



## HYPOTHYROIDISM

# Hypothyroidism is associated with a faulty increase in Hemoglobin A1C levels

### BACKGROUND

Hypothyroidism causes many metabolic abnormalities as well as multiple clinical symptoms. Some studies suggest that blood sugar may be affected in hypothyroidism and levels may increase. Indeed, it has been noted that patients with diabetes who also have hypothyroidism may have higher levels of Hemoglobin A1C (HBA1C). This test is done to diagnose and monitor control of blood sugar by patients with diabetes. An elevated HBA1C usually indicates worse control of diabetes.

This study was done to look at the effect of thyroid hormone treatment on HBA1c levels in patients with hypothyroidism. This study was also done to look at the effect thyroid hormone treatment has on the diagnoses of pre diabetes and the control of diabetes after treatment.

### THE FULL ARTICLE TITLE

Anantarapu S et al Effects of thyroid hormone replacement on glycated he n non-diabetic subjects with overt hypothyroidism. Arch Endocrinol Metab. September 25 2015 [Epub ahead of print].

### SUMMARY OF THE STUDY

This study was done at a large hospital in India. Patients who were newly diagnosed with hypothyroidism were studied. They were at least 20 years old. Blood tests were done before starting the thyroid hormone and 3 months after the tests showed normal thyroid hormone levels. An

HBA1C test and an oral glucose tolerance test were done on all patients. The results showed a significant drop in the HBA1c levels for patients diagnosed as having pre diabetes (HBA1C between 5.7 to 6.5 %) and diabetes (HBA1C above 6.5%) after starting thyroid hormone therapy. There was no change in the number of patients with elevated fasting glucose levels or impaired glucose tolerance after treatment with thyroid hormone. The body weight did not change to a great extent.

### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that hypothyroidism may be falsely increasing the levels of the HBA1C test. While thyroid hormone therapy decreases the HBA1C test results, suggesting an improvement of blood sugar control, actual measurements of fasting blood sugars and overall glucose tolerance were unchanged on thyroid hormone therapy. This may lead to errors in diagnosing pre diabetes and diabetes in patients with hypothyroidism. This is important for both physicians and patients to know.

—Vibhvasu Sharma, MD

### ATA THYROID BROCHURE LINKS

Hypothyroidism: <http://www.thyroid.org/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.

**Thyroid Hormone Therapy:** patients with hypothyroidism are most often treated with Levothyroxine in order to return their thyroid hormone levels to normal.

**HBA1c:** Hemoglobin A1c is a blood test done to diagnose diabetes and monitor control in patients with

diabetes. The higher the number, the worse control of the diabetes.

**Oral Glucose Tolerance Test:** This is a blood test done after giving the patients a certain amount of sugar by mouth. It may also be used to diagnose diabetes.

**Diabetes:** A chronic condition caused by higher than normal blood sugar levels due to the inability of the body to process the sugars.