Grave’s Disease – Autoimmune Hyperthyroidism

From the American Thyroid Society

Graves’ Disease

What is the Thyroid Gland?

The thyroid gland is a butterfly-shaped endocrine gland that is normally located in the lower front of the neck. The thyroid’s job is to make thyroid hormones, which are secreted into the blood and then carried to every tissue in the body. Thyroid hormone helps the body use energy, stay warm and keep the brain, heart, muscles, and other organs working as they should.

What is Graves’ Disease?

Graves’ disease is caused by a generalized over-activity of the entire thyroid gland (hyperthyroidism). It is named for Robert Graves, an Irish physician, who described this form of hyperthyroidism about 150 years ago.

What are the symptoms of Graves’ Disease?

Hyperthyroidism

The majority of symptoms of Graves’ disease are caused by the excessive production of thyroid hormones by the thyroid (see Hyperthyroidism brochure).

Eye Disease

Graves’ disease is the only kind of hyperthyroidism that can be associated with inflammation of the eyes, swelling of the tissues around the eyes and bulging of the eyes (called Graves’ ophthalmopathy). Although many patients with Graves’ disease have redness and irritation of the eyes at some time, less than five percent ever develop enough inflammation of the eye tissues to cause serious or permanent trouble. Patients who have more than very mild eye symptoms do require an evaluation with an eye doctor (an ophthalmologist) as well as their endocrinologist.

Eye symptoms most often begin about six months before or after the diagnosis of Graves’ disease has been made. Seldom do eye problems occur long after the disease has been treated. In some patients with eye symptoms, hyperthyroidism never develops and, rarely, patients may be hypothyroid. The severity of the eye symptoms is not related to the severity of the hyperthyroidism. Early signs of trouble might be red or inflamed eyes, a bulging of the eyes due to inflammation of the tissues behind the eyeball or double vision. Diminished vision or double vision are rare problems that usually occur later if at all. We do not know why, but problems with the eyes occur much more often and are more severe in people with Graves’ disease who smoke cigarettes.

Skin Disease

Rarely, patients with Graves’ disease develop a lumpy reddish thickening of the skin in front of the shins known as pretibial myxedema. This skin condition is usually painless and relatively mild, but can be painful. Like the eye trouble of Graves’ disease, the skin problem does not necessarily begin precisely when the hyperthyroidism starts. Its severity is not related to the level of thyroid hormone.

What causes Graves’ Disease?

Immune System

Graves’ disease is triggered by some process in the body’s immune system, which normally protects us from foreign invaders such as bacteria and viruses. The immune system destroys foreign invaders with substances called antibodies produced by blood cells known as lymphocytes. Some people inherit an immune system that can cause problems. Their lymphocytes make antibodies against their own tissues that stimulate or damage them. In Graves’ disease, antibodies bind to the surface of thyroid cells and stimulate those cells to overproduce thyroid hormones. This results in an overactive thyroid.

Eye Changes

These same antibodies may also be involved in the eye changes seen in Graves’ ophthalmopathy, since the receptors on the thyroid may also be found on the surface of cells behind the eye. Physicians have long suspected that severe emotional stress, such as the death of a loved one, can set off Graves’ disease in some patients. Dr. Graves himself commented on stressful events in his patients’ lives that came several months before the development of hyperthyroidism. However, most patients who develop Graves’ disease report no particular recent stress in their lives.

HOW IS THE DIAGNOSIS OF GRAVES’ DISEASE MADE?

The diagnosis of hyperthyroidism is made on the basis of your symptoms and findings during a physical exam and it is confirmed by laboratory tests that measure the amount of thyroid hormone (thyroxine, or T4, and triiodothyronine, or T3) and thyroid-stimulating hormone (TSH) in your blood (see the Hyperthyroidism brochure). Sometimes your doctor may want you to have a radioactive image, or scan, of the thyroid to see whether the entire thyroid gland is overactive. Your

doctor may also wish to do a blood test to confirm the presence of thyroid-stimulating antibodies (TSI or TRAb) that cause Graves' disease, but this test is not usually necessary.

Clues that your hyperthyroidism is caused by Graves' disease are the presence of Graves' eye disease (see above), an enlarged thyroid and a history of other family members with thyroid or autoimmune problems. Some relatives may have had hyperthyroidism or an underactive thyroid; others may have other autoimmune diseases including premature graying of the hair (beginning in their 20´s). Similarly, there may be a history of related immune problems in the family, including juvenile diabetes, pernicious anemia (due to lack of vitamin B12) or painless white patches on the skin known as vitiligo.

How is Graves' Disease treated?

The treatment of hyperthyroidism is described in detail in the Hyperthyroidism brochure. Treatment includes antithyroid drugs (generally methimazole [Tapazole®], although propylthiouracil [PTU] may be used in rare instances), radioactive iodine and surgery. Although each treatment has its advantages and disadvantages, most patients will find one that is just right for them. Hyperthyroidism due to Graves' disease is, in general, easily controlled and safely treated and treatment is almost always successful.

What will be the outcome of treatment?

No matter how your hyperthyroidism is controlled, you will probably eventually develop hypothyroidism (underactive thyroid). Hypothyroidism will occur sooner if your thyroid has been treated by radioactive iodine or removed in an operation. Even if you are treated with antithyroid drugs alone, hypothyroidism still can occur.

Because of this natural tendency to progress toward hypothyroidism sometime after you have been hyperthyroid, every patient who has ever had hyperthyroidism due to Graves' disease should have blood tests at least once a year to measure thyroid function. When hypothyroidism occurs, a thyroid hormone tablet taken once a day can treat it simply and safely (see the Hypothyroidism brochure).

Other Family Members at Risk

Because Graves' disease is related to a genetic predisposition, examinations of the members of your family may reveal other individuals with thyroid problems.

Further Information

Further details on this and other thyroid-related topics are available in the patient information section on the American Thyroid Association® website at www.thyroid.org. and from the NIH

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