

**THYROID CANCER****Usefulness of radioactive iodine therapy in children with thyroid cancer after the Chernobyl nuclear accident****BACKGROUND**

After the Chernobyl nuclear accident in 1986, people living in surrounding areas were exposed to high radiation levels putting them at risk for developing papillary thyroid cancer. This was especially true for children who were under 14 years of age at the time of the accident (40 times higher risk of developing thyroid cancer compared to non-exposed children). Children who developed thyroid cancers were routinely treated with surgery. Those with cancer invasion into surrounding tissues, spread to lymph nodes or spread to other parts of the body went on to receive radioactive iodine therapy. Because this cancer was caused by radiation, it is unclear how effective radioactive iodine therapy is in treating the cancer. This study examined the usefulness of radioactive iodine therapy in children with radiation induced thyroid cancer.

THE FULL ARTICLE TITLE

Reiners C et al. Twenty-five years after Chernobyl: outcome of radioiodine treatment in children and adolescents with very high-risk radiation-induced differentiated thyroid carcinoma. *J Clin Endocrinol Metab* 2013;98:3039-48. Epub April 24, 2013.

SUMMARY OF THE STUDY

A total of 134 children without spread of the cancer outside of the thyroid and 100 patients with spread of the cancer to other parts of the body were included in the study. All children received radioactive iodine therapy after thyroid hormone withdrawal. They were seen in clinic every 3-12 months for up to 13 years. Response

to radioactive iodine therapy was assessed based on thyroglobulin level and results of repeat radioactive iodine scanning. Children were treated with repeat radioactive iodine therapies if they had persistent thyroid cancer.

The majority of the patients were cured from thyroid cancer (64%). The other patients had stable disease. No one died from thyroid cancer. Radioactive iodine therapy caused breathing difficulty (8 patients) and one patient died from decreased lung function. Radioactive iodine therapy seemed to cause infertility in men.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that children with radiation-induced papillary thyroid cancer respond well to radioactive iodine therapy. This is certainly encouraging, especially since the thyroid cancer that developed in children after Chernobyl is more aggressive than the usual papillary thyroid cancer. However, it is uncertain whether this response is any different than the response of the usual papillary cancer to radioactive iodine therapy. As in all patients, rare but serious side effects limit the use of repeated radioactive iodine therapy.

— Mona Sabra, MD

ATA THYROID BROCHURE LINKS

Thyroid cancer: <http://www.thyroid.org/cancer-of-the-thyroid-gland>

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

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 in patients that do not have thyroglobulin antibodies.