



THYROID AND PREGNANCY

First Trimester TSH levels between 2.5 and 5.0 are associated with increased pregnancy loss

WHAT IS THE STUDY ABOUT?

Thyroid hormone is essential for a baby to develop normally during pregnancy. For at least the first half of pregnancy, the fetus gets thyroid hormone from the mother, so it is important that the mother has normal thyroid function during this time. In the non-pregnant woman, normal thyroid function is attributed to a TSH level in the normal range, usually 0.5 – 5 mIU/L. However, the definition of a normal TSH during pregnancy has been changing over time. In 2007, The Endocrine Society recommended that all women on thyroid hormone replacement therapy (levothyroxine) have TSH less than 2.5 mIU/L during the first trimester and less than 3 mIU/L throughout pregnancy. This study investigated the rate of preterm (early) delivery and pregnancy loss in women without hypothyroidism but with a TSH in the upper range of normal (TSH 2.5-5 mIU/L).

THE FULL ARTICLE TITLE:

Negro R et al, Increased Pregnancy Loss Rate in Thyroid Antibody Negative Women with TSH Levels between 2.5 and 5.0 in the First Trimester of Pregnancy. *J. Clin. Endocrinol. Metab.* 95 (9): 2010.

WHAT WAS THE AIM OF THE STUDY?

The aim of this study was to evaluate the rate of preterm delivery and pregnancy loss in women without hypothyroidism who had a TSH between 2.5-5.0 mIU/L compared to women with TSH less than 2.5 mIU/L.

WHO WAS STUDIED?

The women in this study are a subgroup of a larger prospective study of thyroid function and pregnancy. This study included 4123 women who were all negative for anti-thyroid antibodies (ie no evidence of intrinsic thyroid disease) and had a TSH less than or equal to 5.0 mIU/L. Hyperthyroid women were excluded. The women were divided into two groups for evaluation: Group A had TSH levels less than 2.5mIU/L and Group B had TSH levels 2.5-5.0 mIU/L.

HOW WAS THE STUDY DONE?

All pregnant women in the study had a FT₄ and TSH drawn during the first trimester. They were then followed normally throughout pregnancy. Pregnancy outcomes were recorded and the rates of pregnancy loss and preterm delivery were compared between women in the two groups.

WHAT WERE THE RESULTS OF THE STUDY?

A total of 3481 (84.4%) pregnant women had a TSH less than 2.5mIU/L during the first trimester and were in Group A. The remaining 642 women (15.6%) were in Group B and had a first trimester TSH between 2.5-5.0m IU/L. The average TSH of the women in Group A was 0.82 compared to an average TSH of 3.14 in the women in Group B. The spontaneous pregnancy loss rate was significantly lower in the women in Group A compared to Group B. Only 3.6% of women with a TSH less than 2.5 during the first trimester (Group A) had a spontaneous pregnancy loss versus 6.1% of the Group B women with a TSH 2.5-5.0 mIU/L. There were no significant differences in rates of preterm delivery.

HOW DOES THIS COMPARE WITH OTHER STUDIES?

Several studies have suggested that hypothyroidism is associated with pregnancy loss but the results in women with subclinical or mild hypothyroidism have been somewhat conflicting. Studies of women during pregnancy have suggested the TSH normal range is not the same as for non-pregnant individuals but the exact range had not been clearly identified. This study is the first to examine pregnancy loss and preterm delivery in women with TSH in the 2.5-5.0mIU/L range, which is generally considered to be the upper half of the normal range in non-pregnant individuals.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The clinical implication of this study is that a TSH greater than 2.5 mIU/L may not be normal during the first trimester of pregnancy. This study suggests that the upper limit of the TSH normal range should be redefined as less than 2.5 mIU/L during pregnancy.

— Whitney Woodmansee, MD

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THYROID AND PREGNANCY, continued

ATA THYROID BROCHURE LINKS

Thyroid and Pregnancy: http://thyroid.org/patients/patient_brochures/pregnancy.html

Hypothyroidism: http://thyroid.org/patients/patient_brochures/hypothyroidism.html

Thyroid Function Tests: http://thyroid.org/patients/patient_brochures/function_tests.html

ABBREVIATIONS & DEFINITIONS

Thyroxine (T₄) — the major hormone secreted by the thyroid gland. Thyroxine is broken down to produce Triiodothyronine which causes most of the effects of the thyroid hormones. Levothyroxine is the available medication to replace thyroid hormone.

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.

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

Pregnancy Loss — generally, this term refers to stillbirth and/or miscarriage.

Preterm Delivery — usually defined as a pregnant woman going into labor and delivering a child before full 40 weeks of pregnancy has been completed. "Preterm delivery" often refers to delivery of a child between 34-37 weeks pregnancy and "very preterm delivery" refers to delivery of a child at less than 34 weeks pregnancy.



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