



## THYROID NODULES

### Serum TSH levels in the upper normal range suggest that a thyroid nodule is cancerous

#### BACKGROUND

Thyroid nodules can be seen in up to 50% of individuals that have imaging studies that include the neck. The concern about any nodule is the risk for cancer, which is seen in 5-10% of thyroid nodules. Since a report in 2006 from the United Kingdom suggesting that higher serum TSH was risk factor for thyroid cancer in thyroid nodules, there have been many additional studies to evaluate this association. In the current study, the authors performed a systematic review of clinical studies that examined this relationship between serum TSH and the diagnosis of thyroid cancer in thyroid nodules.

#### THE FULL ARTICLE TITLE

McLeod DS et al Thyrotropin and thyroid cancer diagnosis: a systematic review and dose-response meta-analysis. *J Clin Endocrinol Metab* 2012;97(8):2682-92.

#### SUMMARY OF THE STUDY

The authors used several medical literature databases to find all published papers containing studies related to thyroid cancer and serum TSH concentrations. They calculated the likelihood of cancer associated with serum TSH values. A total of 28 studies were selected for this systematic review and 22 of these studies included 40,929 patients and 5605 cases of thyroid cancer.

A total of 15 of the studies included in the analysis show a TSH-related increase in the likelihood of cancer,

frequently extending to a frankly elevated serum TSH. Using a predictive model the authors found that as serum TSH levels increased, so did the risk of thyroid cancer. For example, at a TSH of 3 mU/L, the likelihood that the nodule was a cancer was almost twice that seen with a TSH of 1, while there was an almost 3-fold greater likelihood of cancer if the TSH was 5 mU/L.

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The conclusion of this study is that higher serum TSH concentrations are generally associated with an increased risk of thyroid cancer in thyroid nodules. This study and another large study also indicates that a relatively low serum TSH suggests that a nodule is more likely to be benign (non-cancerous). This could have potential implications in the management of patients with thyroid nodules, suggesting a possible benefit of treatment with levothyroxine in those patients with higher TSH. However, prospective well designed studies would be needed to evaluate this theory.

— M. Regina Castro, MD

#### ATA THYROID BROCHURE LINKS

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

Thyroid Nodules: <http://www.thyroid.org/what-are-thyroid-nodules>

#### ABBREVIATIONS & DEFINITIONS

**Levothyroxine (T<sub>4</sub>):** the major hormone produced by the thyroid gland and available in pill form as Levoxyl™, Synthroid™, Levothroid™ and generic preparations.

**Thyroid nodule:** an abnormal growth of thyroid cells that

forms a lump within the thyroid. While most thyroid nodules are non-cancerous (Benign), ~5% are cancerous.

**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