

## **The relationship between hyperthyrotropinemia and metabolic and cardiovascular risk factors in a large group of overweight and obese children and adolescents.**

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Purpose: Mild TSH elevations are frequently observed in obese patients, in the absence of any detectable thyroid disease. Our objective is to evaluate the relationship between the raised TSH levels and the biochemical and clinical consequences of obesity.

Methods: This is a retrospective cross-sectional study of a large population of obese children and adolescents. We evaluated 833 subjects (340 m, 493 f), aged  $14.4 \pm 2.5$  (range 5.2-18.5) years, height SDS  $0.27 \pm 1.04$  (-3.49-4.35), and BMI SDS  $2.94 \pm 0.59$  (1.60-4.68). Body composition, free T4, TSH, anti-TPO antibodies, anti-TG antibodies, inflammation markers (total WBC and the subtypes, ultrasensitive C-reactive protein), and metabolic parameters [AST, ALT,  $\gamma$ GT, ALP, glycaemia, insulin, total cholesterol (TC), HDL-cholesterol (HDL-C), and LDL-cholesterol (LDL-C), triglycerides (TG)] were measured, and oral disposition index (ODI) and cardiovascular risk factors (TC/ HDL-C and TG/HDL-C) were calculated. After exclusion of the subjects showing anti-thyroid antibodies, the remaining 779 (325 m, 454 f) were then subdivided into two subgroups according to a TSH value below (group A) or above (group B) 4.5 mU/L.

Results: Clinical characteristics and hematological markers of patients with and without positive anti-thyroid antibodies were similar, with the exception of higher TSH levels in the latter group. Using analysis of covariance, the subjects of group B had significantly higher values of TC ( $170.3 \pm 28.7$  vs  $163.3 \pm 32.9$  mg/dL;  $p < 0.05$ ), systolic ( $125.8 \pm 13.5$  vs  $124.5 \pm 13.1$  mm/Hg), and diastolic blood pressure ( $79.2 \pm 8.0$  vs  $77.9 \pm 8.2$  mm/Hg) than subjects of group A. No difference was observed in body composition, ODI, and the cardiovascular risk factors between these two groups.

Conclusion: TSH elevation in overweight and obese children and adolescents, being associated with a higher TC and blood pressure, might negatively influence the cardiac status. Longitudinal studies are requested, however, to confirm this hypothesis and, therefore, to conclude whether a substitutive treatment with l-thyroxine is really needed in these patients.

Se desidera avere la fotocopia di questo lavoro, per esclusivo uso personale, può fare richiesta per mail a: [info@cresceresani.it](mailto:info@cresceresani.it) indicando il titolo, gli autori, la rivista e il proprio recapito lavorativo (nome, cognome, indirizzo, CAP, città).