



## THYROID DISEASE AND PREGNANCY

### Positive thyroid peroxidase antibody level is associated with a lower birth rate in women with recurrent pregnancy losses

#### BACKGROUND

Pregnancy loss or miscarriage is estimated to occur in 1 in 4 pregnancies. Recurrent pregnancy loss is defined as three or more early pregnancy losses (in the first trimester) or two or more pregnancy losses in the second trimester or later. The cause of pregnancy loss is not known in about 60% of cases. Autoimmune thyroid disease occurs when the body makes antibodies that attack the thyroid, turning it on (hyperthyroidism) or off (hypothyroidism). Increased levels of thyroid peroxidase antibody (TPOAb) in the blood is a marker for autoimmune thyroid disease. Positive thyroid peroxidase antibody (TPOAb) levels in the blood have also been associated with difficulty getting pregnant (infertility) and pregnancy loss in some studies but not in others. Previous clinical trials did not show clear benefit of treatment with levothyroxine in women with positive TPOAb and history of infertility or pregnancy loss. This study was done to evaluate possible effect of positive TPOAb levels on live birth rate in women with history of current pregnancy losses.

#### THE FULL ARTICLE TITLE

Bliddal Set al. 2019 Thyroid peroxidase antibodies and prospective live birth rate – a cohort study of women with recurrent pregnancy loss. *Thyroid*. Epub 2019 Aug 13. PMID: 31407629.

#### SUMMARY OF THE STUDY

A total of 825 women (average age 35 years old) with history of recurrent pregnancy losses (average number of previous pregnancy losses was 3) and without clear cause for these pregnancy losses were recruited from a university hospital in Denmark from 2011-2017. Blood TPOAb and thyroid stimulating hormone (TSH) levels were measured before pregnancy. Women were recommended to start levothyroxine if TPOAb was positive and TSH >2.5mIU/L or if TPOAb was negative and TSH >4mIU/L. The decision to start levothyroxine was made between patient and her doctor.

Of 825 women, 139 women (16.8%) were TPOAb positive. A total of 444 women had a pregnancy and were included in the analyses assessing possible association between TPOAb positivity and pregnancy, live birth, and pregnancy loss rates. Of these 444 women, 69 women were TPOAb positive (15.5%) and 52 women were treated with levothyroxine (75%).

Overall, 62.8% of these pregnancies were successful in carrying the baby to term (live birth rate). The live birth rate was significantly lower in TPOAb-positive women compared to TPOAb-negative women (51.3% vs. 65.2%). TSH levels was not significantly different between women with live births and women with pregnancy losses. TPOAb-positive women who were treated with levothyroxine had a higher birth rate compared to TPOAb-positive women who were not treated with levothyroxine (61.5% vs. 29.4%). TPOAb-negative women who were treated with levothyroxine also had a higher birth rate compared to TPOAb-negative women who were not treated with levothyroxine (85.7% vs. 64.3%), but the difference was not significant.

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

Among women with recurrent pregnancy losses, TPOAb-positive women had a lower birth rate compared to TPOAb-negative women. Treatment with levothyroxine improved birth rate in these women. Positive TPOAb titer may be an indicator for a problem with underlying immune system, interfering with developing baby. It may also be an indicator for mild abnormalities in thyroid function, increasing the risk of pregnancy losses. Previous clinical trials have not shown clear benefit of treatment with levothyroxine in women with positive TPOAb levels, normal thyroid function, and history of infertility or pregnancy loss. However, this study looked at women in a higher risk group, with history of recurrent pregnancy losses. Doses of levothyroxine used in this study were





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also higher compared to doses of levothyroxine used in previous clinical trials.

Given the findings of this study, treatment with levothyroxine may decrease risk of further pregnancy loss in high-risk women with recurrent pregnancy losses.

However, treatment may not be generally necessary for pregnant women with positive TPOAb titer and normal thyroid function. More studies in high-risk women are needed to confirm the benefit of levothyroxine treatment in this group.

— Sun Lee, MD

### ATA THYROID BROCHURE LINKS

Hyperthyroidism in Pregnancy: <https://www.thyroid.org/hyperthyroidism-in-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).

**Thyroid peroxidase (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.

**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.

**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.

**Levothyroxine (LT<sub>4</sub>):** the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tyrosint™ and generic preparations.

