



THYROID NODULES

Thyroid nodules are common in survivors of childhood leukemias and lymphomas treated with total-body x-ray irradiation

BACKGROUND

Many studies have documented a high frequency of benign or cancerous thyroid nodules in children who have undergone x-ray therapy for to their head or neck for cancers such as leukemias and lymphomas. Even though there is no consensus, the prevailing opinion is that these nodules are more frequently cancers than nodules found in the general populations. The risk increases with higher doses of x-rays used. In addition, children whose thyroids receive very high doses of x-rays may develop hypothyroidism as the normal thyroid cells die. This study looked at children with leukemia or lymphoma receiving total body x-ray treatments in preparation for stem-cell transplantation. The aim was to define how many developed thyroid nodules after the x-ray treatment and whether these nodules were benign or cancers.

THE FULL ARTICLE TITLE

Vivanco M et al 2012. Malignant and benign thyroid nodules after total body irradiation preceding hematopoietic cell transplantation during childhood. *Eur J Endocrinol* 167:225-233. Epub May 22, 2012.

SUMMARY OF THE STUDY

From 1989 until 2009, 76 patients who had received total body x-ray irradiation in preparation to stem cell transplantation underwent thyroid ultrasound over a period of 2-19 years. A total of 21 (28%) of the patients developed thyroid nodules, with those who were treated at a younger age being more prone to develop nodules than

those treated later in childhood. Some of this increase may have been due to being observed for a longer period of time. Most of the nodules were benign, although 29% were cancers, all of which were papillary cancer, the most common form of thyroid cancer. To date, all patients with thyroid cancer were effectively treated and show no evidence of persistent thyroid cancer.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Children who receive total body x-ray treatments during childhood should undergo long-term ultrasound monitoring of their thyroids to detect nodules that may develop from the x-rays. Suspicious nodules should be biopsied to detect thyroid cancers. Also, some patients develop hypothyroidism after total body x-ray irradiation and therefore thyroid hormone levels need to be monitored for life.

— Glenn Braunstein, MD

ATA THYROID BROCHURE LINKS

Hypothyroidism: <http://www.thyroid.org/what-is-hypothyroidism>

Thyroid Nodules: <http://www.thyroid.org/what-are-thyroid-nodules>

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

Childhood Head and Neck Irradiation: <http://www.thyroid.org/pediatric-endocrinology>

ABBREVIATIONS & DEFINITIONS

Thyroid nodule: an abnormal growth of thyroid cells that forms a lump within the thyroid. While most thyroid nodules are non-cancerous (Benign), ~5% are cancerous.

Thyroid Ultrasound: a common imaging test used to evaluate the structure of the thyroid gland. Ultrasound

uses sound waves 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.

Papillary thyroid cancer: the most common type of thyroid cancer.