



HYPOTHYROIDISM

Initiation of metformin use is associated with a decrease in serum TSH levels among patients being treated for hypothyroidism

BACKGROUND

A common medication used for the treatment of diabetes called metformin may have effects on the thyroid. Some studies suggest that the TSH level is lower in patients with diabetes on metformin. This may be important in patients with previously diagnosed hypothyroidism on thyroid hormone. The current study was done to look at the effect of two different diabetes medications, metformin or a sulfonylurea drug, on the TSH of a large number of people some of whom take levothyroxine to treat hypothyroidism.

THE FULL ARTICLE TITLE

Fournier JP et al. Metformin and low levels of thyroid-stimulating hormone in patients with type 2 diabetes mellitus. *CMAJ*. September 22, 2014 [Epub ahead of print].

SUMMARY OF THE STUDY

This large study included 74,300 people of which 5689 were being treated for hypothyroidism and 59,937 had normal TSH at the start of the study. They followed the TSH levels for many years in these patients. About 500 patients taking levothyroxine who were started on metformin developed a low TSH. The study showed that metformin used as a single treatment for diabetes was linked to having a low TSH compared to those who used a sulfonylurea medication. The results were only significant

for patients taking levothyroxine at the start of the study. Patients with normal TSH at the beginning of the study also had low TSH at times, but there was no difference in low TSH levels for patients who were not hypothyroid at the start of the study no matter if they were taking metformin or a sulfonylurea. The most common time to see a low TSH was within the first 90–180 days after starting metformin.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The authors showed that metformin used alone for treating diabetes can cause a low TSH in patients who have hypothyroidism. It is important for patients to know that medications can change their thyroid blood test results as was shown in this study. Even though we do not know why this interaction is happening, the authors recommend changing the levothyroxine dose to get the TSH normal.

—Wendy Sacks, MD

ATA THYROID BROCHURE LINKS

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

Thyroid Function Tests: <http://www.thyroid.org/blood-test-for-thyroid>

ABBREVIATIONS & DEFINITIONS

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

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.

Metformin – a medication used to treat insulin resistance or diabetes. It works to help keep blood sugars normal by making the body more sensitive to insulin.

Sulfonylurea Medications: Sulfonylureas are a class of medications used to treat diabetes mellitus. They work to lower blood sugar by stimulating insulin production from the pancreas.

Levothyroxine (T₄): the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tyrosint™ and generic preparations.