AMERICAN THYROID ASSOCIATION
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HYPOTHYROIDISM

Serum TSH concentrations are associated with cholesterol levels in children and adolescents

BACKGROUND

Thyroid hormone has a direct effect on cholesterol levels, which increase as the TSH increases and hypothyroidism develops. This association between hypothyroidism and high cholesterol levels has been demonstrated in several large studies, most of which involved adult patients. The few studies testing an association between thyroid function and cholesterol levels among children and adolescents are limited by their small sample sizes. The objective of this study was to test this association between hypothyroidism and cholesterol levels in children and adolescents using a large German population-based study sample.

THE FULL ARTICLE TITLE

Witte T et al Association between serum thyroid-stimulating hormone levels and serum lipids in children and adolescents: a population-based study of German youth. J Clin Endocrinol Metab. March 17, 2015 [ePub ahead of print].

SUMMARY OF THE STUDY

This study measured serum TSH and lipid levels, including total cholesterol, LDL cholesterol (bad cholesterol), HDL cholesterol (good cholesterol) and triglycerides in patients identified from the German Health Interview and Examination Survey for Children and Adolescents between 2003 to 2006. A total 6622 children (age range, 3 to 10 years) and 6134 adolescents (age range, 11 to 17 years) were studies. The average age was 7.4 years in children and ~14.4 years in adolescents. Over 95% of the total sample had serum TSH levels in the reference range. Cholesterol levels were not significantly different between boys and girls, nor between children and adolescents. The primary finding was a significant positive association between serum TSH and total and LDL cholesterol and triglycerides. This relationship was sustained when compared between normal, overweight, and obese children.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

In this large study, there was a significant, positive association between serum TSH and total cholesterol, LDL, and triglyceride concentrations in both children and adolescents. Thus, similar to what is seen in adults, the higher the TSH (and the worse the hypothyroidism), the higher the cholesterol levels. Because the bad long-term health effects of high cholesterol levels, this study suggests that there may be benefits to treating even mild hypothyroidism in children.

— Alan P. Farwell, MD

ATA THYROID BROCHURE LINKS

Hypothyroidism: http://www.thyroid.org/what-is-hypothyroidism

ABBREVIATIONS & DEFINITIONS

Hypothyroidism: a condition where the thyroid gland is underactive and doesn't produce enough thyroid hormone. Treatment requires taking thyroid hormone pills.

Lipids: the general term used to describe fat molecules in the blood. Examples of blood lipids include cholesterol, HDL ("good) cholesterol, LDL ("bad") cholesterol and triglycerides.

TSH: thyroid stimulating hormone — produced by the pituitary gland that regulates thyroid function; also the best screening test to determine if the thyroid is functioning normally.