



THYROID HORMONE

WHAT IS THE STUDY ABOUT?

Hypothyroidism is very common and is treated with thyroid hormone pills, usually in the form of Levothyroxine. In several large population studies, it has been shown that many patients are on too high or too low a dose. In particular, elderly patients are more likely to have a problem if they are over- or under-treated. This study was done to find out how common over- and under-treatment is in elderly hypothyroid patients and what factors may cause this problem.

THE FULL ARTICLE TITLE: Somwaru LL, Arnold AM, Joshi N, Fried LP, Cappola AR. High frequency of and factors associated with thyroid hormone over-replacement and under-replacement in men and women aged 65 and over. *J Clin Endocrinol Metab* 2009;94:1342-5.

WHAT WAS THE AIM OF THE STUDY?

To determine how often elderly hypothyroid patients are over- or under-treated and what factors may lead to this problem.

WHO WAS STUDIED?

The nation-wide Cardiovascular Health Study enrolled 5201 adults over the age of 65 from 1989 – 1990, which at baseline obtained a medical history, physical examination, assessment of health status and blood tests, including TSH and free thyroxine (FT₄). Among this large group, 339 individuals (9.2%) were taking various thyroid hormone preparations. This study examines these 339 individuals.

HOW WAS THE STUDY DONE?

The 339 patients taking thyroid hormone were divided into one of three groups: low TSH, euthyroid/normal TSH, and high TSH. No patients with thyroid cancer (and who may be intentionally slightly over-replaced) were included in the study. The patients were also divided into those taking Levothyroxine and those taking a combination of Levothyroxine plus Triiodothyronine.

WHAT WERE THE RESULTS OF THE STUDY?

The average age of the individuals studied was 72.9. Only 43% of patients had a normal TSH while 41% had a low serum TSH and 16% had a high TSH. More women were in the low TSH group than the euthyroid group. Among this group, 74% were taking levothyroxine alone and 26% were thyroid hormone products with both levothyroxine (L-T₄) and triiodothyronine (T₃); the number of individuals with abnormal TSH concentrations were not different between the two groups.

Individuals with low serum TSH levels had lower weight and lower body-mass index and were taking fewer medications as compared with the euthyroid group.

Individuals with diabetes mellitus were more likely to have either a low TSH or a high TSH while those with renal insufficiency more likely to have a normal TSH.

HOW DOES THIS COMPARE WITH OTHER STUDIES?

Other studies over large groups of individuals have shown a similar likelihood of abnormal TSH concentrations. Specifically looking at elderly patients, the Framingham Heart study showed a similar frequency of having a low TSH.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

More elderly hypothyroid patients taking thyroid replacement therapy are either over- or under-replaced than have normal TSH concentrations. Patients at highest risk for having an abnormal TSH are those with lower body weight, lower body-mass-index and Diabetes mellitus. All elderly hypothyroid patients need to have their serum TSH levels more closely monitored and their thyroid replaced doses adjusted to result in a TSH in the normal range in order to avoid potential harmful side effects.

— Alan Farwell, MD

ATA THYROID BROCHURE LINKS

Hypothyroidism: http://thyroid.org/patients/patient_brochures/hypothyroidism.html

Thyroid Hormone Treatment: http://thyroid.org/patients/patient_brochures/hormonetreatment.html

ABBREVIATIONS & DEFINITIONS

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

Levothyroxine: the major hormone produced by the thyroid gland and available in pill form as Levoxyl™, Synthroid™, Levothroid™, and generic preparations.

Triiodothyronine: the active thyroid hormone, usually produced from Levothyroxine, available in pill form as Cytomel™

TSH: pituitary hormone that regulates the thyroid gland and that is the best initial blood test to determine if the thyroid gland is functioning normally and to determine the best dose of thyroid hormone treatment in hypothyroid patients