



## THYROID AND PREGNANCY

### Maternal hypothyroidism during pregnancy is not associated with severe brain abnormalities in the baby if treated with thyroid hormone prior to the third trimester

#### BACKGROUND

Thyroid hormone is essential for normal brain development in the baby during pregnancy. All babies are screened for congenital hypothyroidism at birth to identify and treat patients to avoid severe lifelong developmental disabilities. Early on in pregnancy the thyroid hormone in the baby comes from the mother, thus hypothyroidism in the mother should be avoided during pregnancy. Thus, hypothyroidism in either the mother or baby can be associated with impaired brain development if left untreated. One rare form of severe hypothyroidism is caused by TSH receptor-blocking antibodies, which can cross from the mother to the baby during pregnancy and cause hypothyroidism in the baby. Some pregnant women with newly detected severe hypothyroidism have expressed a desire to terminate their pregnancies due to fears of brain abnormalities in their unborn child. This study reports on the brain development of 3 children born to mothers with severe hypothyroidism detected during pregnancy and aggressively treated with thyroid hormone.

#### THE FULL ARTICLE TITLE

Downing S et al. Severe maternal hypothyroidism corrected prior to the third trimester is associated with normal cognitive outcome in the offspring. *Thyroid*. 22(6): 625-630. 2012.

#### SUMMARY OF THE STUDY

This study examined brain function and IQ tests in 3 children born to mothers with severe hypothyroidism due to TSH receptor blocking antibodies. The women were diagnosed during pregnancy and were aggressively treated with thyroid hormone with the goal to normalize thyroid hormone and TSH levels prior delivery of the child. All 3 children had evidence of congenital hypothyroidism at birth due to these antibodies and were treated

with thyroid hormone. A variety of tests, including IQ tests, were performed when the children were between 5 and 6 years old. All 3 children had average or above average scores on the tests – none showed any significant impairment. Additionally, these 3 children were each compared to one of their siblings. All the mothers had normal thyroid function during the pregnancy of the sibling. On some tests the children born when the mother had hypothyroidism during pregnancy did better and on some the sibling performed better. The main finding was that these 3 children exposed to maternal hypothyroidism during pregnancy that was treated early with thyroid hormone demonstrated average or above average brain development.

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The authors conclude that if maternal hypothyroidism is treated early in pregnancy, severe brain dysfunction can be prevented and early termination of pregnancy due to fears of impaired brain development is not warranted. Although this study reports on only 3 children born to mothers with severe hypothyroidism, it provides some reassuring information for mothers with hypothyroidism detected during pregnancy that severe brain dysfunction in their child is unlikely if they receive prompt and appropriate therapy with thyroid hormone.

—Whitney Woodmansee MD

#### ATA THYROID BROCHURE LINKS

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

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

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## 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.

**Congenital:** condition that exists at birth.

**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.

**Thyroid hormone therapy:** patients with hypothyroidism are most often treated with Levothyroxine in order to return their thyroid hormone levels to normal. The goal of treatment is a TSH in the normal range and is the usual therapy.

**TSH Receptor Blocking Antibodies:** these are antibodies that block the TSH signaling pathway. TSH normally signals the thyroid gland to secrete thyroid hormones. TSH blocking antibodies prevent TSH from transmitting its signal to the thyroid cells, thus, the cells stop producing thyroid hormone, producing hypothyroidism.