



## THYROID AND PREGNANCY

# The Presence Of Anti-Thyroid Antibodies During The First Trimester Of Pregnancy Is A Major Risk For Perinatal Death

### WHAT IS THE STUDY ABOUT?

Thyroid hormone is very important for the baby to develop normally. During pregnancy, the mother's thyroid supplies thyroid hormone for the developing baby until the baby's thyroid begins to work on its own. Thyroid problems in the mother have been associated with both developmental problems in the baby and unfavorable pregnancy outcomes. For example, it appears that the rate of miscarriage is higher in mothers that are hypothyroid during their pregnancy. The presence of anti-thyroid antibodies is common in people with thyroid problems (particularly hypothyroidism) and has also been linked to problems carrying out a successful pregnancy. This study examined the effect of thyroid problems and the presence of anti-thyroid antibodies on pregnancy outcomes.

### THE FULL ARTICLE TITLE:

Männistö T, Vääräsmäki M, Pouta A, Hartikainen AL, Ruokonen A, Surcel HM, Bloigu A, Järvelin MR, Suvanto-Luukkonen E. Perinatal outcome of children born to mothers with thyroid dysfunction or antibodies: a prospective population-based cohort study. *J Clin Endocrinol Metab* 2009;94:772-9.

### WHAT WAS THE AIM OF THE STUDY?

The aim of the study was to examine the effect of thyroid problems and the presence of thyroid antibodies on pregnancy outcomes.

### WHO WAS STUDIED?

The study included women from the Northern Finland Birth Cohort that delivered a single baby from July 1985 through June 1986. A total of 9247 women were included and 5805 had a blood sample available for analysis.

### HOW WAS THE STUDY DONE?

Pregnant women were enrolled in the study up until the 24th week of pregnancy and followed throughout their pregnancy. Blood levels of T<sub>4</sub>, TSH and anti-thyroid antibodies were obtained up to the 20th week of pregnancy.

Three questionnaires gathered information about general health, socioeconomic status, mother's health and

health behavior during the pregnancy and pregnancy outcomes. The women were separated into groups based on thyroid hormone levels (hypothyroid, hyperthyroid and normal) and the presence of anti-thyroid antibodies (positive or negative).

### WHAT WERE THE RESULTS OF THE STUDY?

Women with positive anti-thyroid antibodies had a 2-3 fold increase in perinatal death as compared to women with negative anti-thyroid antibodies. A number of infants that died in the perinatal period were born very early (before the 28th week of the pregnancy) which may have contributed to their death. Women with positive anti-thyroid antibodies were more likely to have a baby with abnormal birth weight, either higher than normal or lower than normal. Surprisingly, women with either hypothyroidism or hyperthyroidism did not have higher perinatal death rate than women with normal thyroid function in this study.

### HOW DOES THIS COMPARE WITH OTHER STUDIES?

Many studies have shown that severe hypothyroidism in the mother is associated with increased child death and risk for child death has been shown to be related to TSH levels, with higher levels being associated with higher child death rates. In contrast, this study shows that abnormal TSH values were not associated with increased child death rates. Another study showed that women with positive anti-thyroid antibodies were more likely to deliver early. This study extended those findings and showed that women with positive anti-thyroid antibodies are at risk for increased risk for perinatal death.

### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Women with positive anti-thyroid antibodies are at increased risk of perinatal death, possibly related to an increased risk of preterm (early) delivery. Identification of positive anti-thyroid antibodies may help target women that should be followed more closely to attempt to decrease preterm delivery.

— 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](http://thyroid.org/patients/patient_brochures/pregnancy.html)

Thyroid Function Tests: [http://thyroid.org/patients/patient\\_brochures/function\\_tests.html](http://thyroid.org/patients/patient_brochures/function_tests.html)

### ABBREVIATIONS & DEFINITIONS

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

**Hyperthyroidism:** a condition where the thyroid gland is overactive and produces too much thyroid hormone. Hyperthyroidism may be treated with antithyroid meds (Methimazole, Propylthiouracil), radioactive iodine or surgery.

**Thyroxine (T<sub>4</sub>):** 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.

**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.

**Anti-thyroid antibodies:** these are antibodies that attack the thyroid instead of bacteria and viruses and they are a marker for autoimmune thyroid disease, which is the main underlying cause for hypothyroidism and hyperthyroidism in the United States. The two antibodies that are often measured are: anti-thyroid peroxidase (TPO) and anti-thyroglobulin (Tg).

**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.

**Perinatal death:** this occurs when a baby is born dead or dies in the first 7 days after being born (also referred to as early neonatal death).

**Neonatal death:** this occurs when a baby dies after birth.