Department of Endocrinology

Hyperthyroidism due to Graves’ disease

The aim of this leaflet is to provide some general information about hyperthyroidism due to Graves’ disease and the routine for its management at Addenbrooke’s Hospital.

What is Graves’ disease?

In Graves’ disease, special proteins called antibodies are produced. These antibodies bind to the thyroid gland. They usually stimulate the gland to produce too much thyroid hormone but, rarely, the antibody can block the action of the thyroid gland which results in low levels of thyroid hormone. The reason patients with Graves’ disease make these antibodies is not known.

It is the most common cause of an overactive thyroid, also called hyperthyroidism or thyrotoxicosis, and is much more common in women than men. There is often a family history of thyroid disease as hereditary factors are involved.

Graves’ disease will often cause an enlargement of the thyroid gland (goitre) causing a swelling at the front of the neck below the Adam’s apple. The enlarged gland produces increased amounts of thyroid hormone. About 20% of people with Graves’ disease also develop eye problems. There is more information on our thyroid eye disease leaflet.

What are the causes of Graves’ disease?

Many patients with Graves’ disease have a family history of thyroid disease so there are likely to be genes that increase the risk of Graves’ disease. In addition there are probably environmental factors. It has been suggested that Graves’ disease may be brought on by stressful circumstances.

What are the symptoms of Graves’ disease?

High thyroid hormone levels lead to an increase in the body’s metabolism (energy production). This can cause mood swings, extreme thirst, tremors and sometimes looseness of the bowels and weak muscles. It can also cause heat intolerance, palpitations, sweating and weight loss despite an increased appetite. The eyes may become more prominent and feel gritty and sore with occasional double vision. Many of the symptoms of hyperthyroidism are similar to those found in anxiety.

What are the treatment options?

- A course of anti-thyroid drugs which is continued for six months to a year and then stopped to see whether the condition recurs.
- Surgery to remove the thyroid gland (thyroidectomy).
- Slowly quenching the gland’s activity with radioiodine (radio-active iodine).
Usually the initial treatment is anti-thyroid drugs to lower thyroid hormone levels to normal. The need for other treatment such as radioiodine or surgery will be discussed during consultations with your doctor.

**How are anti-thyroid drugs used?**

In the UK, the most commonly used medication is Carbimazole. If this specific drug causes side effects or if a female patient wishes to conceive, Propylthiouracil (PTU) is used instead. Drugs are the initial form of treatment regardless of whether surgery or radioactive iodine is needed later.

The treatment course is usually six months to a year, starting with a high dose and then adding thyroxine to replace the function of the thyroid gland. This is called a “block and replace” regimen. Alternatively, a titration regimen is used in which high doses of anti-thyroid drugs are given initially, then the dose is gradually reduced to the lowest possible to maintain normal thyroid hormone levels.

Some people with severe sweating and palpitations may benefit from beta-blocking drugs such as Propranolol. Following the initial course of treatment with anti-thyroid drugs, relapse may occur at any stage but is most likely to happen within six months of stopping the medication. You will almost certainly be under review by the thyroid clinic so the relapse should be picked up by a blood test before you notice symptoms. If, however, you were to experience symptoms, you should report to your doctor for a blood test. If relapse occurs, further treatment options will be discussed with you.

**What are the side effects of anti-thyroid drugs?**

Side effects are uncommon but may include skin rashes, skin itching and urticaria (white raised spots on the skin). Rarer effects include fever, joint pains, liver problems and jaundice. However, the most important side effect is extremely rare and is due to the lowering of white blood cells which combat infection. This will be recognised by the development of a sore throat, flu-like illness, temperature or mouth ulcers. If you develop these symptoms while on Carbimazole or Propylthiouracil, please stop the tablets and go to your GP or A&E department immediately and have a blood test.

**What does radioiodine treatment involve?**

This is by far the simplest and most convenient form of treatment. It is given by mouth as a tasteless drink or capsule and is concentrated in the thyroid gland where in time it reduces the over-activity. Its full effect may take several weeks or months.

Radioiodine treatment is effective after one dose in approximately 90% of people. The main side effect is hypothyroidism (low thyroid hormone levels). This occurs in about 50% of patients within one year and then in about 5% of people per year after that. If patients develop hypothyroidism after radioiodine, it is treated with daily thyroid hormone tablets for life. Thyroid hormone tablets are very safe in the long term and have no side effects. If you are taking thyroid hormone tablets, the level of thyroid hormone is monitored by your GP with annual blood tests.
What will thyroid surgery involve?

This is the treatment of choice for people with large goitres, those with severe Graves’ disease and patients with severe thyroid eye disease. It is only performed after thyroid activity has been stabilised with drugs. It is carried out by a skilled thyroid surgeon. Complications are rare but include possible damage to nerves in the neck, resulting in hoarseness of the voice or damage to the parathyroid glands which are near the thyroid and control calcium levels in the blood. These levels are monitored following surgery and medication is given to correct them if necessary.

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