The effect of methylphenidate on executive functions in children with Attention-Deficit Hyperactivity Disorder

Alper Yilmaz, Cem Gokcen, Emine Cigil Fettahoglu, Esin Ozatalay.

Bulletin of Clinical Psychopharmacology 2013; 23(2): 162-70
doi: 10.5455/bcp.20121130090251
http://www.scopemed.org/fulltextpdf.php?mno=23689

Abstract
Objective: The aim of this study was to evaluate the effect of methylphenidate (MPH) on executive functions in children with Attention-Deficit Hyperactivity Disorder (ADHD).

Methods: The study included 30 children between the ages of 7 and 12 with the diagnosis of ADHD Combined subtype (ADHD-C) and 30 healthy children with no known history of psychiatric or medical conditions, who were age and sex-matched with the patient group. At the first interview, the Schedule for Affective Disorders and Schizophrenia for School Age Children-Present and Lifetime Version-Turkish Version (K-SADS-PL), the Wisconsin Card Sorting Test (WCST) and the Stroop Test-TBAG form (ST) were administered to all subjects. MPH treatment was initiated after the first interview in the ADHD-C group. One month later the WCST and ST were repeated in both groups.

Results: It was found that children with ADHD-C gave more incorrect responses (p=0.02), completed fewer categories (p=0.02), and their percentage of conceptual level responses was lower than their healthy peers (p=0.02) in the first WCST. At the first ST administration, it was observed that children with ADHD-C took longer to complete the task of color naming (4th card) than the control group. After MPH treatment, children with ADHD-C had more responses to complete the first category (WCST) (p=0.03), and the interference score (ST) (p=0.02) was also lower than healthy children.

Conclusions: In this study, it was found that children with ADHD-C showed lower performances on the WCST (perseveration) and ST (color naming) than healthy children. In addition MPH treatment resulted in improvements on the WCST (perseveration and conceptualization/reasoning) and ST (color naming and interferences effect) performances in the ADHD-C group. However, we also observed similar positive changes in healthy children, indicating that improved performances in

these areas could be related to the practice effect and learning processes, in addition to the potential effects of MPH in children with ADHD-C.