



THYROID AND PREGNANCY

Could isolated hypothyroxinemia in pregnancy be caused by iron deficiency?

BACKGROUND

Isolated hypothyroxinemia is a condition in pregnancy where the T_4 levels in the mother are low but the TSH levels are normal. This does not lead to hypothyroidism in the mother and eventually resolves. The cause of isolated hypothyroxinemia is unknown. However, isolated hypothyroxinemia occurring during early pregnancy may irreversibly damage the brain development of the baby. There is an association between iron deficiency and isolated hypothyroxinemia but it is not clear if this is a cause and effect or if both low T_4 and iron levels are due to another similar cause. The goal of this study was to investigate the association of iron deficiency with thyroid function in women early in their pregnancy and in nonpregnant women.

THE FULL ARTICLE TITLE

Yu X et al. Iron deficiency, an independent risk factor for isolated hypothyroxinemia in pregnant and nonpregnant women of childbearing age in China. *J Clin Endocrinol Metab.* January 19, 2015 [Epub ahead of print].

SUMMARY OF THE STUDY

The study was done in northeast China, a region with adequate iodine intake. The study included 7953 pregnant women at 4 to 12 weeks' of their pregnancy and 2000 women of child-bearing age who were not pregnant. Of these, a subpopulation including 3340 pregnant women and 1052 nonpregnant women with sufficient iodine intake and no evidence of thyroid problems were studied. Hypothyroxinemia were defined as FT_4 levels below the 10th percentile (mild) and the 5th percentile (severe) with a normal TSH. Total body

iron, serum ferritin, and serum transferrin receptor were used as indicators for iron nutrition.

Serum FT_4 levels were significantly lower in both pregnant and nonpregnant women with iron deficiency, as compared with women without iron deficiency. The prevalence of mild and severe hypothyroxinemia was markedly higher in both pregnant and nonpregnant women with iron deficiency than in those without it.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests an association between iron deficiency and isolated hypothyroxinemia in both pregnant and nonpregnant women of child-bearing age, independently of the effects of iodine and underlying thyroid problems. The authors suggest that iron deficiency may be a cause of the hypothyroxinemia. More studies are needed to examine this association further. Until then, all pregnant women should be taking a prenatal vitamin containing iron. It is unclear whether this recommendation should be expanded to all women of child-bearing age.

— Alan P. Farwell, MD

ATA THYROID BROCHURE LINKS

Thyroid and Pregnancy: <http://www.thyroid.org/thyroid-disease-and-pregnancy>

Thyroid Function Tests: <http://www.thyroid.org/blood-test-for-thyroid>

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.

Thyroxine (T_4): the major hormone produced by the thyroid gland. T_4 gets converted to the active hormone T_3 in various tissues in the body.

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.