



## AUTOIMMUNE THYROID DISEASES

### Can we predict who will develop thyroid dysfunction, and when?

#### BACKGROUND:

Hashimoto's thyroiditis and Graves' disease are autoimmune disorders where the immune system damages or alters the function of the thyroid gland. In Hashimoto's thyroiditis, antibodies attack the thyroid and destroy the gland, producing hypothyroidism. In Graves' disease, antibodies attack the thyroid and turn it on, producing hyperthyroidism. These disorders often run in families. Thyroid patients often wonder if their children are at risk for developing thyroid problems and, if so, when they are likely to occur. This study was done to follow a group of people at risk for the development of thyroid disease to answer these questions.

#### FULL ARTICLE TITLE:

Effraimidis et al. Natural history of the transition from euthyroidism to overt autoimmune hypo- or hyperthyroidism: a prospective study *Eur J Endocrinol* 2011;164:107-113. Epub October 18, 2010.

#### SUMMARY OF THE STUDY:

Close to 800 healthy women in Amsterdam ages 18-65 who had at least one relative with documented autoimmune thyroid disease were followed annually for 5 years. Approximately 5 percent became hypothyroid while 1.6 % became hyperthyroid. While everyone had normal thyroid levels at the beginning the study, the people who became hypothyroid had higher titers of TPO antibodies, higher TSH levels and lower levels of T<sub>4</sub> as compared with those patients that did not develop hypothyroidism. It took an average of three years for hypothyroidism to develop.

In the people who became hyperthyroid, TPO antibodies were more common but there was no difference in thyroid hormone levels, even at the last annual study before development of hyperthyroidism.

#### IMPLICATIONS OF THE STUDY:

As has been shown in different ways in previous studies, the development of Hashimoto's thyroiditis is a relatively slow process over many years. On the other hand, Graves' disease seems to develop rapidly in susceptible people and may be triggered by as yet unknown stresses.

This study raises the question whether some patients who may develop Hashimoto's thyroiditis should be treated with thyroid hormone replacement even before they develop hypothyroidism. However, precisely who could benefit from this remains quite unclear since, in this study, only a small fraction of people became hypothyroid.

— Henry Fein, MD

#### ATA THYROID BROCHURE LINKS

Hypothyroidism: [http://thyroid.org/patients/patient\\_brochures/hypothyroidism.html](http://thyroid.org/patients/patient_brochures/hypothyroidism.html)

Graves disease: [http://thyroid.org/patients/patient\\_brochures/graves.html](http://thyroid.org/patients/patient_brochures/graves.html)

Hyperthyroidism: [http://thyroid.org/patients/patient\\_brochures/hyperthyroidism.html](http://thyroid.org/patients/patient_brochures/hyperthyroidism.html)

#### ABBREVIATIONS & DEFINITIONS

**Hypothyroidism:** a condition where the thyroid gland is underactive and doesn't produce enough thyroid hormone. Treatment requires taking thyroid hormone pills.

**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.

**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.

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## **AUTOIMMUNE THYROID DISEASES**, continued

**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.

**Thyroxine (T<sub>4</sub>):** the major hormone secreted by the thyroid gland. Thyroxine is broken down to produce Triiodothyronine which causes most of the effects of the thyroid hormones.

**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.

**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.

**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.