



HYPERTHYROIDISM

Hyperthyroidism in infants of mothers with Graves' disease

BACKGROUND

The most common cause of hyperthyroidism in the United States is Graves' disease. This is an autoimmune disorder where antibodies attack the thyroid and turn it on. These antibodies are called TSH receptor antibodies (TRAb). Occasionally, the antibodies go away and the Graves' disease goes into remission. During pregnancy in a mother with Graves' disease, TRAb can cross the placenta and affect the developing baby's thyroid. If the baby is born with these antibodies, they may be hyperthyroid, a condition called neonatal Graves' disease. Symptoms typically develop within the first 2 weeks of life. This disorder lasts only a few weeks until the mother's antibodies go away. Fortunately, TRAb in mothers with Graves' disease often decrease and the disease can go into remission during pregnancy. As such, hyperthyroidism in early infancy and neonatal Graves' disease is rare. Guidelines published by the American Thyroid Association recommend testing pregnant women with Graves' disease for TRAb in the 3rd trimester.

All newborns in the United States are screened for thyroid disease by obtaining a TSH level on a heel stick blood sample right after delivery. This is done mainly to screen for neonatal hypothyroidism, which is vastly more common than neonatal Graves' disease. Although we know of some of the risk factors for developing Graves' disease in the mother, additional studies are necessary to help predict which newborns are at risk. This study was done to look at the risk factors in the newborn that may help predict the likelihood of developing hyperthyroidism and neonatal Graves' disease prior to the onset of symptoms.

THE FULL ARTICLE TITLE

Banigé M et al 2018 Research Group for Perinatal Dys-thyroidism (RGPD) Study Group 2018 Prediction of neonatal hyperthyroidism. J Pediatr Epub 2018 Mar 28. PMID: 29605392.

SUMMARY OF THE STUDY

This study examined the medical records of 415 pregnant women who had Graves' disease and positive TRAb testing during their pregnancy at multiple obstetric centers in Paris, France. Also, in addition to symptoms and signs of hyperthyroidism, blood test reports of infants born to the mothers with this condition and any neck ultrasound data in them were studied. Well defined laboratory ranges were used to diagnose hyperthyroidism in the newborns.

A total of 149 babies (35.9%) had positive TRAb tests, which took an average of 20 days to decline to normal. A total of 23 babies (5.5%) had neonatal hyperthyroidism of varying severity based on clinical symptoms; 17 of these had hyperthyroidism determined by blood testing. The mothers of 20 of the infants with neonatal hyperthyroidism were treated with antithyroid drugs in the 3rd trimester. The infants with neonatal hyperthyroidism were born earlier than the infants without neonatal hyperthyroidism (37 vs. 38.5 weeks) and at lower birth weights (average 2809 vs. 3013 g). Antithyroid drugs were used to treat 17 hyperthyroid infants and 14 of these became hypothyroid and subsequently required levothyroxine treatment.

Among infants of mothers with Graves' disease, a serum TSH <0.9 mIU/L at days 3 to 7 after birth had a higher chance of having higher levels of the thyroid antibody and /or developing hyperthyroidism (although the overall risk was low) that babies with higher TSH levels.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study showed that in addition to the mother's history and laboratory testing, additional tests in the newborn can help predict which newborns are at a higher risk of developing hyperthyroidism. Although further studies are needed to further understand the risk of developing this condition in the newborns, it is helpful to know some of the risk factors that can help predict neonatal Graves' disease before the onset of symptoms.

—Vibhavasu Sharma, MD





HYPERTHYROIDISM, continued

ATA THYROID BROCHURE LINKS

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

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

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

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

ABBREVIATIONS AND DEFINITIONS

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.

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.

Neonatal Graves' disease: hyperthyroidism that occurs in babies born from mothers with Graves's disease and caused by the transfer of TRAb from the mother to the

baby during pregnancy. The disorder is self-limited in the baby and resolved within a few weeks after birth.

TRAb: 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.

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.

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