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HYPERTHYROIDISM

Radioactive iodine therapy has the most favorable profile for the treatment of Graves' disease at the Mayo Clinic

BACKGROUND:

Graves' disease is an autoimmune condition that affects the thyroid and is the most common cause of hyperthyroidism. There are three main treatment options for Graves' disease: a) oral antithyroid drugs (ATDs) such as methimazole and propylthiouracil, b) radioactive iodine therapy and c) surgical removal of the thyroid gland (thyroidectomy). The treatment needs to be individualized based on the unique risks and benefits of each treatment option as well as the patients' preferences. The goal of this study is to compare the efficacy and safety of the three treatment options for Graves' disease in a large single-center group of patients.

THE FULL ARTICLE TITLE:

Sundaresh V et al. Comparative effectiveness of treatment choices for Graves' hyperthyroidism—a historical cohort study. Thyroid. Apr 2017, 27(4): 497-505.

SUMMARY OF THE STUDY

The study included 720 adult patients diagnosed and treated for Graves' disease at the Mayo Clinic in Rochester, MN, from 2002 to 2008. A total of 77% of patients were women, the average age was 49 years and the average follow-up duration was 3.3 years. The most commonly used therapy was radioactive iodine therapy (75%), followed by ATDs (16%) and thyroid surgery (3%). Interestingly, 6% of patients (40 patients)were initially monitored without treatment. Among ATD users, methimazole was preferred over propylthiouracil use after 2003. No gender-specific differences were noted.

In 80% of the 40 patients with mild hyperthyroidism who were initially observed, the disease progressed requiring treatment later. Among the 118 patients treated with ATDs, 39 (33%) changed therapy because of personal preferences or minor side effects. Of the remaining 89 patients, 25 (28%) had persistent hyperthyroidism on a high doses of ATD or significant adverse effects and required a change in treatment. A total of 17 out of 64 (27%) patients who completed the first ATD treatment had a relapse. The overall treatment failure rate for ATDs was 48% as compared to 8% for radioactive iodine therapy treatment. The radioactive iodine therapy treatment was the most common treatment choice for patients who failed ATDs. None of the 35 patients who underwent thyroidectomy had recurrent hyperthyroidism.

Adverse effects were reported in 17% of the patients treated with ATDs. Minor side effects included altered taste sensation (4%), rash (3%), and nausea (2%), while major adverse reactions included elevated liver enzymes (2%), bile duct inflamation (0.8%), and low white blood cell count (agranulocytosis) (0.8%). After radioactive iodine therapy, 1% of patients developed radiation thyroiditis and 6% developed new thyroid eye disease. After surgery, 29% of patients developed low calcium levels, 3% developed a bleeding problem after surgery and 3% developed permanent hoarseness due to recurrent laryngeal nerve injury.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Radioactive iodine therapy was the most commonly used treatment and had the most favorable efficacy and safety profile for Graves' disease. Although surgery was performed rarely, it was successful in all cases and had a low complication rate with experienced surgeons. ATD use resulted in frequent adverse effects and relapse. A detailed discussion with the patients is recommended before initiating treatment for Graves' disease.

— Alina Gavrila, MD, MMSC

ATA THYROID BROCHURE LINKS

Graves' Disease: http://www.thyroid.org/graves-disease/

Hyperthyroidism (Overactive): http://www.thyroid.org/hyperthyroidism/

Radioactive Iodine: http://www.thyroid.org/radioactive-iodine/

Thyroid Surgery: http://www.thyroid.org/thyroid-surgery/

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HYPERTHYROIDISM, continued

ABBREVIATIONS & DEFINITIONS

Graves' disease: the most common cause of hyperthyroidism in the United States. It is caused by antibodies that attack the thyroid and turn it on.

Hyperthyroidism: a condition where the thyroid gland is overactive and produces too much thyroid hormone. Hyperthyroidism may be treated with antithyroid medications, radioactive iodine, or surgery.

Thyroid eye disease (TED): also known as Graves' ophthalmopathy. TED includes inflammation of the eyes, eye muscles and the surrounding tissues. Symptoms include dry eyes, red eyes, bulging of the eyes and double vision.

Antithyroid drugs (ATDs): medications that block the thyroid from making thyroid hormone. Methimazole, carbimazole and propylthiouracil (PTU) are used to treat hyperthyroidism, especially when it is caused by Graves' disease.

Radioactive iodine (RAI): this plays a valuable role in diagnosing and treating thyroid problems since it is taken up only by the thyroid gland. I-131 is the destructive form used to destroy thyroid tissue in the treatment of thyroid cancer and hyperthyroidism.

Thyroidectomy: surgery to remove the entire thyroid gland.

Cholestasis: a condition where the bile cannot flow from the liver to the intestine.

Agranulocytosis: a marked decrease in the neutrophil count, the most abundant type of white blood cells that causes a patient to be more likely to develop an infection. This is commonly associated with a fever and/or a sore throat.

Radiation thyroiditis: painful inflammation of the thyroid gland caused by the RAI therapy used to treat hyperthyroidism.

Hypocalcemia: low calcium levels in the blood, a complication from thyroid surgery that is usually short-term and relatively easily treated with calcium pills. If left untreated, low calcium may be associated with muscle twitching or cramping and, if severe, can cause seizures and/or heart problems.

Recurrent laryngeal nerve: a branch of the vagus nerve located close to the thyroid gland that regulate the muscles that move the vocal cords.