Hashimoto's Disease

National Endocrine and Metabolic Diseases Information Service

U.S. Department of Health and Human Services

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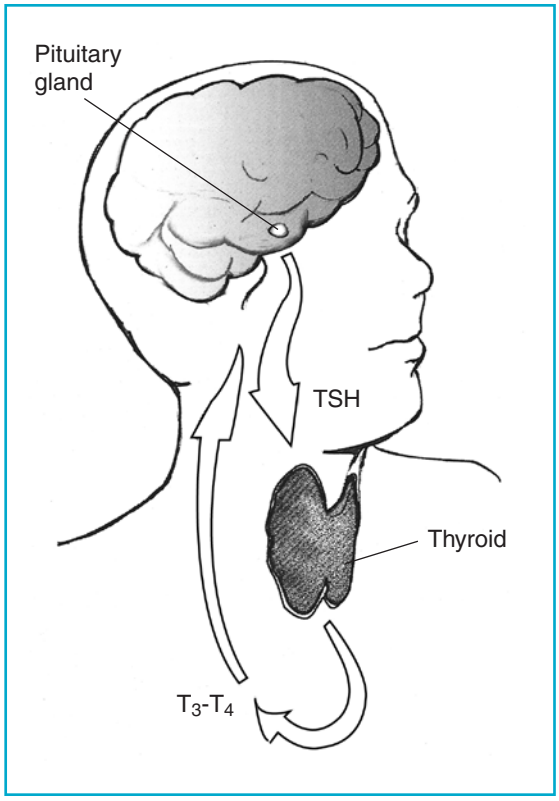
What is Hashimoto's disease?

Hashimoto's disease, also called chronic lymphocytic thyroiditis or autoimmune thyroiditis, is a form of chronic inflammation of the thyroid gland. The inflammation results in damage to the thyroid gland and reduced thyroid function or "hypothyroidism," meaning the gland doesn't make enough thyroid hormone for the needs of the body. Hashimoto's disease is the most common cause of hypothyroidism in the United States.

The thyroid is a small, butterfly-shaped gland in the front of the neck below the larynx, or voice box. The thyroid gland makes two thyroid hormones, triiodothyronine (T_3) and thyroxine (T_4). Thyroid hormones circulate throughout the body in the bloodstream and act on virtually every tissue and cell in the body. These hormones affect metabolism, brain development, breathing, heart rate, nervous system functions, body temperature, muscle strength, skin moisture levels, menstrual cycles, weight, cholesterol levels, and more.

Thyroid hormone production is regulated by another hormone called thyroid-stimulating hormone (TSH). TSH is made by the pituitary gland, a pea-sized gland located in the brain. When thyroid hormone levels in the blood are low, the pituitary releases more TSH. When thyroid hormone levels are high, the pituitary responds by dropping TSH production.



The thyroid gland's production of thyroid hormones (T_3 and T_4) is triggered by thyroid-stimulating hormone (TSH), which is made by the pituitary gland.

Hashimoto's disease is an autoimmune disorder, meaning the body's immune system attacks its own healthy cells and tissues. In Hashimoto's disease, the immune system makes antibodies that attack cells in the thyroid and interfere with their ability to produce thyroid hormone. Large numbers of white blood cells called lymphocytes accumulate in the thyroid. Lymphocytes make the antibodies that drive the autoimmune process.

What are the symptoms of Hashimoto's disease?

Many people with Hashimoto's disease have no symptoms at first. As the disease slowly progresses, the thyroid usually enlarges and may cause the front of the neck to look swollen. The enlarged gland, called a goiter, may create a feeling of fullness in the throat but is usually not painful. After years, or even decades, the damage to the thyroid causes it to shrink and the goiter to disappear.

Not everyone with Hashimoto's disease develops hypothyroidism. For those who do, the hypothyroidism may be subclinical—mild and without symptoms. Other people have one or more of these common symptoms of hypothyroidism:

- fatigue
- weight gain
- cold intolerance
- joint and muscle pain
- constipation
- dry, thinning hair
- heavy or irregular menstrual periods and impaired fertility
- depression
- a slowed heart rate

Who is likely to develop Hashimoto's disease?

