

## GRAVES' DISEASE & THYROID FOUNDATION

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### The Treatment of Graves' Disease: Different Strokes for Different Folks by David S. Cooper, M.D.

Once the diagnosis of hyperthyroidism due to Graves' disease is made, the next step is for the patient and the physician to sit down and discuss the most appropriate treatment. The choice of therapy is not an easy one, since all treatments are effective, yet all have certain advantages and disadvantages.

#### Antithyroid Drugs

Antithyroid drugs are commonly prescribed. There are two of them: propylthiouracil (nicknamed PTU) and methimazole (the brand name is Tapazole®). These drugs block the thyroid's ability to make thyroid hormone.

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After a few weeks to 2 to 3 months the blood levels of

thyroid hormone in the blood decrease towards normal. The speed of the response is determined by a number of factors, including the dose of the drug, the severity of the thyroid problem, and the size of the thyroid gland. Antithyroid drugs almost always work, and they are usually well-tolerated. However, about 5 - 10% of people have side-effects, including skin rashes, itching, joint pains, and fever. A far more serious problem is a lowering of the white blood cell count in the blood; this could lead to a serious or even life-threatening infection if it is not diagnosed and treated promptly. Fortunately, this problem occurs in only 1 out of every 400 or 500 people who take antithyroid drugs. Other very rare side-effects include severe liver damage and problems with the sense of taste.

The side effects are not the major drawback to taking antithyroid medication: the main problem is that they do not usually cure the disease. When they are stopped, a patient will usually become

hyperthyroid again within a few weeks to a few months. There are patients who have "remissions", but they are in the minority (<50%). The chance of a patient being one of the "lucky" ones to have a remission after taking an antithyroid drug is highest when the degree of thyroid overactivity is mild to start with and when the thyroid enlargement is only modest. In 1991, it was suggested in a research study from Japan that taking antithyroid drugs along with thyroid hormone (thyroxine) would improve the chances for remission, but this has not been borne out in more recent studies.

**The main problem (with antithyroid drugs) is that they do not usually cure Graves' disease.**

In general, antithyroid drugs are given for 12 - 24 months, and they are then discontinued or tapered to see

whether a remission has occurred. The patient is monitored with thyroid blood tests every few months to check their thyroid function: a “remission” is defined as maintaining normal thyroid function for one year after stopping the antithyroid drug. If a relapse does occur, the patient can take antithyroid drugs for another 12 - 24 months, or opt for one of the other therapies.

## **Radioactive Iodine**

Radioactive iodine has been used for over 50 years to treat Graves’ disease. Radioactive iodine is generally given as a single dose (in a capsule, like a vitamin pill). The radioactive iodine enters the thyroid gland and radiates the thyroid cells. This damages and ultimately kills them. The thyroid gland gradually shrinks in size, and thyroid function slowly returns to normal, usually within 2 - 3 months. There are no significant side-effects from radioactive iodine.

Long-term studies involving tens of thousands of patients have not shown a higher risk of cancer, leukemia, infertility, or birth defects in patients receiving radioiodine. However, the experience with radioiodine in children is limited, and most physicians reserve it for patients who are over 21

years of age. Of course, radioiodine can never be administered to a pregnant woman, and it is appropriate for pregnancy testing to be done in all patients in whom this might be a possibility.

## **Radioactive iodine has been used for over 50 years to treat Graves’ disease.**

A recent study has suggested that radioiodine may cause a worsening of Graves’ eye disease in patients who already have an underlying eye problem. Some physicians do not use radioiodine in this situation, while others continue to use it, but administer cortisone-like drugs for a few months after the radioiodine treatment.

## **Virtually all patients who receive radioactive iodine develop hypothyroidism – and must take thyroid hormone replacement medicine for the rest of their lives.**

Virtually all patients who receive radioiodine develop hypothyroidism within 6 months to several years, and must take thyroid hormone replacement therapy for the rest of their lives. About 20%

of patients require a second dose of radioiodine to fully control their over active thyroid glands.

In the United States radioactive iodine is the treatment most patients ultimately receive for their thyroid problem.

## **Surgery**

Surgery, the oldest form of therapy, is rarely used nowadays. However, surgery is an effective treatment when performed by a skilled and experienced surgeon. Surgery is especially useful in patients with very large thyroid glands, in whom remission is unlikely after a course of antithyroid drugs, and who might require more than one treatment with radioiodine.

## **Surgery is an effective treatment when performed by a skilled and experienced surgeon.**

The complications of surgery include damage to the nerve that controls the voice (so a person will be hoarse) and damage to the parathyroid glands, which control the body’s calcium balance. These complications occur in less than 1% of patients in centers where there are experienced surgeons. Surgery also is far more expensive than the other

treatments, and it requires the patient to take time off from work (usually 10 - 14 days). Patients undergoing surgery almost always are hypothyroid following the procedure, and must take lifelong thyroid hormone replacement therapy, similar to the situation with radioiodine.

**The good news is that the vast majority of patients are restored to good health, regardless of the therapy they select, and most people are content with the treatment they receive.**

When members of the American Thyroid Association were surveyed about their preferences for treating a hypothetical 43 year old woman with Graves' disease of moderate severity, 70% favored radioiodine, 23% favored drugs, and 3% recommended surgery. The proportion that would choose radioiodine decreased to less than 50% if the hypothetical patient was a teenager, and increased to 80% if the patient were older.

An interesting study from Scandinavia was recently published in the Journal of Clinical Endocrinology and Metabolism. In this report,

179 patients with Graves' disease were randomly assigned to receive antithyroid drugs (Tapazole®), radioactive iodine, or surgery. As expected, the surgery and radioiodine cured the problem, but all the patients became hypothyroid. The antithyroid drugs were, of course, less successful, since about 40% of the patients had a relapse and were then treated with either radioiodine or surgery. The surprising aspect of the study was the fact that when they were asked, over 90% of the patients in each group were satisfied happy with the treatment that they had received, and the majority would recommend the treatment to a relative or friend, regardless of which one it was. This knowledge may help patients to focus on getting better, and not focus so much on how they get better.

For the average patient with Graves' disease, the issues involved in choosing one form of treatment over another are complex, and involve medical factors (the age of the patient, the size of the thyroid and the severity of the disease), and personal issues: some people fear undergoing any kind of surgery, others have emotional reactions about the thought of radiation, and others are afraid of the possibility of a life-threatening infection with antithyroid drugs. Certainly, no treatment should be given unless the patient is

comfortable with the decision; usually there is plenty of time for the patient to think about the options, ask questions, do some reading, and discuss the different therapies with their doctor and family members: There is no "right" choice for most patients, although for certain individuals one form of treatment or another may be best from a medical point of view, cost, convenience, the desire to have the problem treated as rapidly as possible, and many other considerations. The good news is that the vast majority of patients are restored to good health, regardless of the therapy they select, and most people are content with the treatment they receive.

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