

Difference Between Graves Disease and Hashimoto

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Key Difference – Graves Disease vs Hashimoto

The disorders that are due to the immune reactions mounted by the body against its own cells and tissues are known as [autoimmune disorders](#). Graves disease and Hashimoto are two such autoimmune disorders that affect both structure and function of the [thyroid](#) gland. However, the ultimate pathological outcomes of these two conditions are drastically different from each other. **In Graves disease, the thyroid hormone level is elevated causing [hyperthyroidism](#) whereas, in Hashimoto, the thyroid hormone level drops well below the par value, resulting in [hypothyroidism](#).** This discord in the hormone level is the key difference between Graves disease and Hashimoto.

What is Graves Disease?

Graves disease is an autoimmune thyroid disorder with an unknown etiology.

Pathogenesis

An autoantibody of [IgG](#) type called the Thyroid Stimulating Immunoglobulin binds to TSH receptors in the thyroid gland and mimics the action of TSH. As a result of this increased stimulation, there is an excessive production of the thyroid hormone associated with the hyperplasia of the thyroid follicular cells. The end result is the diffuse enlargement of the thyroid gland.

The increased stimulation by the thyroid hormones expands the volume of retro-orbital connective tissues. This along with the edema of the extraocular muscles, accumulation of the extracellular matrix materials, and infiltration of the periorbital spaces by [lymphocytes](#) and fat tissues weaken the extraocular muscles, pushing the eyeball forward.



Figure 01: Exophthalmos in Graves disease

Morphology

There is a diffuse enlargement of the thyroid gland. Cut sections will show a red meaty appearance. Follicular cell hyperplasia which is characterized by the presence of a large number of small follicular cells is the hallmark microscopic feature.

Clinical Features

The distinguishing clinical features of Graves disease are,

- Diffuse goiter
- Exophthalmos
- Periorbital myoedema

In addition to these symptoms, the patient can have the following clinical features because of the increased thyroid hormone levels.

- Warm and flushed skin
- Increased sweating
- Loss of weight and increased appetite
- [Diarrhea](#) due to increased bowel motility

- Increased sympathetic tone leads to tremors, insomnia, anxiety and proximal muscle weakness.
- Cardiac manifestations such as tachycardia, palpitations, and arrhythmias.

Investigations

- Thyroid function tests to confirm thyrotoxicosis
- Checking for the presence of thyroid stimulating immunoglobulin in blood.

Management

- Medical treatment

The administration of antithyroid drugs such as carbimazole and methimazole is extremely effective. The most common adverse effect associated with the continuous use of these drugs is agranulocytosis, and all patients who are under antithyroid drugs should be advised to seek immediate medical attention in case of an unexplained fever or a sore throat.

- Radiotherapy with radioactive iodine
- Surgical resection of the thyroid gland. This is the last resort option which is used only when the medical interventions fail to achieve the desired outcome.

What is Hashimoto?

Hashimoto thyroiditis is an autoimmune disease which is a common cause of hypothyroidism, especially in areas where iodine deficiency is not prevalent.

This condition is characterized by the gradual destruction of thyroid follicles due to the autoimmune-mediated lymphocytic infiltration, ultimately resulting in thyroid failure.

Morphology

The thyroid gland is diffusely enlarged, and cut sections show a pale firm and solid appearance with vague nodularity. An intense infiltration of the thyroid gland by the plasma cells and lymphocytes can be observed under the microscope.

Clinical Features

Usually, middle-aged women are more likely to be affected by this condition.

- Diffuse goiter
- Tiredness
- Weight gain
- Cold intolerance
- Depression
- Poor libido
- Puffy eyes
- Dry and brittle hair
- Arthralgia and myalgia
- Constipation
- Menorrhagia
- [Psychoses](#)
- Deafness

Children with hypothyroidism can have cretinism which is characterized by poor mental and physical development.



Figure 02: Hashimoto

Complications

Hashimoto thyroiditis increases the likelihood of having

- Other autoimmune diseases such as SLE

- Malignancies such as [non- Hodgkin lymphoma](#) and papillary [carcinoma](#) of the thyroid gland.

