



## THYROID CANCER

# The Best Time For A Posttreatment Whole-Body Scan Is 3 To 6 Days After Therapeutic Radioiodine Is Administered For The Treatment Of Thyroid Cancer

### WHAT IS THE STUDY ABOUT?

Once a diagnosis of thyroid cancer is made, the usual next step is surgery to remove the entire thyroid along with the cancer. After surgery, it is important to determine the amount of thyroid tissue left in the neck and whether the cancer has spread outside of the neck. Given persistent swelling in the neck immediately after surgery that distorts the neck architecture, thyroid ultrasounds are not very useful until several months later. The level of thyroglobulin is also not helpful until several months later as well. However, many patients are also treated after surgery with radioactive iodine (I-131) to destroy any remaining thyroid tissue, including any remaining cancer tissue. A scan after I-131 therapy gives a picture of the whole body and identifies the thyroid tissue remaining in the neck as well as any cancer that has spread outside of the neck. The aim of this study was to determine when is the best time to perform this post-treatment scan.

### THE FULL ARTICLE TITLE:

Hung BT et al. Appropriate time for post-therapeutic I-131 whole body scan. Clin Nucl Med 2009;34:339-42.

### WHAT WAS THE AIM OF THE STUDY?

The aim of the study was to determine the best time to perform a whole body scan after I-131 therapy.

### WHO WAS STUDIED?

The study included 239 patients with thyroid cancer treated from January 2006 and May 2008 in the Department of Nuclear Medicine in Chang Gung Memorial Hospital, University College of Medicine in Kaohsiung, Taiwan.

### HOW WAS THE STUDY DONE?

All patients had a total thyroidectomy and were treated with I-131 after stopping thyroid hormone therapy for at least 4 weeks (thyroid hormone withdrawal). The patients then had three whole body scans on the 3rd to 4th day, the 5th to 6th day, and the 10th to 11th day after I-131 was administered. The scans were graded as follows: grade 0 = no visible uptake, grade 1 = visible uptake and grade 2 = clearly visible uptake.

### WHAT WERE THE RESULTS OF THE STUDY?

The authors found that the ability of the post-treatment scan to accurately detect the amount of thyroid tissue remaining in the body is affected by the timing of the scan. As such, detection of thyroid tissue remaining in the neck was best if the scan was performed within 3 to 6 days after the I-131 therapy as compared to 10-11 days later. The identification of the spread of thyroid cancer outside of the neck was best when the scan was performed by day 9 after the I-131 therapy. Scans performed later than 9 days missed 17-29% of the cancers that had spread outside of the neck.

### HOW DOES THIS COMPARE WITH OTHER STUDIES?

This is the first study that looked at the timing of the post-I-131 treatment scan. In current practice, some patients are treated with I-131 after recombinant TSH stimulation rather than thyroid hormone withdrawal. A previous study showed that a post-I-131 therapy scan after recombinant TSH stimulation performed at 48 hours showed a similar finding as a post-I-131 scan after thyroid hormone withdrawal performed 3-6 days after I-131.

### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that the best time to perform the post-treatment scan after I-131 therapy for thyroid cancer in patients undergoing thyroid hormone withdrawal is 3-6 days after the I-131 dose. This should become the usual time for this scan in the future.

— Mona Sabra, MD

### ATA THYROID BROCHURE LINKS

Thyroid cancer: [http://thyroid.org/patients/patient\\_brochures/cancer\\_of\\_thyroid.html](http://thyroid.org/patients/patient_brochures/cancer_of_thyroid.html)

Radioactive Iodine Therapy: [http://thyroid.org/patients/patient\\_brochures/radioactive.html](http://thyroid.org/patients/patient_brochures/radioactive.html)

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## **THYROID CANCER**, continued

### **ABBREVIATIONS & DEFINITIONS**

**Thyroidectomy** — Surgery to remove the entire thyroid gland. When the entire thyroid is removed it is termed a total thyroidectomy. When less is removed, such as in removal of a lobe, it is termed a partial thyroidectomy.

**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).

**Thyroid Hormone Withdrawal (THW)** — this is used to produce high levels of TSH in patients by stopping thyroid hormone pills and causing short-term hypothyroidism. This is mainly used in thyroid cancer patients before treating with radioactive iodine or performing a 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™.