



HYPERTHYROIDISM

A mild risk of neonatal hyperthyroidism follows radioactive iodine therapy for Graves' disease prior to pregnancy

BACKGROUND

Graves' disease is an autoimmune condition and the most common cause of hyperthyroidism in women of childbearing age. It is caused by the patient making an antibody called TRAB (TSH Receptor Antibody) that attacks and turns on the thyroid, making it overactive. TRAB is detectable in the blood of most patients with Graves' disease. TRAB can pass through to the baby and cause hyperthyroidism after delivery in mothers with Graves' disease. This is called neonatal Graves' disease. This is a risk for all babies that are born to mothers with Graves' disease.

TRAB tends to decrease with treatment of Graves' disease with anti-thyroid medications and, if it goes away or decreases low enough, the Graves' disease goes into remission. TRAB also tends to decrease years after surgery. However, the amount of TRAB rises for several months after radioactive iodine therapy, but this effect may last longer in some individuals. This is likely due to the effect of the destruction of the thyroid by the radioactive iodine therapy. It is unknown if this increase in TRAB would have any effect on the thyroid function of babies or newborns of mother that have been previously treated with radioactive iodine. The goal of this study is to assess the risk of hyperthyroidism in newborns of mothers who were treated with radioactive iodine within 2 years before their pregnancy.

THE FULL ARTICLE TITLE

Yoshihara A et al, Incidence of neonatal hyperthyroidism among newborns of Graves' disease patients treated with radioiodine therapy Thyroid; epub 2018 Nov-14

SUMMARY OF THE STUDY

This study was conducted in Ito Hospital in Tokyo, Japan, and included 145 pregnant women who had radioactive iodine therapy within 2 years before their pregnancy. Their newborns were born between April 2004 and December 2015. All newborns had been assessed for hyperthyroidism based on their symptoms and blood tests for thyroid function.

A total of 8 newborns were found to have hyperthyroidism. The mothers of the affected newborns had a higher levels of TRAB at the time of radioactive iodine treatment and in the first and third trimesters of pregnancy as compared to mothers with healthy newborns. There was not a difference between thyroid volume (checked by ultrasound) at the time of radioactive iodine therapy, radioactive iodine dose or the interval between radioactive iodine therapy and pregnancy between these two groups of mothers.

The most important factor predicting hyperthyroidism in newborns was the level of TRAB in their mothers in third trimester of pregnancy (especially when it was 4.9 times higher than the normal range).

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that the risk of hyperthyroidism in newborns whose mothers were treated with radioactive iodine within 2 years of their pregnancy was 5.5%. The level of TRAB at third trimester is a reliable factor to predict this risk. It is critical to treat hyperthyroidism in newborns early and this study provides valuable information to identify the babies at risk.

— Shirin Haddady, MD MPH





HYPERTHYROIDISM, continued

ATA THYROID BROCHURE LINKS

Graves' Disease: <https://www.thyroid.org/graves-disease/>

Hyperthyroidism (Overactive): <https://www.thyroid.org/hyperthyroidism/>

Radioactive Iodine: <https://www.thyroid.org/radioactive-iodine/>

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

ABBREVIATIONS & DEFINITIONS

Graves' disease: the most common cause of hyperthyroidism in the United States. It is caused by antibodies that attack the thyroid and turn it on.

Autoimmune disorders: A diverse group of disorders that are caused by antibodies that get confused and attack the body's own tissues. The disorder depends on what tissue the antibodies attack. Graves' disease and Hashimoto's thyroiditis are examples of autoimmune thyroid disease. Other Autoimmune disorders include: type 1 diabetes mellitus, Addison's disease (adrenal insufficiency), vitiligo (loss of pigment of some areas of the skin), systemic lupus erythematosus, pernicious anemia (B12 deficiency), celiac disease, inflammatory bowel disease, myasthenia gravis, multiple sclerosis, and rheumatoid arthritis.

Hyperthyroidism: a condition where the thyroid gland is overactive and produces too much thyroid hormone. Hyperthyroidism may be treated with antithyroid meds (Methimazole, Propylthiouracil), radioactive iodine or surgery.

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.

TRAB: TSH receptor antibodies often present in the serum of patients with Graves disease that are directed against the TSH receptor, often causing stimulation of this receptor with resulting hyperthyroidism.

Radioactive iodine (RAI): this plays a valuable role in diagnosing and treating thyroid problems since it is taken up only by the thyroid gland. I-131 is the destructive form used to destroy thyroid tissue in the treatment of thyroid cancer and with an overactive thyroid. I-123 is the non-destructive form that does not damage the thyroid and is used in scans to take pictures of the thyroid (Thyroid Scan) or to take pictures of the whole body to look for thyroid cancer (Whole Body Scan).

