



THYROID AND PREGNANCY

Selenium supplements in pregnant women with thyroid disease

BACKGROUND

Selenium is a mineral found naturally in various foods that is important for making thyroid hormones and for normal thyroid health. It is needed in small amounts by the body. Because it is needed in small amounts and is plentiful on our food and environment, selenium deficiency is rare in the United States. However, in areas of the world that do report selenium deficiency, there appears to be an association with an increase in positive thyroid peroxidase (TPO) antibodies, which is a marker for autoimmune thyroid disease.

Positive TPO antibodies in pregnancy are associated with increased risk for miscarriage and other poor outcomes such as preterm delivery. Further, there is an association between positive TPO antibodies and thyroid problems after delivery (post-partum thyroiditis). Two previous clinical trials examining the effects of selenium supplementation in pregnant women had conflicting results; one reported that selenium decreased the risk for postpartum thyroid problems and decreased TPO antibodies during pregnancy, while the other reported no effect on TPO antibody levels.

This study examines the effect of selenium supplementation in pregnant women with autoimmune thyroid disease on the levels of TPO antibodies and the development of thyroid problems after delivery.

THE FULL ARTICLE TITLE

Mantovani, G., et al. "Selenium supplementation in the management of thyroid autoimmunity during pregnancy: results of the "SERENA study", a randomized, double-blind, placebo-controlled trial." *Endocrine* 66.3 (2019): 542-550.

SUMMARY OF THE STUDY

This study was done in 10 endocrine and obstetric centers in Italy. Women 18 to 45 years of age, at week 4-8 of

pregnancy and who were TPO-positive were enrolled between 2011 and 2016. A total of 45 women with positive TPO antibodies were divided into 2 groups that were the same in terms of age, BMI, week of pregnancy, TPO antibody levels or baseline selenium level. Of these, 32 women (71%) were taking levothyroxine prior to the study and another three (7%) were started on levothyroxine at the start of the study as their TSH was >2.7 . The women were randomly assigned to take an oral selenium supplement (L-selenomethionine 83 $\mu\text{g}/\text{day}$) or a non-selenium containing pill (placebo). Treatment was continued until 6 months after delivery.

TPO antibody levels decreased over the course of the pregnancy in both the placebo and the selenium group. At the postpartum visit, TPO antibody levels continued to decrease in the selenium group but had increased significantly in the placebo group. Thyroid-function tests did not differ between the groups at baseline or over the course of the study. Thyroid appearance and volume determined using ultrasound did not differ between groups at baseline or during the follow-up period. Similarly, there were no differences between the groups in health-related quality of life at baseline or during follow-up.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study showed that selenium supplementation during and after pregnancy prevented postpartum increases in TPO autoantibody levels but was not associated with changes in thyroid function, thyroid volume, thyroid appearance, or health-related quality of life. This supports the recommendation from the American Thyroid Association against selenium supplementation during pregnancy.

—Vibhavasu Sharma, MD, FACE



THYROID AND PREGNANCY, continued

ATA THYROID BROCHURE LINKS

Thyroid Disease in Pregnancy: <https://www.thyroid.org/thyroid-disease-pregnancy/>

Thyroid Function Tests: <https://www.thyroid.org/thyroid-function-tests/>

ABBREVIATIONS & DEFINITIONS

Selenium: a mineral found naturally in various foods that is important for making thyroid hormones and for normal thyroid function. It is needed in small amounts by the body.

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).

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.

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.

www.thyroid.org/donate/

