



HYPERTHYROIDISM

New test may help predict which patients with Graves' disease will remain in remission after stopping antithyroid drugs

BACKGROUND

Patients with Graves' disease, an autoimmune disorder, develop hyperthyroidism because their immune system makes antibodies that turn on the thyroid gland, causing the thyroid to enlarge and make excessive amounts of thyroid hormones. The antibodies turn on the thyroid by acting like TSH and binding to the TSH receptor. Sometimes the antibody goes away and Graves' disease goes into remission. Indeed, that is the goal when patients stay on antithyroid drugs, such as Methimazole or Propylthiouracil, for 12-18 months and then the drugs usually are stopped. Unfortunately, a large percentage of patients either do not go into remission or relapse within the first year after stopping the antithyroid drugs. Therefore, any test that would predict which patients would remain in remission and which would relapse before stopping the antithyroid drugs would be useful. The authors developed a test that measured one type of thyroid-stimulating antibodies (the Mc4 assay) which was shown to be positive in the patients with Graves' disease, but negative in patients without thyroid problems, patients with hyperthyroidisms from other causes and patients with Graves' disease that are in remission. In this study, they tested the ability of the Mc4 assay to serve as a sensitive index of remission or relapse of Graves' disease after treatment with antithyroid drugs.

THE FULL ARTICLE TITLE

Giuliani C et al. A TSHR-LH/CGR chimera that measures functional thyroid-stimulating autoantibodies (TSAb) can predict remission or recurrence in Graves'

patients undergoing antithyroid drug (ATD) treatment. *J Clin Endocrinol Metab.* April 6 2012 [Epub ahead of print]. doi: 10.1210/jc.2011-2897.

SUMMARY OF THE STUDY

A total of 55 patients with Graves' disease who received antithyroid drugs for 12-48 months were followed for 12-120 months after the antithyroid drugs were stopped. Of the 28 patients who stayed in remission, 22 (78%) had normal Mc4 levels, while 10 of 12 (83%) patients who relapsed had elevated levels, as did all 15 patients who could not get off antithyroid drug therapy because they had evidence of persistent hyperthyroidism.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This is an important study that identifies a test with potential to identify remission of Graves' disease in patients on antithyroid drugs as well as possibly identify those at high risk for relapse. However, a larger prospective study of patients with Graves' disease needs to be performed to determine if similar results are obtained in larger populations.

— Glenn Braunstein, MD

ATA THYROID BROCHURE LINKS

Hyperthyroidism: <http://www.thyroid.org/what-is-hyperthyroidism>

Graves' Disease: <http://www.thyroid.org/what-is-graves-disease>

ABBREVIATIONS & DEFINITIONS

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 I 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.

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.

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HYPERTHYROIDISM, continued

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.

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.

TSH receptor: a molecule (protein) located on the thyroid cell surface that binds TSH and stimulates the production of the thyroid hormones within the thyroid cell.

Antithyroid drugs: medications that blocks the thyroid from making thyroid hormone and used as treatment for hyperthyroidism. The two drugs used in the United States are Methimazole and Propylthiouracil (PTU).

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.

Immune system: a system of organs, tissues, and cells in our body that has the role to recognize potentially harmful foreign substances and organisms as well as abnormal body cells and produce antibodies to destroy these factors.