Elevated serum ubiquitin-proteasome pathway related molecule levels in attention deficit hyperactivity disorder

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Abstract

Introduction:
We aimed to determine the serum levels of transactive response of DNA-binding protein 43 (TDP-43) and ubiquitin C-terminal hydrolase-L1 (UCH-L1), which are ubiquitin-proteasome pathway-related molecules and have not been investigated so far, in children with attention-deficit/hyperactivity disorder (ADHD).

Methods:
The study group was composed of thirty children aged between 6 and 10. They were diagnosed with ADHD according to DSM-IV criteria. They were the subjects who applied to Dicle University, Faculty of Medicine, and Department of Child Psychiatry in Diyarbakır, Turkey. Children with ADHD were assessed via Turgay DSM-IV Based Child and Adolescent Behavior Disorders Screening and Rating Scale and Stroop test. Serum TDP-43 and UCH-L1 levels were analysed with enzyme-linked immunosorbent assay.

Results:
The TDP-43 and UCH-L1 serum levels of children with ADHD were found to be statistically significantly higher than those of controls. On the other hand, we found that serum levels of TDP-43 correlated with interference effect and hyperactivity–impulsivity in children with ADHD.

Conclusion:
Imbalances in serum UCH-L1 and TDP-43 levels, and the correlation of TDP-43 levels with clinical parameters in children with ADHD may suggest that ubiquitin-proteasome pathway alterations are associated with ADHD. Deterioration of this pathway may cause intracellular TDP-43 aggregation.