



THYROID CANCER

When thyroglobulin is undetectable, is any further testing needed in following patients with thyroid cancer?

BACKGROUND

Thyroglobulin is a protein produced by both normal and cancerous thyroid cells. Treatment of thyroid cancer frequently involves total thyroidectomy and radioiodine therapy followed by thyroid hormone therapy to suppress serum TSH and turn off any residual normal thyroid cells. In this situation, the serum thyroglobulin level can be used as a thyroid cancer marker. Indeed, if any thyroid cancer cells are present, levels of thyroglobulin are often detectable, either on TSH suppression therapy or after stimulation with rhTSH (stimulated thyroglobulin testing). Measurement of thyroglobulin under these conditions has become standard practice in the follow up of patients with thyroid cancer. This study is an analysis of many other studies as to the usefulness of measuring serum thyroglobulin levels in managing patients with thyroid cancer.

THE FULL ARTICLE TITLE

Giovanella L et al, Unstimulated high-sensitive thyroglobulin in follow-up of differentiated thyroid cancer patients: a meta-analysis. *J Clin Endocrinol Metab.* 2013 Nov 27.

SUMMARY OF THE STUDY

This study is an analysis of many other studies evaluating the utility of measuring thyroglobulin levels under thyroid hormone suppression therapy and after stimulation with rhTSH in patients with thyroid cancer. The authors identified 9 studies that used the newer, more sensitive

thyroglobulin assay. These studies included a total of 3178 patients. The investigators found that when the basal thyroglobulin level under thyroid hormone suppression therapy is <0.1 ng/ml, it accurately predicts that the stimulated thyroglobulin level will be <1 , which indicates absence of residual cancer cells.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study is helpful because it indicates that for most patients with thyroglobulin values of <0.1 ng/ml while on thyroid hormone suppression, stimulated thyroglobulin testing is unnecessary since the likelihood of identifying residual cancer is very small. These findings will cut down on the need to perform stimulated thyroglobulin testing, which is both inconvenient for patients and expensive. Long term follow up of patients with thyroid cancer, however, still requires periodic measurement of thyroglobulin, since other studies indicate that ~4% of patients with initially undetectable basal thyroglobulin levels eventually had recurrent cancer.

— M. Regina Castro, MD

ATA THYROID BROCHURE LINKS

Thyroid cancer: <http://www.thyroid.org/cancer-of-the-thyroid-gland>

Radioactive Iodine Therapy: <http://www.thyroid.org/radioactive-iodine>

ABBREVIATIONS & DEFINITIONS

Total thyroidectomy: surgery to remove the entire thyroid gland.

Thyroid hormone therapy: patients with hypothyroidism are most often treated with Levothyroxine in order to return their thyroid hormone levels to normal. Replacement therapy means the goal is a TSH in the normal range and is the usual therapy. Suppressive therapy means that the goal is a TSH below the normal range and is used in thyroid cancer patients to prevent growth of any remaining cancer cells.

Thyroglobulin: a protein made only by thyroid cells, both normal and cancerous. When all normal thyroid tissue is destroyed after radioactive iodine therapy in patients with thyroid cancer, thyroglobulin can be used as a thyroid cancer marker in patients that do not have thyroglobulin antibodies.

Radioactive iodine (RAI): this plays a valuable role in diagnosing and treating thyroid problems since it is taken up only by the thyroid gland. I-131 is the destructive form used to destroy thyroid tissue in the treatment of thyroid



THYROID CANCER, continued

cancer and with an overactive thyroid. I-123 is the non-destructive form that does not damage the thyroid and is used in scans to take pictures of the thyroid (Thyroid Scan) or to take pictures of the whole body to look for thyroid cancer (Whole Body Scan).

Thyroglobulin: a protein made only by thyroid cells, both normal and cancerous. When all normal thyroid tissue is destroyed after radioactive iodine therapy in patients with thyroid cancer, thyroglobulin can be used as a thyroid cancer marker in patients that do not have thyroglobulin antibodies

Stimulated thyroglobulin testing: this test is used to measure whether there is any cancer present in a patient that has previously been treated with surgery and radioactive iodine. TSH levels are increased, either by withdrawing the patient from thyroid hormone or treating the patient with rhTSH (Thyrogen™), then levels of thyroglobulin are measured. Sometimes this test is combined with a whole body iodine scan.

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