A Preliminary Study on Investigation of Serum α-Synuclein and Tau Protein Levels in Children with Attention Deficit Hyperactivity Disorder

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Abstract

Neurodegenerative molecules play an important role in maintaining a supply for synaptic vesicles; and they are also likely to help regulate the dopamine release which is the primary mechanism of action in pharmacological treatments for attention deficit hyperactivity disorder (ADHD). It is suggested that there could be interactions between α-synuclein and tau in cytoskeletal disorganization and synaptic dystrophy. Therefore, we aim to determine the serum levels of neurodegenerative molecules such as α-synuclein and tau in children with ADHD. The study group consisted of 25 children, aged 6–10, diagnosed with ADHD according to DSM-IV criteria and who appeared at Dicle University, Faculty of Medicine, and Department of Child Psychiatry in Diyarbakır, Turkey. 25 children, having no psychiatric disorders and medical illnesses, were selected as healthy control group. Serum α-synuclein and tau concentrations were determined by Enzyme-Linked Immuno Sorbent Assay. The α-synuclein levels of ADHD were not significantly different than those of controls. The tau levels of ADHD were found to be statistically significantly higher than those of controls. Moreover, α-synuclein levels showed a statistically significantly positive correlation with tau levels in children with ADHD. The results of our preliminary study can suggest that ADHD might possibly share a common disease mechanism with other diseases in terms of tau pathology. Increased serum tau level may be an indication of disturbance of microtubule transportation in the brains of children with ADHD.