Blood Levels of Trace Elements in Children with Attention-Deficit Hyperactivity Disorder: Results from a Case-Control Study


Abstract

Some trace elements may participate in the pathogenesis of attention-deficit hyperactivity disorder (ADHD). This study aimed to investigate the trace element status of zinc (Zn), copper (Cu), iron (Fe), magnesium (Mg), and lead (Pb) in children with ADHD, and to compare them with normal controls. Associations between examined elements and SNAP-IV rating scores of ADHD symptoms were also assessed. Four hundred nineteen children with ADHD (8.8 ± 2.1 years) and 395 matched normal controls (8.9 ± 1.7 years) were recruited in the study. The concentrations of Zn, Fe, Cu, Mg, and Pb in the whole blood were measured by atomic absorption spectrometry. Lower zinc levels (P < 0.001) and the number out of normal ranges (P = 0.015) were found in children with ADHD when compared with the normal control group. The difference remained when adjusting the factor of BMI z-score. No significant between-group differences were found in levels of other elements. Zinc levels were negatively correlated with parent-rated scores of inattentive subscale of SNAP-IV (r = -0.40) as well as with total score of SNAP-IV (r = -0.24). Other significant associations were not observed. The present results indicated that there were alterations in blood levels of zinc, which was associated with the symptom scores of ADHD.