



## HYPOTHYROIDISM

### Although 99% of patients are well treated, several factors contribute to high levothyroxine doses in primary hypothyroidism

#### BACKGROUND

Hypothyroidism, or an underactive thyroid, is a very common condition worldwide. Treatment of hypothyroidism is based on replacing thyroid hormone in the form levothyroxine, which is the main thyroid hormone secreted by the thyroid gland. While body weight may influence the dose to some degree, the average replacement dose of levothyroxine to return the TSH back to normal is in the 100–125 mcg range. Occasionally, some patients present a challenge because they seem to require unusually high doses of levothyroxine. This study sought to identify factors that may contribute to those high requirements and to evaluate changes in dose after two years of follow up and intervention to correct those issues.

#### THE FULL ARTICLE TITLE

Robertson HMA et al. Factors contributing to high levothyroxine doses in primary hypothyroidism; an interventional audit of a large community database. *Thyroid*, September 9, 2014 [Epub ahead of print].

#### SUMMARY OF THE STUDY

This study used a community-based register from an area of Scotland that includes 17,500 patients. Of these, 190 patients (1%) were found to be taking more than 225 mcgs of levothyroxine daily. A total of 125 patients returned their questionnaires and their doctors then evaluated them to determine whether they had conditions that could be contributing to the high dose of levothyroxine they required.

In approximately 2/3rd of patients, there was an apparent reason to the high dose requirements, such as celiac disease, autoimmune gastritis, taking other medications

that interfere with the absorption of levothyroxine (iron, calcium supplements for example) or simply missing doses on a regular basis. These patients were given information about the possible reason for the high doses and, if needed, were sent to another specialist such a gastroenterologist to help in evaluating the absorption problems. In the remaining 1/3rd of patients, no obvious reason for the high doses was identified.

After 2 years, it was seen that there was a decline in doses needed in the patients in whom an absorption problem had been identified, but it was not similar or consistent in all the patients. In contrast, the patients who frequently missed doses, had a minimal change in their dose.

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

This study is reassuring because it shows that only a small (1%) percentage of patients who take levothyroxine are on doses higher than expected for their body weight. This study also suggests that patients on high replacement doses of levothyroxine may have an underlying absorption problem that should be evaluated. Finally, this study also shows that these patients did not have high levels of thyroid hormone in their blood in spite of the high doses taken.

— Jessie Block-Galarza, MD

#### ATA THYROID BROCHURE LINKS

Hypothyroidism: <http://www.thyroid.org/what-is-hypothyroidism>

Thyroid Hormone Treatment: <http://www.thyroid.org/thyroid-hormone-treatment>

#### ABBREVIATIONS & DEFINITIONS

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

**Levothyroxine (T<sub>4</sub>):** the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tyrosint™ and generic preparations.



## **HYPOTHYROIDISM, continued**

**Celiac disease:** an autoimmune disorder of the small intestine that occurs in genetically predisposed people of all ages from middle infancy onward.

**Autoimmune disorders:** A diverse group of disorders that are caused by antibodies that get confused and attack the body's own tissues. The disorder depends on what tissue the antibodies attack. Graves' disease and

Hashimoto's thyroiditis are examples of autoimmune thyroid disease. Other Autoimmune disorders include: type 1 diabetes mellitus, Addison's disease (adrenal insufficiency), vitiligo (loss of pigment of some areas of the skin), systemic lupus erythematosus, pernicious anemia (B12 deficiency), celiac disease, inflammatory bowel disease, myasthenia gravis, multiple sclerosis, and rheumatoid arthritis.