CLINICAL **THYROIDOLOGY** FOR THE **PUBLIC**

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THYROID AND PREGNANCY

Thyroid autoimmunity and infertility treatments

BACKGROUND

Autoimmune thyroid disease is very common in women of childbearing age and can lead to either an overactive (Graves' disease, hyperthyroidism) or underactive thyroid (Hashimoto's thyroiditis, hypothyroidism). Autoimmune thyroid disease occurs when the body makes antibodies that attack the thyroid and turn it on or off. This is characterized by positive TPO and/or thyroglobulin antibodies and is most commonly associated with in increased risk of developing hypothyroidism. Women with positive TPO antibodies have been shown to have an increased risk of pregnancy complications, including miscarriage and preterm labor. Autoimmune thyroid disease has been shown to be more common in women seeking treatment for infertility. This study sought to determine the effect of autoimmune thyroid disease on the success of assisted reproduction techniques (infertility treatments), specifically in vitro fertilization (IVF) and intracytoplasmic sperm injection (ICSI).

THE FULL ARTICLE TITLE

Busnelli A et al. The impact of thyroid autoimmunity on IVF/ICSI outcome: a systematic review and meta-analysis. Hum Reprod Update. June 20, 2016 [Epub ahead of print].

SUMMARY OF THE STUDY

These investigators examined 12 studies identified in the medical literature to investigate the relationship between autoimmune thyroid disease and pregnancy outcomes. Autoimmune thyroid disease was defined by positive TPO and/or thyroglobulin antibodies and the primary outcome examined was live births in women who received the infertility treatments of IVF or ICSI. Women with autoimmune thyroid disease had a significantly lower (35%) live birth rate than women without autoimmune thyroid disease. Interestingly, these investigators found that having autoimmune thyroid disease did not seem to negatively impact the success of the fertility procedure itself and there were no differences identified in number of eggs retrieved, fertilization rates, implantation rates or confirmed pregnancy rates. They did report that women with autoimmune thyroid disease had a higher miscarriage rate and that this presumably explained the lower live birth rate. Although all of the women had normal thyroid function as measured by TSH, women with autoimmune thyroid disease had higher TSH values as a group than women without autoimmune thyroid disease. Despite the fact that hypothyroidism is known to have an adverse effects on pregnancy success, TSH levels did not predict live birth or miscarriage rates in this study. In summary, women with autoimmune thyroid disease had lower live birth rates and higher miscarriage rates following infertility treatment, independent of thyroid function. Further studies are warranted to understand the mechanism(s) leading to less successful pregnancy outcomes in women with autoimmune thyroid disease.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Women with autoimmune thyroid disease and normal thyroid function have less successful pregnancy outcomes (fewer live births and more likely to have a miscarriage) following fertility treatments (IVF or ICSI) than women without autoimmune thyroid disease. The underlying mechanism is not known but future studies should be designed to better understand this process and hopefully lead to identification of appropriate prevention strategies.

— Whitney W. Woodmansee MD

ATA THYROID BROCHURE LINKS

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

Thyroid Function Tests:
http://www.thyroid.org/thyroid-function-tests/

Hypothyroidism:
http://www.thyroid.org/hypothyroidism/

THYROID AND PREGNANCY, continued

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.

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.

Thyroglobulin 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.

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.

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

In-Vitro Fertilization (IVF): a procedure when an egg is fertilized outside of the body and then implanted in a woman to achieve a pregnancy. A specific type of IVF is intracytoplasmic sperm injection (ICSI).