Brain-Derived Neurotrophic Factor Gene Val66Met Polymorphism Is a Risk Factor for Attention-Deficit Hyperactivity Disorder in a Turkish Sample

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Objective
Attention-deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder that negatively affects different areas of life. We aimed to evaluate the associations between the Val66Met polymorphism of brain-derived neurotrophic factor (BDNF) and ADHD and to assess the effect of the BDNF polymorphism on the neurocognitive profile and clinical symptomatology in ADHD.

Methods
Two hundred one ADHD cases and 99 typically developing subjects (TD) between the ages of 8 and 15 years were involved in the study. All subjects were evaluated using a complete neuropsychological battery, Child Behavior Checklist, the Teacher’s Report Form (TRF) and the DSM-IV Disruptive Behavior Disorders Rating Scale-teacher and parent forms.

Results
The GG genotype was significantly more frequent in the patients with ADHD than in the TD controls, and the GG genotype was also significantly more frequent in the ADHD-combined (ADHD-C) subtype patients than in the TDs. However, there were no significant associations of the BDNF polymorphism with the ADHD subtypes or neurocognitive profiles of the patients. The teacher-assessed hyperactivity and inattention symptom count and the total score were higher, and the appropriately behaving subtest score of the TRF was lower in the GG genotypes than in the GA and AA (i.e., the A-containing) genotypes.

Conclusion
We found a positive association between the BDNF gene Val66Met polymorphism and ADHD, and this association was observed specifically in the ADHD-C subtype and not the ADHD-predominantly inattentive subtype subtype. Our findings support that the Val66Met polymorphism of BDNF gene might be involved in the pathogenesis of ADHD. Furthermore Val66Met polymorphism of BDNF gene may be more closely associated with hyperactivity rather than inattention.