Study examines subclinical hyperthyroidism, coronary heart disease and mortality risk

April 23 2012

An analysis of individual data from prospective studies assessing the risks of thyroid dysfunction suggests that subclinical hyperthyroidism may be associated with increased risk of total mortality, coronary heart disease (CHD) death and incident atrial fibrillation (AF), although the risk of CHD mortality and AF is higher when thyrotropin levels are below 0.10 mIU/L, according to a report published Online First in *Archives of Internal Medicine*.

Subclinical hyperthyroidism is defined by low thyrotropin levels with normal concentrations of free thyroxine (FT 4) and triiodothyronine (T 3). The condition has been associated with cardiovascular system effects, including an increased heart rate, and observational studies have suggested an association with CHD and incident AF, the authors write in their study background. However, they note that results from prospective cohort studies have been conflicting and study-level meta-analyses have reached contradictory conclusions.

"Although no large randomized controlled trials have examined the effects of treating subclinical hyperthyroidism on clinically relevant outcomes, a consensus statement and recent guidelines advocate treatment of subclinical hyperthyroidism, particularly when thyrotropin level is lower than 0.10 mIU/L, to avoid long-term complications," the authors comment.

Tinh-Hai Collet, M.D., of the University of Lausanne, Switzerland, and colleagues searched the medical literature and analyzed individual data

pooled data from 10 prospective cohorts with a total of 52,674 participants with a median age of 59 years and 58.5 percent of them women. Of the participants, 2,188 (4.2 percent) had endogenous subclinical hyperthyroidism.

During follow-up, 8,527 participants died (including 1,896 from CHD), 3,653 had CHD events and 785 had incident AF. In age- and sex-adjusted analyses, subclinical hyperthyroidism, compared with euthyroidism (normal thyroid function) was associated with increased risk of total mortality (hazard ratio [HR] 1.24), CHD mortality (HR, 1.29), CHD events (HR, 1.21) and incident AF (HR, 1.68). CHD mortality and incident AF (but not other outcomes) were "significantly greater" in participants with lower thyrotropin levels, according to the study results.

"Our study is observational, and as such cannot address whether the risks associated with subclinical hyperthyroidism are lowered by treatment. A large randomized controlled trial with relevant clinical outcomes will be required to demonstrate whether these risks are altered by therapy," the authors conclude.

In an invited commentary, Kenneth D. Burman, M.D., of MedStar Washington Hospital Center and Georgetown University, Washington, D.C., writes: "In conclusion, the study by Collet et al provides important information regarding the importance of recognizing subclinical hyperthyroidism in anticipation of decreasing cardiac and osseous risks, although definitive prospective long-term, controlled studies proving the benefits of treatment in various age groups have not been performed."

"Until further data are available, the relationship between subclinical hyperthyroidism and increased mortality, CHD mortality and atrial fibrillation presently provides sufficient evidence to consider treatment of subclinical hyperthyroidism, especially in elderly patients with cardiac

risks, hyperthyroid symptoms or osteoporosis," Burman concludes.

More information: *Arch Intern Med.* Published online April 23, 2012. doi:10.1001/archinternmed.2012.402
Arch Intern Med. Published online April 23, 2012. doi:10.1001/archinternmed.2012.1114