



## THYROID CANCER

# A second radioactive iodine treatment alone is of little benefit in treating patients with thyroid cancer that has spread into the lymph nodes in the neck

### BACKGROUND

Thyroid cancer is the fastest rising cancer in women. Current treatment including surgery (total thyroidectomy) followed by thyroid hormone therapy. Radioactive iodine therapy is used in patients with an intermediate or higher risk of persistent or recurrent thyroid cancer. Radioactive iodine works as a “magic bullet” by getting taken up by both normal and cancerous thyroid cells and destroying them. Similarly, radioactive iodine can be used to destroy thyroid cancer cells if the cancer returns.

Up to 30% of patients treated with total thyroidectomy and radioactive iodine therapy have persistent metastatic thyroid cancer in the lymph nodes in the neck. While surgery is the gold standard for treatment of large metastatic cancer, management of small, slowly progressive cancer in the neck remains unclear. Repeated doses of radioactive iodine therapy has proven to be beneficial in patients with thyroid cancer that has spread outside of the neck (ie into the lungs), however limited data is available on whether treatment of thyroid cancer in the lymph nodes in the neck with second administration of radioactive iodine therapy is effective. This study was intended to determine whether a second radioactive iodine therapy in patients with thyroid cancer in the lymph nodes in the neck is beneficial.

### THE FULL ARTICLE TITLE

Hirsch D et al. Second radioiodine treatment: limited benefit for differentiated thyroid cancer with locoregional persistent disease. *J Clin Endocrinol Metab.* November 3, 2017.

### SUMMARY

Authors selected for analysis 164 patients with thyroid cancer treated with total thyroidectomy and at least two doses of radioactive iodine therapy who had elevated thyroglobulin levels with or without evidence of metastatic cancer in the neck after the initial therapy. Patients

were divided in three groups prior to a second dose of radioactive iodine therapy (which they all received): 1) elevated thyroglobulin levels only with no evidence of cancer in the neck by ultrasound imaging, 2) recurrent thyroid cancer in the neck treated with surgery, and 3) recurrent thyroid cancer in the neck treated that was not re-operated. Patients were followed for about 10 years after initial diagnosis and 7.3 years after a second radioactive iodine therapy. A total of 73% of the patients with a detectable thyroglobulin level (group 1) had persistently elevated thyroglobulin levels 1-2 years after radioactive iodine therapy; moreover, 16% of these patients developed metastatic cancer that was identified by ultrasound imaging. In group 2, who were re-operated prior to a second dose of radioactive iodine therapy, 48% of patients had persistent cancer. Almost all patients (94%) who did not have reoperation in the neck prior to a second radioactive iodine therapy (group 3) had persistent metastatic cancer at 1-2 years after the repeated radioactive iodine therapy treatment. After a second dose of radioactive iodine therapy, about 38% of patients received additional therapies.

In general, at final follow up 56/164 patients (34%) had no evidence of disease and 75 patients (45%) had imaging studies consistent with metastatic disease. Metastatic cancer in the neck was seen at the last follow up visit in 28% of patients with elevated thyroglobulin levels (group 1), in 40% of patients who were re-operated prior to a second dose of radioactive iodine therapy (group 2) and in 70% of patients who were not re-operated (group 3).

### IMPLICATIONS

This study shows that only a modest decline in metastatic neck disease was noted after a second radioactive iodine therapy, unless this was also preceded by neck reoperation to remove metastasis. The patients who were re-operated prior to a second dose of the radioactive iodine therapy had the best outcomes achieving





## THYROID CANCER, continued

cancer-free state. These results are attributed to surgery itself rather than to repeated radioactive iodine therapy. Furthermore, despite additional therapies that included radioactive iodine therapy, surgery and external beam radiation therapy about half of the patients had persistent metastatic disease in the neck at final follow

up. Thus, it appears that patients with persistent thyroid cancer received little benefit from a second radioactive iodine therapy. Because of this, more studies are needed to evaluate the role of radioactive iodine therapy for recurrent cancer in the neck.

—Valentina Tarasova, MD

### ATA WEB BROCHURE LINKS:

Thyroid Cancer (Papillary and Follicular): <https://www.thyroid.org/thyroid-cancer/>

Radioactive Iodine: <https://www.thyroid.org/radioactive-iodine/>

Thyroid Surgery: <https://www.thyroid.org/thyroid-surgery/>

### ABBREVIATIONS AND DEFINITIONS:

**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.

**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.

**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.

**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.

**Thyroid Ultrasound:** a common imaging test used to evaluate the structure of the thyroid gland. Ultrasound uses soundwaves to create a picture of the structure of the thyroid gland and accurately identify and characterize nodules within the thyroid. Ultrasound is also frequently used to guide the needle into a nodule during a thyroid nodule biopsy.

