Is It Worthwhile to Screen for Thyroid Dysfunction?

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SUMMARY

Background
Based on NHANES III data, about 5% of the U.S. population has subclinical thyroid dysfunction and 1.2% has overt thyroid dysfunction (1). The current study was commissioned by the U.S. Preventive Services Task Force (USPSTF) in order to determine whether screening the population for thyroid dysfunction would have clinical benefit. The study was a follow-up to one published 10 years ago by USPSTF, which concluded that there was no benefit to screening for thyroid dysfunction (2). The current study focused on answering four questions: (1) Does screening for thyroid dysfunction reduce morbidity and mortality? (2) What are the harms of screening? (3) Does treating screen-detected overt or subclinical thyroid dysfunction improve: (a) mortality and morbidity? or (b) intermediate outcomes? and (4) What are the harms of treating thyroid dysfunction detected by screening?

Methods
The Medline and Cochrane databases were reviewed for relevant articles from 2002 to mid-2014 on subclinical hypothyroidism and hyperthyroidism. For overt thyroid dysfunction, there was no date limitation in the review of the databases. Studies were included if they compared screening versus no screening or compared treatment versus no treatment. Cardiovascular outcomes were coronary artery disease, congestive heart failure, and atrial fibrillation. Other outcomes were fractures, changes in bone mineral density, quality of life, and cognitive function. Only articles in English were included.

Results
With regard to cardiovascular events, one study of treatment of subclinical hypothyroidism showed a reduction of ischemic events, deaths due to circulatory diseases, and all-cause mortality in those who were treated with levothyroxine versus those who had no treatment (3). However, the authors point out that this was a retrospective study. Review of several studies of lipids showed that treatment of subclinical hypothyroidism with levothyroxine lowered total cholesterol and LDL levels significantly. There was no significant reduction of weight or body-mass index due to treatment of subclinical hypothyroidism (based on six studies). There was no evidence of harm due to therapy for subclinical hypothyroidism.

In general, there was no significant improvement in quality of life due to treatment of subclinical hypothyroidism versus no treatment. Based on two studies of cognitive function with treatment versus no treatment of subclinical hypothyroidism, the review concluded that there was no benefit of therapy.

The first two questions concerning reduction of morbidity and mortality and harms of screening could not be addressed in a satisfactory manner because no study compared those screened versus those not screened.

There were no studies of treatment versus no treatment of screen-detected, previously undiagnosed overt thyroid dysfunction.

Conclusions
The authors conclude that "more research is needed to determine the clinical benefits associated with thyroid screening."
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ANALYSIS AND COMMENTARY

The general policy of Clinical Thyroidology is not to write an article about a review paper unless it is a meta-analysis that is capable of drawing new conclusions. So why did I choose to review this paper? In their review of the potential benefit of screening for thyroid dysfunction 11 years ago, the U.S. Preventive Services Task Force concluded that: “It is uncertain whether treatment will improve quality of life in otherwise healthy patients who have abnormal TSH levels and normal free thyroxine levels” (2). In a previous review, Helfand et al. concluded that screening women over 50 for overt thyroid disease may be indicated (4).

The controversy regarding the clinical benefits of screening for thyroid dysfunction focuses mainly on subclinical hypothyroidism and has been debated in print for 15 years (5,6). The current review quotes literature showing a reduction of cardiovascular mortality and improvement in lipid levels in patients treated for subclinical hypothyroidism as compared with untreated controls, thus answering question 3 in an affirmative manner. Likewise, the review could not show any harm resulting from treatment of thyroid disease detected by screening, so question 4 is answered.

Although the authors claim that question 1, concerning whether screening versus not screening reduces morbidity and mortality, cannot be answered, this is a rhetorical question. If they define this as a comparison between a screened group and an unscreened group, it is unlikely that such a study will ever be done in a single population. In other words, it is an unanswerable question. Considering question 2, about whether screening is harmful, the screen is a measurement of serum TSH that is readily available and sufficiently inexpensive so that it could not be considered harmful.

There is a lack of review of studies of subclinical hyperthyroidism because it is generally agreed that when the TSH is <0.1 mU/L, there is a strong predisposition to atrial fibrillation and osteoporosis, so these patients should be treated (7). There is a lack of data on controlled studies of overt disease because it is widely accepted that patients with overt hypothyroidism and overt hyperthyroidism, even if detected by screening alone, should be treated. In my opinion, this review does not deserve to be considered as a basis for avoiding screening adults for thyroid dysfunction.

References
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