



THYROID AND THE HEART

Can we measure early changes in heart function in thyroid cancer patients taking high dose of thyroid replacement?

BACKGROUND

Thyroid cancer patients are treated after thyroid surgery with suppressive thyroxine therapy (Synthroid, Levothyroxine, Levoxyl, etc.). This means that the dose given is slightly higher than the body usually needs, causing the TSH to be suppressed into the low range. The goal of this therapy is to prevent growth of any remaining thyroid cancer cells. The problem with this treatment is that chronically higher than normal thyroid hormone levels may affect the heart, which can be seen in patients with hyperthyroidism. The earliest change noted in those patients on an echocardiogram is a thickening of the wall of left main chamber of the heart (ventricle). It is unclear if this causes any problems. A new technique at looking at heart function known as speckle tracking echocardiography (STE) can directly examine how the heart works. In this study, the authors looked at the effects of suppressive thyroxine therapy on the heart function using STE.

THE FULL ARTICLE TITLE

Taillard V et al Early detection of Isolated Left Ventricular Diastolic Dysfunction in High-Risk Differentiated Thyroid Carcinoma Patients on TSH-Suppressive Therapy. Clin Endocrinol (Oxf) 2011;75:709-14.

SUMMARY OF THE STUDY

A total of 24 patients with thyroid cancer and without known heart disease, diabetes or high blood pressure were studied. All were treated with thyroxine for 36 months and had a TSH in the low range. The control group had

20 age-matched subjects not on thyroid medication and with normal thyroid function. Their heart function was examined using both echocardiograms and STE.

No difference in cardiac function was detected between the thyroxine-treated and control groups on the echocardiograms. However, with STE, abnormalities in heart relaxation and the size of the left ventricle were seen in the thyroxine-treated group.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Thyroid cancer patients with low TSH levels from suppressive thyroxine therapy appear to have minor changes in heart function using a very sensitive test despite having normal results on an echocardiogram. None of these patients had clinical heart problems. The long-term significance of those changes on overall heart function remains to be seen. However, this study suggests that suppressive thyroxine therapy should be reserved to high risk thyroid cancer patients who would benefit the most from this therapy.

— Mona Sabra, MD

ATA THYROID BROCHURE LINKS

Thyroid Hormone Treatment: http://thyroid.org/patients/patient_brochures/hormonetreatment.html

Thyroid cancer: http://thyroid.org/patients/patient_brochures/cancer_of_thyroid.html

ABBREVIATIONS & DEFINITIONS

Hyperthyroidism: a condition where the thyroid gland is overactive and produces too much thyroid hormone. Hyperthyroidism may be treated with antithyroid meds (Methimazole, Propylthiouracil), radioactive iodine or surgery.

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.

Thyroid hormone therapy: patients with hypothyroidism are most often treated with Levothyroxine in order to return their thyroid hormone levels to normal. Replacement therapy means the goal is a TSH in the normal range and is the usual therapy. Suppressive therapy means that the goal is a TSH below the normal range and is used in thyroid cancer patients to prevent growth of any remaining cancer cells.

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THYROID AND THE HEART, continued

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.

Echocardiogram: also known as cardiac echo, is a heart ultrasound that uses sound waves to provide dynamic images of the heart as it beats.

Speckle Tracking Echocardiography (STE): a very sensitive type of echocardiogram where shortening, twisting and thickening of the ventricle wall during heart contraction and relaxation are easily seen and measured.