



THYROID CANCER

High-dose radioactive iodine therapy decreases local recurrence for high-risk papillary thyroid cancer

BACKGROUND

After surgery, patients at intermediate or higher risk of thyroid cancer recurrence are treated with radioactive iodine therapy, which produces ionizing radiation that destroys cancer cells. Thyroid tissue, including both the normal thyroid cells and thyroid cancer cells, is one of the few tissues in the body that absorbs iodine. The most common form of thyroid cancer (papillary thyroid cancer) is known to absorb iodine and can be killed by. For these reasons, radioactive iodine therapy can be used to target and kill papillary thyroid cancer cells, especially when these cells manage to spread out of the thyroid to other parts of the body (usually to lymph nodes in the neck and sometimes to more distant areas such as the lungs and the bones). Even though radioactive iodine is very good at specifically targeting thyroid cancer cells, this treatment can have side effects and the higher the dose of radioactive iodine used, the more common and severe these side effects will be. This study looked at the effects of high and low doses of radioactive iodine on cancer recurrence and side effects in patient with papillary thyroid cancer.

THE FULL ARTICLE TITLE

Gray KD et al 2018 High-dose radioactive iodine therapy is associated with decreased risk of recurrence in high-risk papillary thyroid cancer. Surgery. Epub 2018 Sep 28. PMID: 30274732

SUMMARY OF THE STUDY

The purpose of this study was to compare the effect of two different doses of radioactive iodine on the risk of papillary thyroid cancer recurring after thyroid surgery in people known to be at a high risk for such recurrence and the risk of side effects from radioactive iodine treatment. This study started by looking at the medical records of over 1500 people treated for papillary thyroid cancer during a ten-year period of time at three different hospitals (two in France and one in the United States). The study then narrowed the number of people included to 183,

which were those people for whom the risk of papillary thyroid cancer coming back (recurring) was the highest. These 183 people were then divided into groups according to the dose of radioactive iodine they received after thyroid surgery: 117 were in the lower dose group and 66 were in the higher dose group. Using mathematical tools to compare these groups, the study authors found that:

1. Papillary thyroid cancer was more likely to recur in the neck, but not at other body sites, for those people receiving the lower dose of radioactive iodine.
2. When papillary thyroid cancer did recur in the neck, this happened sooner after radioactive iodine treatment in the lower dose group compared to the higher dose group.
3. Side effects of radioactive iodine treatment were only seen for those people receiving the higher dose of radioactive iodine.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The best dose of radioactive iodine to use for treatment of papillary thyroid cancer after thyroid surgery is still unclear, especially among people for whom the risk of this cancer recurring in the neck, or elsewhere in the body, is the highest. This study shows that the risk of cancer recurrence in the neck was lower when a higher dose of radioactive iodine is given and a higher dose of radioactive iodine produced more side effects. Together, these findings imply that the best dose of radioactive iodine to prevent of papillary thyroid cancer redevelopment in the neck after thyroid surgery, specifically in cases having high risk for such recurrence, will depend on balancing the best chance of preventing disease recurrence with the lowest chance of suffering treatment side effects.

— Jason D. Prescott, MD PhD





THYROID CANCER, continued

ATA THYROID BROCHURE LINKS

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

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

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

ABBREVIATIONS & DEFINITIONS

Papillary thyroid cancer: the most common type of thyroid cancer. There are 4 variants of papillary thyroid cancer: classic, follicular, tall-cell and noninvasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP).

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

Cancer metastasis: spread of the cancer from the initial organ where it developed to other organs, such as the lungs and bone.

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

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*.

Ionizing radiation: radiation that can damage cells, causing cell death or mutation. It can originate from radioactive materials, x-ray tubes or specialized machines. It is invisible and not directly detectable by human senses.

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*).

