



HYPERTHYROIDISM

The natural progression of subclinical hyperthyroidism

BACKGROUND

Hyperthyroidism occurs when the thyroid gland is overactive, producing too much of the thyroid hormones. Overt hyperthyroidism occurs when levels of the thyroid hormones (T_4 and T_3) are elevated and the TSH is suppressed. This is usually caused by Graves' disease or toxic nodules. Patients with overt hyperthyroidism usually receive some form of treatment which may include medications, radioactive iodine or thyroid surgery. Subclinical hyperthyroidism occurs when the TSH is suppressed but the T_4 and T_3 levels are normal. About 1-2% of the population has subclinical hyperthyroidism and this condition may not require any treatment. Previous studies suggest that only very few of these patients will progress to develop an overt hyperthyroidism. This study was done to see how often subclinical hyperthyroidism will progress to become overt hyperthyroidism.

THE FULL ARTICLE TITLE:

Vadiveloo T et al. The Thyroid Epidemiology, Audit, and Research Study (TEARS): the natural history of endogenous subclinical hyperthyroidism. *J Clin Endocrinol Metab.* October 6, 2010 [Epub ahead of print].

SUMMARY OF THE STUDY

The study included nearly 300,000 patients in Scotland who had thyroid blood tests done between 1993-

2009. Of these, about 2,000 patients had subclinical hyperthyroidism. These patients were followed for 7 years. The major finding was that only 10% of patients with an undetectable TSH developed overt hyperthyroidism. None of the patients with a slightly low but detectable TSH developed overt hyperthyroidism and ~1/3 of patients had their TSH return to the normal range. Thus, very few patients with subclinical hyperthyroidism develop overt hyperthyroidism. In the majority, the TSH returns to normal or remain stable.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The conclusions of this study reassure us that very few patients with subclinical hyperthyroidism go on to develop overt hyperthyroidism. Those at highest risk are those with an undetectable TSH. Despite this, over 40% may end up on treatment at some point; thus these patients need to be followed closely. This study provides support that watching without treatment is a reasonable approach for most patients with subclinical hyperthyroidism.

— Angela Leung, MD

ATA THYROID BROCHURE LINKS

Hyperthyroidism: http://thyroid.org/patients/patient_brochures/hyperthyroidism.html

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.

Subclinical Hyperthyroidism — a mild form of hyperthyroidism where the only abnormal hormone level is a decreased TSH.

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.

Toxic nodular goiter — characterized by one or more nodules or lumps in the thyroid that may gradually

grow and increase their activity so that the total output of thyroid hormone in the blood is greater than normal.

TSH — Thyroid stimulating hormone – produced by the pituitary gland that regulates thyroid function; also the best screening test to determine if the thyroid is functioning normally.

Thyroxine (T_4) — the major hormone secreted by the thyroid gland. Thyroxine is broken down to produce Triiodothyronine which causes most of the effects of the thyroid hormones.

Triiodothyronine (T_3) — the active thyroid hormone, usually produced from thyroxine.