



THYROID CANCER

TSH-stimulated thyroglobulin testing is sufficient in following high-risk thyroid cancer patients

BACKGROUND

In patients with low-risk thyroid cancer, TSH-stimulated thyroglobulin testing is a more sensitive indicator of cancer recurrence than diagnostic whole-body scans. However, this has not been shown for patients with more advanced stages of thyroid cancer. The purpose of this study was to determine whether routine diagnostic whole-body scans 6 to 12 months after initial treatment provide additional information to that provided by TSH-stimulated thyroglobulin testing during the first year of follow-up of high-risk thyroid cancer.

THE FULL ARTICLE TITLE:

de Meer SG et al. The role of routine diagnostic radioiodine whole-body scintigraphy in patients with high-risk differentiated thyroid cancer. *J Nucl Med* 2011;52:56-9. Epub December 13, 2010.

SUMMARY OF THE STUDY

High-risk patients were defined as those with cancers larger than 4 cm or cancers that were locally invasive or associated with spread to the lymph nodes. TSH-stimulated thyroglobulin testing was performed after treatment with recombinant human TSH and compared with diagnostic whole-body scans.

The study group included 112 patients: 81% had papillary cancer and 19% had follicular cancer. Stimulated thyroglobulin was >0.2 ng/ml in 65%: 8 patients of this group had positive diagnostic whole body scans. In 6

patients, there was recurrence of the cancer only in the neck. One patient had spread of the cancer to the skull and another to the lung and brain. TSH-stimulated thyroglobulin was <0.2 ng/ml in 30% of patients. Only 1 of these patients had a positive diagnostic whole body scan. Additional studies did not reveal a source and a diagnostic whole body scan 1 year later was negative in this patient. Five percent of the patients had thyroglobulin antibodies that made the measurement of thyroglobulin unreliable.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

It is clear that some type of TSH-stimulated testing is important in predicting thyroid cancer recurrence and in assigning thyroid cancer patients as low or high risk for future cancer recurrence. Initially a TSH-stimulated diagnostic whole body scanning was paired with thyroglobulin testing in all patients. The scan was dropped in patients initially thought to be low risk. Now this study suggests that scans do not add important information in high-risk patients. This is important since scans require more preparation and an additional day of testing at the hospital. Thus, for most patients, TSH-stimulated thyroglobulin testing is sufficient.

— Alan P. Farwell, MD

ATA THYROID BROCHURE LINKS

Thyroid cancer: http://thyroid.org/patients/patient_brochures/cancer_of_thyroid.html

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.

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.

TSH-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 recombinant human TSH, then levels of thyroglobulin are measured. Sometimes this test is combined with a whole body iodine scan.

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THYROID CANCER, continued

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 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).

Recombinant human TSH (rhTSH) — human TSH that is produced in the laboratory and used to produce high levels of TSH in patients after an intramuscular injection. This is mainly used in thyroid cancer patients before treating with radioactive iodine or performing a whole body scan. The brand name for rhTSH is Thyrogen™.

Diagnostic Whole Body Scans — these radioactive iodine scans are performed under TSH stimulation, either after thyroid hormone withdrawal or after injections of recombinant human TSH (Thyrogen) and usually include measuring serum thyroglobulin levels.

Lymph node — bean-shaped organ that plays a role in removing what the body considers harmful, such as infections and cancer cells.

Papillary thyroid cancer — the most common type of thyroid cancer.

Follicular thyroid cancer — the second most common type of thyroid cancer.