

Thyroid Hormone Status in Overweight Children with Attention Deficit/Hyperactivity Disorder.

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Abstract

BACKGROUND:

There is an ongoing discussion whether thyroid hormones are involved in the development and course of attention deficit/hyperactivity disorder (ADHD). Since obesity is associated with both higher thyroid-stimulating hormone (TSH) and free triiodothyronine (fT3) concentrations and increased rates of ADHD, we hypothesized that overweight children with ADHD show higher TSH and fT3 concentrations compared to overweight children without ADHD.

METHODS:

TSH, fT3, fT4, and leptin levels were analyzed in 230 children (60.9% boys, 9.3 ± 1.7 years old, 35.7% migration background). The children were divided into four groups (I = 26 overweight children with ADHD, II = 56 normal-weight children with ADHD, III = 66 overweight children without ADHD, and IV = 82 normal-weight children without ADHD). Severity of ADHD was determined by the parent version of the Connors 3® rating scales.

RESULTS:

Overweight children with ADHD did not differ significantly from overweight children without ADHD with respect to TSH, fT3, or fT4 concentrations. Comparing the thyroid hormones between the four groups also demonstrated no significant differences for TSH and fT4 concentrations. fT3 concentrations were significantly higher in normal-weight children with ADHD compared to normal-weight children without ADHD. Inattention and hyperactivity/impulsivity scores were not significantly related to TSH or fT3 in multiple regression analyses adjusted for age, gender, and migration background. In these analyses, TSH was associated with BMI SDS (β coefficient 0.19 ± 0.12 , $p = 0.002$) and leptin ($\exp[\beta$ coefficient] 1.87 ± 1.36 , $p < 0.001$). fT3 (β coefficient 0.06 ± 0.05 , $p = 0.009$) and leptin ($\exp[\beta$ coefficient] 1.17 ± 1.13 , $p = 0.009$) were also associated with BMI SDS.

CONCLUSIONS:

Our findings confirm the relation between overweight and thyroid hormones but point against the hypothesis that thyroid hormones might link overweight and ADHD in children.