



## HYPERTHYROIDISM

### Impact of Lithium on Efficacy of Radioactive Iodine Therapy for Graves' Disease

#### WHAT IS THE STUDY ABOUT?

Graves' disease is the most common type of hyperthyroidism. In the United States, ~85% of patients with Graves' disease eventually are treated with radioactive iodine (RAI) to destroy the overactive thyroid gland. Effective treatment with RAI usually means that the patient becomes hypothyroid, requiring long term thyroid hormone therapy. Much less common, a patient may not require any medication or the hyperthyroidism persists or returns. Lithium, a medication commonly used for the treatment of certain psychiatric disorders, may increase the effects of RAI on the thyroid when used short term during RAI treatment. This study is designed to see if a specific Lithium treatment plan for 12 days around the time of RAI therapy can improve the response of the Graves' disease compared to RAI without the Lithium treatment.

#### THE FULL ARTICLE TITLE:

Bogazzi et al. Impact of Lithium on Efficacy of Radioactive Iodine Therapy for Graves' Disease: A Cohort Study on Cure Rate, Time to Cure, and Frequency of Increased Serum Thyroxine After Antithyroid Drug Withdrawal. *J Clin Endocrinology and Metabolism* 95: 201-208 Jan, 2010.

#### WHAT WAS THE AIM OF THE STUDY?

The aim of the study is to see if a Lithium treatment plan with RAI will improve the response of the Graves' disease compared to RAI without the Lithium treatment.

#### WHO WAS STUDIED?

The study group included 651 patients with Graves' disease that were treated at the University of Pisa in Italy.

#### HOW WAS THE STUDY DONE?

All patients were initially treated with methimazole until thyroid function was normal. Lithium (900 mg per day) was started for 5 days before RAI then continued for 7 days after the RAI in 353 patients. A total of 298 patients were not given Lithium around the time of RAI. All patients were treated with anti-inflammatory steroids (prednisone), which is their usual treatment plan at this institution to reduce the risk of worsening of the eye problems that may be associated with Graves' Disease. All patients

were treated with an equal amount of RAI based on the size of the thyroid and how active the gland was before therapy. Effective treatment was defined as development of hypothyroidism or stable thyroid levels in the normal range of medication for at least a year after therapy.

#### WHAT WERE THE RESULTS OF THE STUDY?

The time to stable thyroid function after RAI was 60 days in the Lithium-treated group and 90 days in the control group. Effective treatment was achieved in 93% of the Lithium-treated group as compared to 83% in the control group. Temporary worsening of the hyperthyroid symptoms was not common in either group.

#### HOW DOES THIS COMPARE WITH OTHER STUDIES?

Some studies have shown a similar effective treatment rate between Lithium and non-Lithium treated patients with RAI while others have shown no advantage with Lithium. Previous studies have suggested that the effective rate with a single treatment is more related to the dose of the RAI. One difference in this study is the use of prednisone in all patients. The impact of the prednisone on the RAI treatment is unclear.

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Treatment with Lithium may benefit those patients at greatest risk for side effects from hyperthyroidism (ie elderly, heart patients) but shortening the time to stable thyroid levels post RAI. Lithium therapy combined with a high dose of RAI may be the fastest treatment of Graves' hyperthyroidism.

— Jerrold Stock, MD

#### ATA THYROID BROCHURE LINKS

Graves disease: [http://thyroid.org/patients/patient\\_brochures/graves.html](http://thyroid.org/patients/patient_brochures/graves.html)

Hyperthyroidism: [http://thyroid.org/patients/patient\\_brochures/hyperthyroidism.html](http://thyroid.org/patients/patient_brochures/hyperthyroidism.html)

Radioactive Iodine Therapy: [http://thyroid.org/patients/patient\\_brochures/radioactive.html](http://thyroid.org/patients/patient_brochures/radioactive.html)

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## **HYPERTHYROIDISM**, continued

### **ABBREVIATIONS & DEFINITIONS**

**Hyperthyroidism** — a condition where the thyroid gland is overactive and produces too much thyroid hormone. Hyperthyroidism may be treated with antithyroid meds (Methimazole, Propylthiouracil), radioactive iodine or surgery.

**Graves' disease** — the most common cause of hyperthyroidism in the United States.

**Methimazole** — an antithyroid medication that blocks the thyroid from making thyroid hormone. Methimazole is 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 with an overactive thyroid. I-123 is the non-destructive form that does not damage the thyroid and is used in scans to take pictures of the thyroid (Thyroid Scan) or to take pictures of the whole body to look for thyroid cancer (Whole Body Scan).

**Lithium** — A medication that is often used to treat certain psychiatric diseases

**Hypothyroidism** — a condition where the thyroid gland is underactive and doesn't produce enough thyroid hormone. Treatment requires taking thyroid hormone pills.