Radiation exposure associated with more aggressive thyroid cancer, worse outcomes

April 20 2009

Patients with thyroid cancer who have previously been exposed to radiation—for example, in the workplace, through environmental exposure or for treatment of acne or another condition—appear to have more aggressive disease and tend to have worse outcomes in the long term, according to a report in the April issue of *Archives of Otolaryngology-Head & Neck Surgery,* one of the JAMA/Archives journals.

"Thyroid cancer is one of the well-known malignant neoplasms [tumors] associated with radiation exposure," the authors write as background information in the article. "It often induces characteristic histologic changes in thyroid tissue, and it is a well-established risk factor for both benign and malignant thyroid tumors. This is supported by epidemiologic studies in atomic bomb survivors and in children living in contaminated areas around Chernobyl, Ukraine, after the 1986 nuclear reactor accident."

Raewyn M. Seaberg, M.D., Ph.D., and colleagues at Mount Sinai Hospital, Toronto, Ontario, Canada, studied 125 patients who had been exposed to radiation at least three years before surgical treatment for thyroid cancer. All the patients were treated at one academic teaching hospital between 1963 and 2007.

Most (56 percent) had a history of direct radiation exposure to the head and neck, usually for the treatment of acne or another benign condition. Six percent had direct radiation exposure to other parts of the body; 23

percent had occupational or diagnostic exposures, such as radiographic technicians, dental assistants or patients exposed to repeated imaging procedures; 11 percent had environmental exposures, such as those in Chernobyl; and 4 percent had received radioactive iodine treatment. The average age at first exposure to radiation was 19.4 years, and cancers were diagnosed an average of 28.7 years later.

Patients were followed for an average of 10.6 years. During this time, 16 percent experienced a recurrence of the disease in the thyroid and 9 percent had cancer that had metastasized (spread) to distant areas. At the last follow-up, 86 percent were alive and free of disease, 4 percent were alive with recurrent thyroid cancer, 4 percent were alive with distant metastases, 4 percent had died of the disease and 2 percent had died of unrelated causes.

These patients were compared with a group of 574 patients of similar ages and sex distribution who also were treated for thyroid cancer but were not exposed to radiation beforehand. The radiation-exposed group was more likely to undergo total or near-total thyroidectomy (removal of the thyroid, 83 percent vs. 38 percent), require additional surgery (23 percent vs. 2 percent), have stage IV disease (16 percent vs. 5 percent), have distant metastases (9 percent vs. 2 percent), have thyroid cancer at follow-up (8 percent vs. 3 percent) or have died of the disease (4 percent vs. 1.5 percent).

"Therefore, this study suggests that patients who have been exposed to radiation have more aggressive disease and worse clinical outcome than other patients with thyroid cancer and, therefore, may require more aggressive treatment," they conclude.

More information: Arch Otolaryngol Head Neck Surg. 2009;135[4]:355-359.

Source: JAMA and Archives Journals (news : web)