



SUBCLINICAL THYROID DYSFUNCTION

Subclinical hyperthyroidism, but not subclinical hypothyroidism, is associated with increased dementia risk

BACKGROUND

Overt thyroid disease means that both the TSH levels and the thyroid hormone levels are abnormal, while subclinical disease is defined by abnormal TSH levels only — the thyroid hormone levels are normal. Overt hypothyroidism and hyperthyroidism has been clearly shown to be associated with a decline in thinking and understanding (cognitive function) and possibly developing early dementia. It is still unclear whether subclinical hypothyroidism and/or hyperthyroidism are similarly associated with worsening cognitive function and early dementia. The aim of this study was to examine published studies to determine whether subclinical hypothyroidism or subclinical hyperthyroidism is associated with increased risk for dementia or impaired thought processes.

THE FULL ARTICLE TITLE

Rieben C et al Subclinical Thyroid Dysfunction and the Risk of Cognitive Decline: a Meta-Analysis of Prospective Cohort Studies. *J Clin Endocrinol Metab*. September 30, 2016 [Epub ahead of print].

SUMMARY OF THE STUDY

The authors included studies which involved adults with subclinical hypothyroidism and/or hyperthyroidism as well as people without thyroid disease. An evaluation for early dementia was performed using the Mini Mental State Examination (MMSE) ([page 18](#)). A total of 11 studies, including 16,805 participants, were eligible for inclusion. Some reported information on dementia, others reported outcomes from the MMSE and some on both. In most studies the average age of the participants was >70 years and the average follow-up was 44.4 months. Subjects on thyroid hormone or on medications that could change thyroid function were excluded when analyzing the results.

The authors found that 5 studies reported associations between subclinical hyperthyroidism and dementia, and three studies showed associations between subclinical hyperthyroidism and Alzheimer's disease, when compared to participants with normal thyroid function. There was no significant association between subclinical hypothyroidism and dementia in any of the studies. Neither subclinical hyperthyroidism nor subclinical hypothyroidism was associated with worsening MMSE scores in any of the studies that evaluated this outcome.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Current guidelines from the American Academy of Neurology recommend routine thyroid function testing in all patients newly diagnosed with dementia. Even though this study found that subclinical hyperthyroidism was associated with dementia, there was a lot of variation in the reference ranges for thyroid hormone used and methods for assessing cognition and dementia diagnosis between the included studies. It is still uncertain whether subclinical thyroid dysfunction is truly associated with dementia and whether normalization of thyroid function in these patients would improve cognitive outcomes.

— Maria Papaleontiou, MD

ATA THYROID BROCHURE LINKS

Thyroid Disease in the Older Patient: <http://www.thyroid.org/thyroid-disease-older-patient/>

Hyperthyroidism (Overactive): <http://www.thyroid.org/hyperthyroidism/>

Hypothyroidism (Underactive): <http://www.thyroid.org/hypothyroidism/>

ABBREVIATIONS & DEFINITIONS

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.

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



SUBCLINICAL THYROID DYSFUNCTION, continued

Overt 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 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.

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

Cognition: the mental processes involved in gaining knowledge and comprehension. These processes include thinking, knowing, remembering, judging and problem-solving.

Mini Mental State Examination (MMSE) (page 18): a 30-point questionnaire that is used extensively in clinical and research settings to measure cognitive impairment. It is commonly used in medicine and allied health to screen for dementia.

