



HYPOTHYROIDISM

Subclinical hypothyroidism is associated with impaired blood flow into the heart muscle

BACKGROUND

Patients with overt hypothyroidism have both an increased TSH and a low T_4 while in those with subclinical hypothyroidism, the T_4 is normal with an increased TSH. There is controversy about the benefits of treating patients with subclinical hypothyroidism. Studies of overt hypothyroidism suggest an increased risk of heart problems including heart attacks if untreated, but most patients with subclinical hypothyroidism have no symptoms and these increased risks have not been proven in this group. A research technique to look at heart function is coronary vasoreactivity, which examines the heart muscle blood flow using PET scanning to measure the ability of small blood vessels to open up and supply the heart with blood when needed. The inability of the small blood vessels to open up is thought to be related to more permanent blood vessel damage over time. Coronary vasoreactivity is performed during a stress test when the small heart blood vessel needs to open up. The goal of this study was to determine coronary vasoreactivity in patients with subclinical hypothyroidism both before and after treatment with thyroid hormone to normalize the TSH level.

THE FULL ARTICLE TITLE:

Traub-Weidinger, T et al. Coronary vasoreactivity in subjects with thyroid autoimmunity and subclinical hypothyroidism before and after supplementation with thyroxine. *THYROID*, Jan, 2011.

SUMMARY OF THE STUDY

Coronary vasoreactivity was performed on 8 patients with subclinical hypothyroidism before and after thyroid

hormone replacement therapy as well as on 8 individuals with normal thyroid function in an academic center in Austria. All patients were diagnosed with Hashimoto's Thyroiditis as the cause of their hypothyroidism. Before treatment coronary vasoreactivity during the stress test was much lower in all the patients, compared to the normal individuals. After 6 months of treatment with thyroid hormone, coronary vasoreactivity increased significantly but was still lower than in the normal individuals. The best responses were in younger patients.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Coronary vasoreactivity is the newest sensitive research technique to show subtle abnormalities in heart function in patients with subclinical hypothyroidism that improves with thyroid hormone therapy. It is unclear if these subtle changes translate into clinical heart problems and certainly these findings need to be confirmed in larger studies. However, this study does suggest that thyroid hormone treatment may be beneficial to more patients with subclinical hypothyroidism than previously thought.

— Jerrold Stock, 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

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HYPOTHYROIDISM, continued

ABBREVIATIONS & DEFINITIONS

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

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.

Overt hypothyroidism: clear hypothyroidism an increased TSH and a decreased T₄ level. All patients with overt hypothyroidism are usually treated with 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

Thyroxine (T₄): the major hormone secreted by the thyroid gland. Thyroxine is broken down to produce Triiodothyronine which causes most of the effects of the thyroid hormones.

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.

Hashimotos thyroiditis: the most common cause of hypothyroidism in the United States. It is caused by antibodies that attack the thyroid and destroy it.