Magnesium, zinc and copper estimation in children with attention deficit hyperactivity disorder (ADHD)

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Abstract

Background
Attention deficit hyperactivity disorder (ADHD) is a common neuro developmental disorder. Evidence for dietary/nutritional treatments for (ADHD) varies widely, however recommended daily allowance of minerals and essential fatty acids is an ADHD-specific intervention.

Aim of the work
To estimate magnesium, zinc and copper levels in the sera and hair of children with ADHD and compare them to normal children and also to correlate these levels with the disease symptoms.

Methods
This case–control study was conducted on 20 patients with ADHD and 20 age and sex matched healthy controls. All subjects were subjected to psychiatric evaluation according to DSMIV-R, magnesium, zinc and copper estimation in serum and hair follicles. ADHD children were further assessed by the Stanford Binnet intelligence scale for children, Conners’ parent rating scale, and Wisconsin’s card sorting test.

Results
Magnesium, zinc and copper deficiencies were found in 13 (65%), 14 (60%) and 12 (70%) of ADHD children respectively. Magnesium and zinc deficiencies were found to be correlated with hyperactivity, inattention and impulsivity. However, this correlation was not found in the copper deficient ADHD cases.

Conclusion
Children with ADHD have lower levels of zinc, copper and magnesium compared to both laboratory reference ranges and to normal controls in both hair and serum. These deficiencies are correlated with the core symptoms of ADHD.