Subclinical Hypothyroidism Tied to Heart Issues

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NEW YORK — Subclinical hypothyroidism with a thyroid-stimulating hormone level of 10-20 mU/L was associated with an almost twofold risk of heart failure in a study of more than 3,000 older adults.

The findings, presented by Dr. Douglas Bauer at the annual meeting of the American Thyroid Association, come from an analysis of participants in the prospective Cardiovascular Health Study, which includes persons from Medicare population–based listings at four university hospitals and is funded by the National Institutes of Health.

Dr. Bauer and his colleagues recruited 3,065 participants who were free of heart failure at baseline and not taking any medication known to affect thyroid function.

Any participants who initiated T4 replacement during the study were removed from the analysis, and 21 were excluded because of insufficient serum for testing. Participants were followed for 12 years and were contacted every 6 months for assessment of outcomes, said Dr. Bauer of the University of California, San Francisco.

Of the 495 participants (16%) with hypothyroidism, 448 had a TSH level between 4.5 mU/L and 9.9 mU/L and 47 had a TSH level of 10-20 mU/L. Hyperthyroidism (TSH level below 0.45 mU/L and normal T4 value) was found in 44 participants. All of the cases of hypothyroidism and hyperthyroidism in the study were subclinical.

Echocardiograms were obtained for all participants at baseline and at 5 years' follow-up and read by blinded physicians (including cardiologists). Some of the participants experienced heart failure before the 5-year follow-up, and their echocardiograms were also included.

At 12 years' follow-up, 660 persons (22%) had heart failure. In the 47 participants with a TSH level of 10-20 mU/L, there were 45 heart failure events per 1,000 person-years, compared with 22 events per 1,000 person-years in euthyroid participants. Multivariate analysis showed an unadjusted hazard ratio of 2.03 for those with a TSH level of 10-20 mU/L, versus euthyroid participants—a significant difference. (Adjusted for confounding factors, the hazard ratio was 1.88.) No increase in heart failure risk was seen in the hypothyroid participants with TSH levels of 4.5-9.9 mU/L or in euthyroid persons, versus those with TSH levels below that range. There was no difference in the heart failure rate between men and women.

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Moreover, at 12 years, impaired cardiac function was associated with TSH levels of 10-20 mU/L: The percentage of participants who had an abnormal left ventricular ejection fraction at time of incident heart failure was 80% in the high-TSH hypothyroid group, compared with 39% in the lower-TSH hypothyroid group, 44% in the euthyroid group, and 33% in the hyperthyroid group.

Dr. Bauer and colleagues concluded that "subclinical hypothyroidism is associated with a moderately increased risk of clinical events of congestive heart failure among older individuals with a TSH greater than 10 [mU/L]."

He acknowledged that the study was limited by a shorter follow-up period for the echocardiography data than for the heart failure data (5 years vs. 12 years), as well as missing follow-up echocardiograms for some participants.

Several studies have established an association between subclinical hypothyroid and hyperthyroid disease and cardiac dysfunction, Dr. Bauer said. But most studies have looked at subtle abnormalities in contractility, rather than at more clinically important measures, such as left ventricular ejection fraction. Also, most of those studies have been limited by small sample sizes and lack of randomization. ■

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