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AUTOIMMUNE THYROID DISEASE

Thyroid antibodies are frequently detected in patients with type 1 diabetes mellitus

BACKGROUND

Autoimmune disease occurs when the body attaches tissues with antibodies that usually attack infections. Individuals with type 1 diabetes mellitus (T1DM) have antibodies which attack the cells responsible for insulin production, thus resulting in the high blood sugars seen in this form of diabetes. T1DM is the less common form of diabetes. Having T1DM increases the risk of having antibodies which attack other tissues in the body, including the thyroid gland. Thyroid antibodies can either turn on the thyroid to cause hyperthyroidism, or turn off the thyroid to cause hypothyroidism. Autoimmune thyroid disease is the most common cause of hyperthyroidism and hypothyroidism in the United States. Thyroid antibodies that can be measured in the blood include antibodies to thyroglobulin (Tg) and thyroid peroxidase (TPO) as well as antibodies to the thyroid hormones T_4 and T_3. This study was done to measure levels of thyroid antibodies in patients with T1DM. In addition, the researchers studied whether having thyroid antibodies increased the chance of developing complications of diabetes, including vascular problems related to diabetic eye, nerve, or kidney diseases.

THE FULL ARTICLE TITLE

Benvenga S et al. Serum thyroid hormone autoantibodies in type 1 diabetes mellitus. J Clin Endocrinol Metab [Epub ahead of print].

SUMMARY OF THE STUDY

This was a study of 52 adult patients with T1DM in Italy followed for six years. The patients had two sets of measurements performed, at the beginning of the study and six years later, of antibodies in the blood to Tg, TPO and the thyroid hormones. They also had thyroid ultrasounds to assess for inflammation in the thyroid gland by imaging. Finally, patients were surveyed to see if any diabetes-related complications were present at the two timepoints.

The researchers found a mild increase in the frequency of Tg or TPO antibodies, or thyroid inflammation by imaging, at the end of the 6 year study. These antibodies and/or inflammation of the thyroid were generally not associated with any diabetes complications. Most of these T1DM patients had at least one positive type of thyroid antibody, compared to the usual frequency of only about 1% in a healthy population without T1DM. However, similar to the findings regarding Tg or TPO antibodies or thyroid inflammation by imaging, antibodies to the thyroid hormones were also generally not associated with any diabetes complications. In some patients, the type of thyroid hormone antibody attacking the thyroid hormone called T_3 was associated with a very slightly increased frequency of some diabetic vascular complications.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study reports that individuals with T1DM have an increased frequency of antibodies attacking the thyroid. This has never been studied and represents a novel finding in patients with autoimmune thyroid disease and T1DM. The observation that antibodies attacking the thyroid hormone called T_3 may be linked to worsening diabetes complications needs to be further analyzed in future research studies. If the findings are confirmed, the T_3 antibody measurement may represent a potentially useful test to monitor for the development of vascular complications in patients with T1DM. In addition, patients with T1DM need to be monitored for the development of thyroid disease, as is noted in several national guidelines.

— Angela M. Leung, MD, MSc

ATA THYROID BROCHURE LINKS

Thyroid Function Tests: http://www.thyroid.org/blood-test-for-thyroid

Hypothyroidism: http://www.thyroid.org/what-is-hypothyroidism

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

AUTOIMMUNE THYROID DISEASE, continued

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 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.

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).

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.

Thyroglobulin 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.