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HYPOTHYROIDISM

Immune-promoting chemicals can be measured in blood which probably cause the early stages of thyroid damage and hypothyroidism in Hashimoto's thyroiditis

BACKGROUND

Hashimotos thyroidits is the most common cause of hypothyroidism in the United States. It is caused by lymphocytes producing antibodies that attack the thyroid and destroy the gland. Some thyroid antibodies, such as TPO antibodies, can be measured in the blood and are useful in diagnosing Hashimoto's thyroiditis. However, they can also be measured in the blood of individuals who may never develop thyroid problems. While it is unknown what makes antibodies attack the thyroid, the attack begins by the antibody-producing cells secreting chemicals which activate susceptible thyroid and lymphocyte blood cells. These activated thyroid cells and lymphocytes release "chemokines" which are chemicals which cause inflammation in the thyroid, leading to hypothyroidism. Three chemokines, CXCL9, CXCL10 and CXCL11, have been measured in blood, but only CXCL10 has been consistently high in Hashimoto's patients. This study measured CXCL 9 and 11 to determine if blood levels were higher in Hashimoto's patients. If so, they could become additional tests which might improve the ability to predict the future course of Hashimoto's thyroiditis in individual patients.

THE FULL ARTICLE TITLE:

Antonelli A et al Increase of circulating CXCL 9 and CXCL 11 associated with euthyroid or subclinically hypothyroid autoimmune thyroiditis. J Clin Endocrinology and Metab., 2011, 96:1859-63.

SUMMARY OF THE STUDY

A total of 141 patients with Hashimoto's thyroiditis were studied. Most had positive TPO antibodies, hypothyroidism or typical ultrasound features of Hashimotos's thyroiditis. They were compared to patients with negative TPO antibodies, both with and without thyroid problems.

The results were that blood levels of CXCL9 and CXCL11 were higher in the Hashimoto's patients than the two other groups, especially when patients were hypothyroid, had characteristic ultrasound features or were older than 50.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that blood levels of the chemokines CXCL 9 and 11 may become newer tests to predict which patients with positive TPO antibodies will develop hypothyroidism. This may allow earlier detection and treatment of patients with Hashimoto's thyroiditis.

— Jerrold Stock, MD

ATA THYROID BROCHURE LINKS

Hypothyroidism: http://thyroid.org/patients/patient_brochures/hypothyroidism.html

Thyroiditis: http://thyroid.org/patients/patient_brochures/thyroiditis.html

ABBREVIATIONS & DEFINITIONS

Hashimoto's thyroiditis: the most common cause of hypothyroidism in the United States. It is caused by antibodies that attack the thyroid and destroy the gland.

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.

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.

Lymphocytes: cells of the immune system that produce antibodies to fight infection.

Chemokines: chemicals produced by lymphocytes that cause inflammation in affected tissues. One chemokine, CXCL10, has been reported to be elevated in the blood of patients with Hashimotos's thyroiditis.