Investigations

- Measurement of serum TSH level which is unusually increased in hypothyroidism
- The T₄ level is drastically reduced
- Checking for the presence of antithyroid antibodies – in the Hashimoto thyroiditis, the levels of antithyroid peroxidase, antithyroid thyroglobulin, and antithyroid microsomal antibodies are abnormally elevated.

Management

Hypothyroidism is managed by the replacement therapy with levothyroxine.

What are the Similarities Between Graves Disease and Hashimoto

- Both are autoimmune diseases that affect the thyroid gland.
- The thyroid gland is diffusely enlarged in both Graves disease and Hashimoto thyroiditis.

What is the Difference Between Graves Disease and Hashimoto?

Graves Disease vs Hashimoto	
Graves disease is an autoimmune thyroid disorder with an unknown etiology.	Hashimoto thyroiditis is an autoimmune disease which is a common cause of hypothyroidism especially in the areas where iodine deficiency is not prevalent.
Thyroid Levels	
This causes hyperthyroidism.	This causes hyperthyroidism.
Thyroid Follicles	
There is hyperplasia of the thyroid follicular	The thyroid follicles are destroyed,

cells.

and there is an infiltration of the thyroid tissues by plasma cells and lymphocytes.

Cross Section

The cross sections taken from a thyroid gland affected by Graves have a red meaty appearance.

Cross sections have a pale, firm and solid appearance.

Clinical Features

- The hallmark clinical features of Graves disease are,
 - Diffuse goiter
 - Exophthalmos
 - Periorbital myoedema

In addition to these symptoms, the patient can have the following clinical features because of the increased thyroid hormone levels.

- Warm and flushed skin
- Increased sweating
- Loss of weight and increased appetite
- Diarrhea due to increased bowel motility
- Increased sympathetic tone leads to tremors, insomnia, anxiety and proximal muscle weakness.
- Cardiac manifestations such as

The following clinical features are observed in Hashimoto thyroiditis due to the resultant hypothyroidism.

- There is diffuse goiter
- Tiredness
- Weight gain
- Cold intolerance
- Depression
- Poor libido
- Puffy eyes
- Dry and brittle hair
- Arthralgia and myalgia
- Constipation

tachycardia, palpitations, and arrhythmias.

- Menorrhagia
- Psychoses
- Deafness

TSH Levels

The serum TSH level is decreased, but the T4 level is increased.

TSH level is increased, but the T4 level is decreased.

Antibodies

Thyroid Stimulating Immunoglobulin is the antibody whose levels are increased in Graves disease.

In the Hashimoto thyroiditis, the levels of antithyroid peroxidase, antithyroid thyroglobulin, and antithyroid microsomal antibodies are abnormally elevated.

Relation to Cancer

There is no correlation with the incidence of cancers.

Hashimoto thyroiditis increases the chance of having papillary carcinomas of the thyroid gland and non-Hodgkin lymphomas.

Medical Management

Medical management is through the administration of antithyroid drugs such as carbimazole. Radiotherapy with radioactive iodine and surgical removal of the thyroid gland are the other treatment options.

Medical management is the replacement therapy using levothyroxine.

Summary – Graves Disease vs Hashimoto

Graves disease and Hashimoto are two autoimmune disorders that affect the thyroid gland. In Graves disease, the thyroid hormone level increases causing hyperthyroidism, but in Hashimoto, the thyroid hormone level is unusually reduced. This is the basic difference between Graves disease and Hashimoto.

References:

1. Kumar, Parveen J., and Michael L. Clark. Kumar & Clark clinical medicine. Edinburgh: W.B. Saunders, 2009. Print.
2. Kumar, Vinay, Stanley Leonard Robbins, Ramzi S. Cotran, Abul K. Abbas, and Nelson Fausto. Robbins and Cotran pathologic basis of disease. 9th ed. Philadelphia, Pa: Elsevier Saunders, 2010. Print.

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