AMERICAN THYROID ASSOCIATION
Optimal Thyroid Health for All

Volume 13 | Issue 12 | December 2020

Clinical Thyroidology® for the Public

HYPOTHYROIDISM

Levothyroxine does not affect heart function after a heart attack in patients who have mild hypothyroidism

BACKGROUND

Subclinical hypothyroidism is a milder form of hypothyroidism, when the TSH is elevated but the thyroid hormone levels are still normal. Patients with TSH levels less than 10 mIU/L have the mildest form. Even at these levels, prior studies suggest that patients with subclinical hypothyroidism are at higher risk for heart disease and they are more likely to die after a heart attack compared to someone without thyroid disease. However, we do not know whether treatment with thyroid hormone would decrease this risk.

The heart pumps blood to the rest of the body out of a large chamber called left ventricle. The left ventricular ejection fraction is the percentage of blood that leaves the left ventricle when it contracts. It is a good measure of heart function. Patients who have weaker left ventricle function after having a heart attack are more likely to die or to have difficulty recovering.

This study was designed to find out whether levothyroxine treatment would improve left ventricular function after having a heart attack in patients with subclinical hypothyroidism.

THE FULL ARTICLE TITLE

Jabbar A et al 2020 Effect of levothyroxine on left ventricular ejection fraction in patients with subclinical hypothyroidism and acute myocardial infarction: a randomized clinical trial. JAMA 324:249–258. PMID: 32692386.

SUMMARY OF THE STUDY

The study was done in United Kingdom at 6 hospitals. Patients who presented with a heart attack and had persistent mild hypothyroidism were studied. Inclusion criteria were age greater than 18 years and TSH levels more than 4 mIU/L and less than 10 mIU/L with normal thyroid hormone level on 2 occasions 7-10 days apart. Patients were given either levothyroxine or placebo (sugar/dummy pill) for 52 weeks. Levothyroxine was started within 21 days after the heart attack. Starting dose was 25 mcg and the dose was adjusted to keep the TSH between 0.4 to 2.5 mIU/L.

Left ventricular ejection fraction (LVEF) was measured with an MRI and the MRI was repeated after 52 weeks to see the effect of treatment. Researchers also assessed LV volume, size of the damage to heart muscle, health status, depression, and quality of life.

A total of 2147 patients were potentially eligible. Of these, 314 (16%) had subclinical hypothyroidism when they were admitted. Many of these patients had normal levels when the test was repeated 7- 10 days later. Ultimately, 95 patients qualified for the study and 39 levothyroxine-treated and 46 placebo-treated patients completed the study.

TSH levels were improved to a lower range in the levothyroxine-treated group. The LVEF improved in all patients at the end of 52 weeks without a difference in the treatment groups. Levothyroxine treatment did not improve any of the measured outcomes including quality of life and depression. One patient in each group died and there was no difference in adverse events between the groups.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

In conclusion, levothyroxine treatment for 52 weeks did not help to improve LVEF in patients who had a heart attack and had mild subclinical hypothyroidism. Further studies are needed to find out whether treatment would help patients with more severe disease with TSH levels above 10 mIU/L or if treatment is started earlier.

Patients who have initial TSH elevation should have a repeat measurement in a few weeks since the levels frequently improve without treatment. It was also reassuring that treatment with levothyroxine did not increase the risk of any adverse event.

— Ebru Sulanc, MD

HYPOTHYROIDISM, continued

ATA THYROID BROCHURE LINKS

Hypothyroidism (Underactive): https://www.thyroid.org/hypothyroidism/

Thyroid Hormone Treatment: https://www.thyroid.org/thyroid-hormone-treatment/

ABBREVIATIONS & DEFINITIONS

Subclinical Hypothyroidism: a mild form of hypothyroidism where the only abnormal hormone level is an increased TSH. There is controversy as to whether this should be treated or not.

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.

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

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