CLINICAL **THYROIDOLOGY** FOR THE **PUBLIC**

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THYROID CANCER

Childhood radiation and thyroid cancer

BACKGROUND

Exposure to radiation occurs with many imaging studies (like CT scans) and medical treatments (like radiation therapy for cancer). When radiation exposure involves the head and neck areas directly, the thyroid is exposed and there is an increased risk for the development of thyroid cancer in the future. Children exposed to radiation are particularly vulnerable to these thyroid cancer health risks.

This study was done to further understand what the risks are regarding radiation exposure among children and its potential effect on getting thyroid cancer. The study specifically assessed very low doses of radiation exposure. To determine the potential thyroid cancer health risks, the authors pooled data from nine individual previously published studies of children who had a history of radiation exposure. These individuals included children with a history of radiation treatment for other cancers, children exposed to radiation during the treatment of non-cancerous diseases, and children who survived the atomic bombs in Japan during WWII.

THE FULL ARTICLE TITLE

Lubin JH et al Thyroid cancer following childhood low dose radiation exposure: a pooled analysis of nine cohorts. J Clin Endocrinol Metab 2017 Mar 8. doi: 10.1210/jc.2016-3529. [Epub ahead of print]

SUMMARY OF THE STUDY

From these data, the authors found that thyroid cancer was more common in the individuals who had a history of radiation exposure as children. The increased thyroid cancer risks were seen even in the children who received as little as 0.1 Gray (ie one chest x-ray). Furthermore, there was a direct dose-response relationship between the dose of the radiation and the thyroid cancer risk, meaning that the higher the amount of radiation the child received, the higher the risk of thyroid cancer.

The risk for developing thyroid cancer as a result of childhood radiation exposure was present even more than 45 years later. The risk was greatest in those who received the radiation at particularly younger ages, except for the children who were irradiated at less than one year of age. There were no differences in the thyroid cancer risk between males and females.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study provides data that radiation exposure among children is not without risks. Although radiation may be required for certain medical procedures, the risk of developing thyroid cancer supports use of only the lowest amount of radiation needed, particularly when the child is very young. Finally, children who have known radiation exposure should continue to be monitored for the development of thyroid nodules or thyroid cancer for the rest of their lives.

— Angela M. Leung, MD, MSc

ATA THYROID BROCHURE LINKS

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

Thyroid nodules: http://www.thyroid.org/thyroid-nodules

ABBREVIATIONS & DEFINITIONS

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.