



## THYROID AND PREGNANCY

### IVF pregnancy outcomes in women with treated hypothyroidism and women without thyroid disease

#### BACKGROUND

Hypothyroidism is common among women of child-bearing age. The most common cause of hypothyroidism in the United States is the autoimmune disease Hashimoto's thyroiditis. This is caused by the body developing antibodies that attack and destroy the thyroid. Hypothyroidism that is either undiagnosed or under-treated can contribute to infertility and can result in miscarriage. Several, but not all studies have suggested that treating women with hypothyroidism with levothyroxine improves pregnancy rates and reduces the risk of miscarriage. This study was designed to compare the success of in vitro fertilization (IVF) carried out in hypothyroid women treated with adequate doses of levothyroxine compared to women undergoing the same procedure with normal thyroid function. The goal was to see if appropriate treatment of the hypothyroidism normalized the success and live birth rates following IVF.

#### THE FULL ARTICLE TITLE

Busnelli A et al. In vitro fertilization outcomes in treated hypothyroidism. *Thyroid*. April 2, 2013 [Epub ahead of print].

#### SUMMARY OF THE STUDY

At an infertility clinic in Italy, 137 women with hypothyroidism were treated with levothyroxine to normalize their TSH and compared to 274 age-matched control women with normal thyroid function. Both groups underwent IVF. The main outcome measurement was live birth rate per IVF cycle. The two groups were similar in regards to baseline TSH, smoking history, menstrual regularity and cycle length, number of prior deliveries and indications for the IVF procedure. The treated hypothyroid women had more cancelled IVF cycles

due to poor response, the need for longer hormone stimulation to get their ovaries to respond and a greater proportion who did not undergo embryo transfer than did the control women. However, once the embryos were transferred there was no difference between the groups in regards to pregnancy rate (36% vs. 34%), proportion of women who had a miscarriage (16% vs. 22%) and live birth rates (30% of treated hypothyroid vs. 27% of the controls). There were no differences in outcomes in the hypothyroid patients between those women who had antibody positive autoimmune thyroid disease and those who were hypothyroid without any antibodies.

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

In this study, women with adequately treated hypothyroidism had no difference in pregnancy rates and live births compared to women with normal thyroid function, although the hypothyroid women did have less response to hormonal ovarian stimulation and a lower rate of embryo transfer. This adds to the data that shows the importance of identifying and treating women with hypothyroidism before attempting either natural conception or undergoing IVF.

— Glenn D. Braunstein, M.D.

#### ATA THYROID BROCHURE LINKS

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

Thyroid Hormone Treatment: <http://www.thyroid.org/thyroid-hormone-treatment>

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

#### ABBREVIATIONS & DEFINITIONS

**Autoimmune thyroid disease:** a group of disorders that are caused by antibodies that get confused and attack the thyroid. These antibodies can either turn on the

thyroid (Graves' disease, hyperthyroidism) or turn it off (Hashimoto's thyroiditis, hypothyroidism).

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

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## **THYROID AND PREGNANCY, continued**

**Subclinical Hypothyroidism:** a mild form of hypothyroidism where the only abnormal hormone level is an increased TSH. There is controversy as to whether this should be treated or not.

**Overt Hypothyroidism:** clear hypothyroidism with an increased TSH and a decreased T4 level. All patients with overt hypothyroidism are usually treated with thyroid hormone pills.

**Levothyroxine (T4):** the major hormone produced by the thyroid gland and available in pill form as Levoxy<sup>l</sup><sup>TM</sup>, Synthroid<sup>TM</sup>, Levotheroid<sup>TM</sup> and generic preparations.

**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.

**In-vitro fertilization:** a procedure when an egg is fertilized outside of the body and then implanted in a woman to achieve a pregnancy. The woman undergoing IVF is treated with hormones to stimulate the ovaries before IVF (hormonal ovarian stimulation).

**Antibodies:** proteins that are produced by the body's immune cells that attack and destroy bacteria and viruses that cause infections. Occasionally the antibodies get confused and attack the body's own tissues, causing autoimmune disease.