AMERICAN THYROID ASSOCIATION
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THYROID CANCER

An increased but small absolute risk of leukemia can be attributed to radioactive iodine therapy for thyroid cancer

BACKGROUND

Thyroid cancer is the fastest rising cancer in women. Most thyroid cancers are treated with surgery alone. More advanced thyroid cancers require additional treatment with radioactive iodine. Radioactive iodine therapy is a well-tolerated and effective treatment for most types of thyroid cancer. It is taken up and concentrated by thyroid cells, both normal and cancerous, producing ionizing radiation that destroys the cells. While the highest amount of radioactive iodine is delivered to the thyroid cells, many other cells are exposed to low levels of ionizing radiation for a brief period of time. Any ionizing radiation has the potential to cause harm and the risk of cancer related to or caused by radioactive iodine has been studied but without clear conclusions. These cancers are called secondary malignancies, a cancer related to the treatment of another cancer.

This study was performed to gather more information on how much risk radioactive iodine has for the development of a secondary malignancy.

THE FULL ARTICLE TITLE

Yu CY et al 2018 A systematic review and meta-analysis of subsequent malignant neoplasm risk after radioactive iodine treatment of thyroid cancer. Thyroid. Epub 2018 Nov 27. PMID 30370820.

SUMMARY OF THE STUDY

This was a meta-analysis, a study that looks at the results of well-done previous studies on the same topic, combining the results to get a better overall picture and answer to the question of the risk of radioactive iodine. After reviewing all available studies, 17 were considered of high enough quality to be included in this meta-analysis.

Overall, there were 5-16 years of follow up for patients that received radioactive iodine for thyroid cancer. The average dose of radioactive iodine for these patients was 100-150 mCi. This comprehensive study did not show an increased risk of secondary malignancies after radioactive iodine when looking at all cancers. When individual types of cancers were examined more closely, there was a very slight increased risk of leukemia, a blood cancer.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that there may be a slight increased risk of developing leukemia later in life after receiving radioactive iodine for treatment of thyroid cancer. Importantly, relatively higher doses of radioactive iodine were used in this study. Current practice uses lower doses and it is unclear of these lower doses would have the same effect. Also, the routine use of radioactive iodine to treat all thyroid cancers has markedly decreased. Current guidelines from the American Thyroid Association recommend using radioactive iodine only for those advanced cancers that have an increased risk of recurrence. Certainly, patients should not use this information as a reason to not get radioactive iodine therapy for thyroid cancer if it is needed. It does, however, reinforce the fact that thyroid cancer patients do require life-long follow up and monitoring. Further, this study highlights the importance of giving the lowest effective dose of radioactive iodine and restricting its' use to the patients that would benefit the most.

— Joshua Klopper, MD

ATA THYROID BROCHURE LINKS

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

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

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).

mCi: millicurie, the units used for I-131

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.