Vitamin D Deficiency and a Blunted Parathyroid Hormone Response in Children with Attention-Deficit/Hyperactivity Disorder.

Avcil S, Uysal P, Yilmaz M, Erge D, Demirkaya SK, Eren E.


Abstract

BACKGROUND:
Attention-deficit/hyperactivity disorder (ADHD) is the most frequently diagnosed neuropsychiatric disorder of childhood. The etiopathogenesis of ADHD has not been fully defined. Recent evidence has suggested a pathophysiological role of vitamin D deficiency in ADHD. In this study, we evaluated the serum levels of 25-hydroxy vitamin D (25(OH)D), parathyroid hormone (PTH), calcium (Ca), phosphate (P), and alkaline phosphatase (ALP) in children with ADHD.

METHODS:
The study group consisted of 105 children diagnosed with ADHD according to DSM-IV-TR criteria. A control group, matched for age and gender, was composed of 95 healthy children. Venous blood samples were collected, and 25(OH)D, PTH, Ca, P, and ALP levels were measured.

RESULTS:
The mean serum 25(OH)D, Ca, and P levels of the children with ADHD were significantly lower than those of the healthy controls. There were no significant differences between the groups regarding PTH and ALP. Serum PTH levels were found to be normal, but vitamin D deficiency, hypocalcemia, and hypophosphatemia were observed in children with ADHD. There was no correlation between serum PTH and Ca levels in children with ADHD, whereas, there was a negative correlation between serum PTH and Ca levels in healthy controls. There was no correlation between serum 25(OH)D and PTH levels in children with ADHD, whereas, there was a negative correlation between serum 25(OH)D and PTH levels in healthy controls. There were no significant differences in all parameters' levels among the subtypes of ADHD.

CONCLUSIONS:
The findings suggest that ADHD is associated with vitamin D deficiency, blunted PTH response, and impaired Ca homoeostasis in children.