



GRAVES' DISEASE

Selenium deficiency and Graves' eye disease

BACKGROUND

Graves' disease, the most a common cause of hyperthyroidism, can be occasionally associated with eye abnormalities. Known as thyroid eye disease (TED), this may include protrusion of the eyeball, swelling of the soft tissues around the eye and, less often, double vision. While subtle signs of TED can be seen in up to 80% of patients if sensitive imaging studies are used, <10% have clinically significant symptoms. Selenium, an essential trace element present in many foods and that is essential in making thyroid hormones, has been suggested in prior studies to improve symptoms of TED. It has long been known that smoking is associated with a higher incidence of TED. The present study suggests that a relative deficiency in selenium may also be a risk factor for TED and may provide a reason why selenium may be helpful in treating the disease.

THE FULL ARTICLE TITLE

Khong JJ et al. Serum selenium status in Graves' disease with and without orbitopathy: a case-control study. *Clin Endocrinol (Oxf)* 2014;80:905-910. Epub January 30, 2014.

SUMMARY OF THE STUDY

A total of 198 patients with Graves' disease were recruited from multiple clinics to participate in this study. Of these patients, 101 patients had moderate to severe TED and 97 patients had had Graves' disease for more than 2 years with no evidence of TED. Patients with TED were older (54.1 vs. 47.4 years) and had a longer duration of Graves'

disease (8 years vs. 3 years). More patients with TED were current or former cigarette smokers and more were residents of suburban areas. Also, more patients in the TED group required radioactive iodine or thyroidectomy as treatment for their hyperthyroidism while more of those without TED were managed with antithyroid drugs alone. At the time of the study, the patients with TED had higher TSH levels and lower T3 levels than those without TED. The average selenium levels were significantly lower in the TED group (86.6 mcg/L vs. 93.7 mcg/L).

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that is a small but significant difference in selenium levels in Graves' disease patients with TED compared with patients who do not have TED. Therefore, relative selenium deficiency may be an independent risk factor for TED in patients with Graves' disease. This suggests a reason why selenium supplementation may be helpful in treating patients with TED. Further studies are needed to determine whether selenium supplementation is beneficial in patients diagnosed with Graves' disease to prevent development of TED.

— Frank Crantz, MD

ATA THYROID BROCHURE LINKS

Graves' disease: <http://www.thyroid.org/what-is-graves-disease>

Radioactive iodine therapy: <http://thyroid.org/radioactive-iodine>

ABBREVIATIONS AND 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. It is caused by antibodies that attack the thyroid and turn it on.

Thyroid eye disease (TED): also known as Graves ophthalmopathy. TED is most often seen in patients with Graves' disease but also can be seen with Hashimoto's thyroiditis. 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.

Radioactive iodine (RAI): this plays a valuable role in diagnosing and treating thyroid problems since it is taken



GRAVES' DISEASE, continued

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.

Thyroid Awareness Monthly Campaigns Announced in Cooperation with PuraVida

The ATA will be highlighting a distinct thyroid disorder each month and a portion of the sales for PuraVida bracelets will be donated to the ATA. The month of July is **Thyroid and Pregnancy Awareness Month** and a bracelet is available through the **ATA Marketplace** to support thyroid cancer awareness and education related to thyroid disease.

