

25-Hydroxyvitamin D concentrations are not lower in children with bronchial asthma, atopic dermatitis, obesity, or attention-deficient/hyperactivity disorder than in healthy children

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Abstract

Vitamin D (vitD) is involved in immune regulation, and its receptor has been identified in several tissues including lung, adipose tissue, brain, and skin. Based on these observations, it has been suggested that vitD has an essential role not only in bone metabolism but also in other diseases such as atopic dermatitis (AD), bronchial asthma (BA), attention-deficit/hyperactivity disorder (ADHD), and obesity because the affected tissues express vitD receptors. Furthermore, obesity, AD, and BA are regarded as inflammatory diseases. Therefore, we hypothesized that vitD concentrations are lower in children with AD, BA, ADHD, and obesity compared to healthy children. We measured 25-hydroxyvitamin D concentrations in 235 children (60% boys, age 9.3 ± 1.7 years) with obesity, BA, AD, or ADHD and compared them to those of 3352 children from a healthy population. Additionally, parathyroid hormone was measured in the children with obesity, ADHD, BA, and AD. VitD concentrations were not lower in children with obesity, ADHD, BA, and AD compared to healthy children. In multiple regression analyses adjusted to migration background, time period of blood sample, age, and sex, VitD levels correlated significantly with the severity of AD measured by SCORing Atopic Dermatitis index and attention deficit measured by Conners questionnaire in ADHD. VitD levels were not linked to hyperactivity in ADHD, the severity of BA measured as forced expiration volume in the first second, or body mass index standard deviation score. Parathyroid hormone was not associated with the activity of any analyzed disease. In conclusion, most of our findings do not support the hypothesis that vitD is involved in the pathogenesis of these entities.