Hashimoto's disease is about seven times more common in women than men. Although it often occurs in adolescent or young women, the disease more commonly appears between 40 and 60 years of age.[1] Hashimoto's disease tends to run in families. Scientists are working to identify the gene or genes that cause the disease to be passed from one generation to the next. Possible environmental influences are also being studied. For example, researchers have found that excess iodine consumption may inhibit thyroid hormone production in susceptible individuals. Certain drugs or viral infections may also contribute to autoimmune thyroid diseases.

People with other autoimmune disorders are more likely to develop Hashimoto's disease and vice versa. These disorders include

- vitiligo, a condition in which some areas of the skin lose their natural color
- rheumatoid arthritis
- Addison's disease, in which the adrenal glands are damaged and cannot produce enough of certain critical hormones
- type 1 diabetes
- pernicious anemia, a type of anemia caused by inadequate vitamin B12 in the body

[1]Bindra A, Braunstein GD. Thyroiditis. *American Family Physician*. 2006;73(10):1769–1776.

How is Hashimoto's disease diagnosed?

Diagnosis begins with a physical examination and medical history. An enlarged thyroid gland may be detectable during a physical exam and symptoms may suggest hypothyroidism. Doctors will then do several blood tests to confirm the diagnosis.

The ultrasensitive TSH test is usually the first test performed. This blood test is the most accurate measure of thyroid activity available. Generally, a TSH reading above normal means a person has hypothyroidism. In people who produce too little thyroid hormone, the pituitary makes TSH continuously, trying to get the thyroid to produce more thyroid hormone.

The T_4 test measures the actual amount of circulating thyroid hormone in the blood. In subclinical hypothyroidism, the level of T_4 in the blood is normal, but as the disease progresses, T_4 levels drop below normal.

The antithyroid peroxidase (anti-TPO) antibody test looks for the presence of thyroid autoantibodies. Most people with Hashimoto's disease have these antibodies, but people whose hypothyroidism is caused by other conditions do not.

How is Hashimoto's disease treated?

Treatment generally depends on whether the thyroid is damaged enough to cause hypothyroidism. In the absence of hypothyroidism, some doctors treat Hashimoto's disease to reduce the size of the goiter. Others choose not to treat the disease and simply monitor their patients for disease progression.

Hashimoto's disease, with or without hypothyroidism, is treated with synthetic thyroid hormone. Doctors prefer to use synthetic T_4 such as Synthroid rather than synthetic T_3 because T_4 stays in the body longer, ensuring a steady supply of thyroid hormone throughout the day. The so-called "natural" thyroid preparations made with desiccated animal thyroid are rarely prescribed today.

The exact dose of synthetic thyroid hormone depends on a person's age and weight; the severity of the hypothyroidism, if present; the presence of other health problems; and the use of other medications such as cholesterol-lowering drugs that could interfere with the action of synthetic thyroid hormone.

Doctors routinely test the blood of patients taking synthetic thyroid hormone and make dosage adjustments as necessary. A normal, healthy thyroid and metabolic state can be restored with the use of synthetic thyroid hormone.

Points to Remember

- Hashimoto's disease is an autoimmune disease that causes chronic inflammation of the thyroid gland.
- Hashimoto's disease is the most common cause of hypothyroidism—when the thyroid gland doesn't make enough thyroid hormone for the body's needs—in the United States and most often affects women between the ages of 40 and 60.
- Symptoms of Hashimoto's disease may include goiter, a feeling of fullness in the throat, fatigue, weight gain, cold intolerance, and a slowed heart rate.
- Hashimoto's disease may not always need treatment. When it does, it is treated with synthetic thyroid hormone.

For more information about hypothyroidism, see the National Endocrine and Metabolic Diseases Information Service's fact sheet *Hypothyroidism*.

Hope through Research

Researchers are working to identify the genes that make some people susceptible to autoimmune thyroid diseases. Other studies are examining the cellular activities that trigger lymphocyte invasion of the thyroid and potential therapies to interrupt these processes.

Participants in clinical trials can play a more active role in their own health care, gain access to new research treatments before they are widely available, and help others by contributing to medical research. For information about current studies, visit *www.ClinicalTrials.gov*.

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This fact sheet is also available at *www.endocrine.niddk.nih.gov*.

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