



THYROID AND PREGNANCY

WHAT IS THE STUDY ABOUT?

During pregnancy, thyroid hormone is very important for the baby to develop normally. This is especially true for the baby's brain to develop normally. Hypothyroidism in the mother that is not treated can lead to brain damage and lower intelligence. Appropriate treatment prevents these problems. It also appears that thyroid hormone is important for a successful pregnancy overall. While it is rare, fetal death is often due to hypothyroidism in their mothers. Further, it appears that the rate of miscarriage is higher in mothers that are hypothyroid during their pregnancy. The purpose of this study was to examine the association between the mother's TSH and FT₄ levels during pregnancy and the rate of miscarriage and fetal death.

THE FULL ARTICLE TITLE: Benhadi N, Wiersinga WM, Reitsma JB, Vrijkotte TG, Bonsel GJ. Higher maternal TSH levels in pregnancy are associated with increased risk for miscarriage, fetal or neonatal death. *Eur J Endocrinol* 2009;160:985-91.

WHAT WAS THE AIM OF THE STUDY?

The aim of this study was to examine the association between the mother's TSH and FT₄ levels during pregnancy and the rate of miscarriage and fetal and neonatal death.

WHO WAS STUDIED?

The study was performed using information from pregnant Dutch women without known thyroid disease who participated in the Amsterdam Born Children and their Development (ABCD) study in Amsterdam from March 2003 through January 2004. A total of 8266 pregnant women filled out a questionnaire.

HOW WAS THE STUDY DONE?

Of the 8266 women who filled out the questionnaire, 4267 women provided consent for blood collection during their first doctor's visit, which on average took place during the 13th week of pregnancy. Miscarriage and fetal and neonatal death was determined from three overlapping sources: (1) the National Midwife Registry, (2) the National Obstetricians Registry, and (3) the National Neonatal Registry. The TSH normal range in this study was 0.35 – 5.6. Women with hypothyroidism or hyperthyroidism were removed from the study.

WHAT WERE THE RESULTS OF THE STUDY?

A total of 2497 women completed the study. The average age of the study group was 32 years. TPO antibodies were positive in 146 women. A total of 11 women had a miscarriage. There were 10 cases of fetal death and 6 cases of neonatal death. The average TSH in these 27 women was 1.48 mU/l as compared to an average TSH of 1.11 mU/l in women without child loss. The risk of child loss increased by 60% for every doubling in TSH concentration. Despite this increased risk, the actual numbers of child loss were very small. There was no effect of FT₄ level on child loss.

HOW DOES THIS COMPARE WITH OTHER STUDIES?

Many studies have shown that severe hypothyroidism in the mother is associated with increased child loss. Another study has shown that the major adverse pregnancy outcome of an elevated serum TSH concentration from the second trimester onward is an increased rate of fetal death. Finally, a prior study found that the risk for child loss not only increased with higher TSH levels, but occurred even when maternal FT₄ concentrations were normal. This study also shows that the risk of child loss is related to a higher TSH level.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Pregnant women with high TSH levels but normal FT₄ levels are at increased risk of miscarriage and fetal and neonatal loss. However, the actual rate of child loss is very low. This study raises the idea that pregnancy outcome might be improved by levothyroxine treatment in these patients.

— Alan P. Farwell, MD

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 AND PREGNANCY, continued

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 (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.

Triiodothyronine (T₃): the active thyroid hormone, usually produced from thyroxine.

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.

TPO antibodies: these are antibodies that attack the thyroid instead of bacteria and viruses, they are a marker for autoimmune thyroid disease, which is the main underlying cause for hypothyroidism and hyperthyroidism in the United States .

Miscarriage: this occurs when a baby dies in the first few months of a pregnancy, usually before 22 weeks of pregnancy.

Fetal death: this occurs when a baby dies later in pregnancy (usually after 22 weeks of pregnancy) before delivery.

Neonatal death: this occurs when a baby is born dead or dies in the first 7 days after being born.