CLINICAL THYROIDOLOGY **FOR THE PUBLIC**

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HYPER- AND HYPOTHYROIDISM

Thyroid dysfunction and risk of death and cardiovascular events

BACKGROUND

Studies that have examined the all-cause death rate and cardiovascular risks of overt or subclinical hyperthyroidism or hypothyroidism have shown differing results, with some showing increased risk, some no risk, and others reduced risk (for hypothyroidism). In an effort to answer the question, this study was designed to examine the association between thyroid disease and death and cardiovascular risk in a large Danish population.

THE FULL ARTICLE TITLE

Selmer C et al. Subclinical and overt thyroid dysfunction and risk of all-cause mortality and cardiovascular events: a large population study. J Clin Endocrinol Metab. March 21, 2014 [Epub ahead of print].

SUMMARY OF THE STUDY

Several Danish national registries provided information on 563,700 residents of Copenhagen at least 18 years old (mean age 48.6 years; 61% women) who had thyroid function tests run between 2000 and 2009. Patients taking thyroid hormones or antithyroid drugs or had had a heart attack, stroke, heart failure, or cancer were excluded. Overt hyperthyroidism was defined as a low TSH with elevated free thyroxine (total 3902 individuals [0.6%]); subclinical hyperthyroidism as a low TSH with normal free thyroixine (5972 individuals [1.06%]); euthyroidism as a normal TSH (540,710 individuals [95.9%]); subclinical hypothyroidism as a high TSH with normal free thyroxine (11,560 individuals [2%]); and overt hypothyroidism as an elevated TSH with a low free thyroxine level (1549 individuals [0.3%]). The major outcomes were death from any cause and major adverse cardiovascular events (MACE), which included cardiovascular death, nonfatal heart attack and nonfatal stroke. Other outcomes were heart attack, stroke, heart failure, and cancer as individual problems. Comparisons were made between individuals with abnormal thyroid function tests and those with normal thyroid function tests and the data was adjusted for confounding variables such as age, sex, calendar year and several other variables.

During the study, 47,327 patients died. Both overt and subclinical hyperthyroidism was associated with an increased risk of all-cause mortality, MACE and heart failure. Isolated heart attack and stroke risk were not increased in comparison to those individuals with normal thyroid function. Patients with subclinical hypothyroidism had lower all-cause mortality than those with normal thyroid function and the risk for MACE did not differ for those with overt or subclinical hypothyroidism as compared with those with normal thyroid function.

When examined by sex and age, the reduced risk for all-cause mortality was present only in women with subclinical hypothyroidism and in subjects over age 65. Heart attack risk was increased in those with subclinical hypothyroidism,and cancer rates were lower in those with either subclinical or overt hypothyroidism.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The major conclusions were that cardiovascular death and all-cause mortality were increased in both overt and subclinical hyperthyroidism, with heart failure being the specific cause for the increased risk. In contrast, subclinical hypothyroidism was associated with decreased all-cause mortality risk in women and those over 65 years. These results are consistent with the current American Thyroid Association guidelines for the management of hyperthyroidism and hypothyroidism.

— Glenn Braunstein, MD

ATA THYROID BROCHURE LINKS

Thyroid and the Elderly: http://www.thyroid.org/hypothyroidism-elderly/

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

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

Hyperthyroidism: http://www.thyroid.org/what-is-hyperthyroidism

HYPER- AND 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 T_4 level. All patients with overt hypothyroidism are usually treated with thyroid hormone pills.

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.

Subclinical Hyperthyroidism: a mild form of hyperthyroidism where the only abnormal hormone level is a decreased TSH.

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.

Thyroxine (T_4): the major hormone produced by the thyroid gland. T_4 gets converted to the active hormone T_3 in various tissues in the body

Thyroid Awareness Monthly Campaigns Announced in Cooperation with PuraVida

The ATA will be highlighting a distinct thyroid disorder each month and a portion of the sales for PuraVida bracelets will be donated to the ATA. The month of July is **Differentiated Thyroid Cancer Awareness** and a bracelet is available through the **ATA Marketplace** to support thyroid cancer awareness and education related to thyroid disease.