



THYROID CANCER

Pertechnetate thyroid scanning is a low-cost and widely available option for patients who require thyroid imaging before Radioactive Iodine therapy

WHAT IS THE STUDY ABOUT?

Following initial surgery for thyroid cancer, there is almost always a small amount of residual thyroid tissue remaining. Many patients are treated with Radioactive Iodine to destroy any remaining thyroid cancer cells as well as this remaining thyroid tissue. Prior to the Radioactive Iodine treatment, a thyroid scan using a small amount of Radioactive Iodine is often performed to document how much normal thyroid tissue is remaining. There is some concern that this small amount of Radioactive Iodine may interfere with the larger dose of Radioactive Iodine. Pertechnetate is another isotope that can be used to image thyroid tissue. The present study examines the effectiveness of pertechnetate in performing scan in thyroid cancer patients prior to Radioactive Iodine therapy.

THE FULL ARTICLE TITLE:

Kueh SS et al. Role of tc-99m pertechnetate for remnant scintigraphy post-thyroidectomy. Clin Nucl Med 2010;35:671-4.

WHAT WAS THE AIM OF THE STUDY?

The aim of this study was to examine the effectiveness of pertechnetate in performing scans in thyroid cancer patients prior to Radioactive Iodine therapy.

WHO WAS STUDIED?

The study group included 70 patients with thyroid cancer who were treated with Radioactive Iodine between 1995 and 2006 at the Royal North Shore Hospital Department of Nuclear Medicine in Sydney, Australia.

HOW WAS THE STUDY DONE?

The patients underwent whole body scanning using pertechnetate 3 to 6 weeks following total thyroidectomy. The patients were treated with Radioactive Iodine within a week after the pertechnetate scan. A post-Radioactive iodine Whole Body Scan was performed following the treatment and this scan was compared to the pertechnetate scan.

WHAT WERE THE RESULTS OF THE STUDY?

Of the 70 patients, 2 (3%) had negative post-Radioactive Iodine scans. Both of these patients also had negative pre-treatment pertechnetate scans. Of the remaining 68 patients, 55 (81%) were positive for at least one site on the pertechnetate scan, 6 (9%) had equivocal uptake and 7 (10%) had negative scans. A total of 54 of the 55 positive pertechnetate scans (98%) showed uptake that correlated with at least one site on the post-ablation ¹³¹iodine scan. One patient (2%) had uptake at different sites, though both the pertechnetate and post-Radioactive Iodine scan were positive. All six equivocal pertechnetate scans were also positive on the post-Radioactive Iodine scan. Thus, all of the positive or equivocal pertechnetate scans were associated with a positive post-Radioactive Iodine scan.

HOW DOES THIS COMPARE WITH OTHER STUDIES?

Previous studies have demonstrated that low-dose Radioactive Iodine scans have a relatively low sensitivity for identifying residual thyroid tissue and can interfere with the effectiveness of the high-dose Radioactive Iodine treatment. This study suggests that the pertechnetate scans are more effective in identifying residual thyroid tissue and do not interfere with Radioactive Iodine treatment.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study supports the use of pertechnetate, an inexpensive and readily-available radioactive imaging agent, for pretreatment scanning following initial surgery for thyroid cancer.

— Frank Craz, MD

ATA THYROID BROCHURE LINKS

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

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THYROID CANCER, continued

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).

Post- Radioactive Iodine Whole Body Scan (post-RAI WBS) — the scan done after Radioactive Iodine treatment that identifies what was treated and if there is any evidence of metastatic thyroid cancer.

Pertechnetate thyroid scan — pertechnetate is another radioactive substance that is taken up by the thyroid in a similar fashion to iodine and that can be used to image thyroid tissue.