-analysis was performed in a fixed/random effect model by using the software Review Manager 5.2.

RESULTS:
Our meta-analysis suggests that peripheral BDNF levels did not differ significantly between ADHD and controls with the standardized mean difference (SMD) of 0.62 (95% CI -0.12 to 1.35, p = 0.10). However, it is intriguing that BDNF levels were significantly higher in males with ADHD compared with controls (SMD = 0.49, 95% CI = 0.14-0.84, p = 0.006), whereas there was no difference in BDNF levels between ADHD female patients and control groups (SMD = 0.21, 95% CI = -0.44 to 0.86, p = 0.53).

LIMITATIONS:
High heterogeneity was noted across sampled studies, which may be a function of sample size, participants sampled, variations in study design, or other factors.

CONCLUSIONS:
We found that though there was no significantly difference in peripheral BDNF levels between ADHD patients and control groups overall, BDNF levels were significantly higher in males with ADHD compared with controls. Our results suggested a sex-specific association between peripheral blood BDNF levels and ADHD male patients.