



THYROID CANCER

Use of thyroid hormone withdrawal before radioactive iodine whole body scans for metastatic thyroid cancer is superior to recombinant TSH in detecting tumor sites

BACKGROUND

Patients with thyroid cancer are treated with surgery, which is often followed by radioactive iodine therapy to destroy any remaining thyroid cancer cells. When there is concern that the cancer has spread, radioactive iodine scans are used to detect the cancer. These scans are done in the presence of elevated TSH levels to increase the radioactive iodine uptake into thyroid cancer cells allowing for the detection and treatment of thyroid tumors. Elevated TSH levels can be achieved by stopping thyroid hormone therapy (thyroid hormone withdrawal, THW) or by injections of TSH in the form of recombinant human TSH (rhTSH, Thyrogen™). While both methods are approved for preparation for the initial radioactive iodine therapy, rhTSH preparation is not FDA approved for the scanning or treatment of metastatic thyroid cancer. This is because the ability of rhTSH preparation to achieve a sufficient concentration of radioactive iodine in such tumors has not been proven. This study compared the results of radioactive iodine whole body scans after both rhTSH and THW in patients suspected to have persistent thyroid cancer.

THE FULL ARTICLE TITLE

Van Nostrand D et al. Recombinant human thyroid-stimulating hormone versus thyroid hormone withdrawal in the identification of metastasis in differentiated thyroid cancer with ¹³¹I planar whole-body imaging and ¹²⁴I PET. *J Nucl Med.* 2012;53:359-62. Epub February 7, 2012.

SUMMARY OF THE STUDY

A total of 40 patients with suspected recurrent or metastatic thyroid cancer had radioactive iodine whole body scans after either rhTSH (24 patients) or THW preparation (16 patients). The number of metastatic lesions that concentrated iodine was then counted by two physicians independently.

Far more lesions (2-10-fold more) were detected on the radioactive iodine scans in patients who were prepared with THW rather than rhTSH.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The authors concluded that THW is superior to rhTSH preparation in the detection of metastatic thyroid cancer. However, more studies are needed to determine whether THW is superior to rhTSH preparation in the treatment of metastatic thyroid cancer.

— Mona Sabra, 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>

Thyroid Surgery: <http://thyroid.org/patients/patient-brochures/surgery.html>

ABBREVIATIONS & DEFINITIONS

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).

Diagnostic radioactive iodine 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). The scan identifies any remaining thyroid cells in the body and determines if there is any evidence of metastatic thyroid cancer.

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.