THYROID CANCER

Environmental toxicants and thyroid cancer

BACKGROUND

There has been a steady rise of thyroid cancers (mostly as papillary thyroid cancers) over the past several decades. Over 62,000 new cases were diagnosed in the U.S. during 2016. The cause of this increase is unclear. Some of this is likely due to the increased use of imaging such as CT scans that identify small thyroid nodules that may never become concerning. However, it is likely that other factors play a role as well, including chemicals in our environment.

One possible group of chemicals in the environment are flame retardants called PBDEs, which were used commonly in electronics and furniture manufacturing practices. Although use of PBDEs has been mostly phased out, the chemicals still persist in the environment, mostly in household dust. It has been proposed that exposure to these and other endocrine-disrupting chemicals might increase the risk of thyroid cancer through increased or decreased thyroid hormone levels. This study was performed to examine whether exposure to flame retardant chemicals in the environment might be associated with the rise in thyroid cancer.

THE FULL ARTICLE TITLE

Hoffman K et al.. Exposure to flame retardant chemicals and occurrence and severity of papillary thyroid cancer: A case-control study. Environ Int 2017 Oct;107:235-242.

SUMMARY OF THE STUDY

The researchers studied 70 patients with papillary thyroid cancer and compared them against 70 patients without thyroid cancer. PBDE levels were measured in samples of dust collected from patients' households, as well as in patients' blood. There are many different types of PBDE

flame retardant chemicals. This study measured 116 common ones in dust samples and 27 ones in patients' blood. The findings show that every household had detectable PBDE levels from the dust samples. Among the patients with papillary thyroid cancer, two of these chemicals measured in household dust were found to be in higher levels. Some of the chemicals also were associated with more aggressive forms of papillary thyroid cancer (for example, higher stage of the cancer). PBDE content in blood was either not present in most people or present in very low levels, such that this could not be studied.

WHAT ARE THE IMPLICATIONS **OF THIS STUDY?**

This was a relatively small study that examined whether flame retardant chemicals found in household dust might be related to papillary thyroid cancer. The findings suggest that there might be higher levels of at least some PBDEs in the local environment (household dust) of people with papillary thyroid cancer. However, PBDE levels were too low to detect in patients' blood.

The topic of chemicals that affect the thyroid is extremely complex. Additionally, the reasons for why thyroid cancer might be on the rise are numerous. This study is interesting, though, in at least starting to examine how chemicals in the environment might be related to thyroid cancers. Further studies are needed to better understand the role of endocrine-disrupting chemicals on the development of thyroid disease.

— Angela M. Leung, MD, MSc

ATA THYROID BROCHURE LINKS

Thyroid Cancer: https://www.thyroid.org/thyroid-cancer/

ABBREVIATIONS & DEFINITIONS

Papillary thyroid cancer: The most common type of thyroid cancer. There are 4 variants of papillary thyroid cancer: classic, follicular, tall-cell and noninvasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP).

Endocrine-disrupting chemicals: Chemical pollutants in

the environment that can affect the action of endocrine glands. Examples include polybrominated diphenyl ethers (PBDEs), bisphenol A (BPA), polychlorinated biphenols (PCBs), perfluoroalkyl substances (PFAs), and organochlorines (OCs).

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