



## HYPERTHYROIDISM

# Thyroid antibody levels may not predict thyroid hormone levels and risk of recurrence in older patients with Graves' disease

### BACKGROUND

Graves' disease is one of the most common causes of an overactive thyroid gland (hyperthyroidism). In Graves' disease, the patient's immune system produces high levels of antibodies to the TSH receptors (TRAb). TRAb then binds to the TSH receptor on the thyroid gland and stimulates it to increase thyroid hormone production. Graves' disease can be treated with antithyroid drugs (ATDs – Methimazole or PTU), radioactive iodine or surgery. ATDs can be used either in the short term to prepare patients for either radioactive iodine or surgery or as a long term treatment. When used as a long term treatment, the goal of ATDs is to cause the Graves' disease to go into remission, usually associated with the TRAb levels declining or going away. Once the ATDs are stopped, there can be anywhere from a 5-90% risk of relapse of the Graves' disease. Some of the risk factors that have been associated with increased risk of recurrence include: younger age, male sex, a large thyroid gland, severe hyperthyroidism at diagnosis, cigarette smoking and high TRAb levels at diagnosis or at the end of ATD treatment. This study was done to study possible association between the level of TRAb at diagnosis of Graves' disease and severity of hyperthyroidism and risk of recurrence after stopping ATD treatment.

### THE FULL ARTICLE TITLE

Bano A et al 2019 Age May Influence the Impact of TRAbs on Thyroid Function and Relapse-Risk in Patients with Graves Disease. *J Clin Endocrinol Metab* 104(5):1378-1385.

### SUMMARY OF THE STUDY

A total of 384 patients with Graves' disease (average age 48 years, 85.2% women, and 93.5% White) were included in the study from an endocrine clinic in England. All patients has thyroid levels and TRAb levels measured. If TRAb levels were not high, patients had a thyroid scan to confirm the diagnosis of Graves' disease. None of the patients in the study were taking

other medications that can affect thyroid levels or were pregnant. A total of 231 patients were included in the study of risk of recurrence. Patient were treated with ATD for an average of 12 months. These patients were followed up to 12 months after stopping ATD treatment, with range of follow-up from 3 to 12 months.

A higher TRAb level at diagnosis was associated with higher thyroid hormone levels at diagnosis. This association was different in younger and older patients. In patients aged 55 years or older, a higher TRAb level was associated with higher thyroid hormone levels only if TRAb levels were below 10 U/L. In those with TRAb above 10 U/L, there was no association between TRAb level and thyroid hormone levels.

There was 5% increased risk of recurrence for every 1 unit increase in TRAb level at diagnosis in the whole group. Again, this association was different in younger and older patients. In patients aged 18-41 years, there was 13% increased risk of recurrence for every 1 unit increase in TRAb level at diagnosis. In patients aged 42-56 years, there was 5% increased risk of recurrence for every 1 unit increase in TRAb level at diagnosis. However, in patients aged 56 years or older, there was no association between TRAb level at diagnosis and risk of recurrence.

### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Higher TRAb levels at the diagnosis of Graves' disease were associated both with higher thyroid hormone levels at diagnosis and an increased risk of recurrence within 12 months of stopping ATD treatment in patients aged less than 55 years. In older patients with Graves' disease, TRAb level at diagnosis may not be a good marker of risk of recurrence. Therefore, decision on how often and how long to follow older patients after stopping ATD treatment for Graves' disease may be different than in younger patients.

— Sun Y. Lee, MD





## HYPERTHYROIDISM, continued

### ATA THYROID BROCHURE LINKS

Graves' Disease: <https://www.thyroid.org/graves-disease/>

Hyperthyroidism (Overactive): <https://www.thyroid.org/hyperthyroidism/>

### 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 meds (Methimazole, Propylthiouracil), radioactive iodine or surgery.

**Thyroid scan:** this imaging test uses a small amount of a radioactive substance, usually radioactive iodine, to obtain a picture of the thyroid gland.

**TSH receptor:** A molecule (protein) located on the thyroid cell surface that binds TSH and stimulates the production of the thyroid hormones within the thyroid cell.

**TRAb:** antibodies often present in the serum of patients with Graves disease that are directed against the TSH receptor, often causing stimulation of this receptor with resulting hyperthyroidism.

**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).

**Thyroidectomy:** surgery to remove the entire thyroid gland. When the entire thyroid is removed it is termed a total thyroidectomy. When less is removed, such as in removal of a lobe, it is termed a partial thyroidectomy.

**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.

**Propylthiouracil (PTU):** an antithyroid medication that blocks the thyroid from making thyroid hormone. Propylthiouracil is used to treat hyperthyroidism, especially in women during pregnancy.

