



## THYROID CANCER

### PET scans are very effective at finding spread of thyroid cancer to the lymph nodes in the neck

#### WHAT IS THE STUDY ABOUT?

Thyroid cancer is common and is the fastest rising cancer in women. It is known that as many as 1/3 of patients will have spread of the thyroid cancer to the lymph nodes in the neck at the time of the initial thyroid surgery. However, as we develop more sensitive means of finding thyroid cancer, doctors are learning that this is actually more common than initially thought. Further, these patients frequently have persistent thyroid cancer in the neck lymph nodes after treatment with radioactive iodine. Fortunately, thyroid cancer has a good prognosis, even for those patients that have spread of the cancer to the lymph nodes in the neck. One sensitive way of examining patients for thyroid cancer is an imaging study known as Positron-Emission Tomography (PET) Scan. Importantly, PET scans can identify thyroid cancer that does not take up the radioactive iodine and that cannot be seen on thyroid scans. This study examines how effective PET scans are at finding residual thyroid cancer remaining after radioactive iodine therapy.

#### FULL ARTICLE TITLE:

Kaneko et al. Detection of residual lymph node metastases in high-risk papillary thyroid cancer patients receiving adjuvant I-131 therapy: the usefulness of F-18 FDG PET/CT. Clin Nucl Med 2010;35:6-11.

#### WHAT WAS THE AIM OF THE STUDY?

The aim of this study was to examine how effective PET scans are at finding residual thyroid cancer remaining after radioactive iodine therapy.

#### WHO WAS STUDIED?

The study group included 37 patients at a Japanese university hospital with high-risk papillary thyroid cancer who were treated between 2006 and 2008. All patients had a total thyroidectomy and removal of lymph nodes in the neck followed by radioactive iodine therapy.

#### HOW WAS THE STUDY DONE?

The records of the patients were examined for the initial pathology of the thyroid cancer, the amount of radioactive iodine received and the number of lymph nodes that contained thyroid cancer. All patients also had PET scans.

#### WHAT WERE THE RESULTS OF THE STUDY?

A total of 9 patients were found to have residual thyroid cancer in the lymph nodes. A total of 33 lymph nodes were involved with cancer in these 9 patients. PET scans identified all 33 lymph nodes that contained thyroid cancer. Only 14 (42%) of these lymph nodes were identified on the radioactive iodine whole body scan.

#### HOW DOES THIS COMPARE WITH OTHER STUDIES?

It has been known for many years that when papillary thyroid cancer spreads from the thyroid, it spreads to the lymph nodes in the neck. Recent studies indicate that cancers that have a specific gene mutation (BRAF) are more aggressive and often do not take up radioactive iodine.

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Despite the excellent prognosis for most patients with thyroid cancer, it appears that residual thyroid cancer in the lymph nodes in the neck after radioactive iodine therapy is more common than initially thought. PET scanning is very sensitive to identify spread of thyroid cancer to the lymph nodes, including thyroid cancer that does not take up iodine. Thus, a PET scan may be a very valuable tool to identify thyroid cancer patients that may benefit from more aggressive treatment.

— Henry Fein, 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)

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## **THYROID CANCER**, continued

### **ABBREVIATIONS & DEFINITIONS**

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

**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).

**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.

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

**Cancer recurrence** — this occurs when the cancer comes back after an initial treatment that was successful in destroying all detectable cancer at some point.