Medical Xpress

Suffering from headaches? You may be at increased risk for a thyroid condition

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Credit: Sasha Wolff/Wikipedia

Sufferers of migraines, cluster headaches, tension headaches or other headache disorders are at greater risk of developing a thyroid condition

called hypothyroidism, according to a study by University of Cincinnati College of Medicine researchers.

The study, "Headache Disorders May Be a Risk Factor for the Development of New Onset Hypothyroidism" is currently available in the online edition of *Headache: The Journal of Head and Face Pain*. Hypothyroidism occurs when the body can't make sufficient thyroid hormone causing individuals to suffer from mood swings, weight gain, hair loss, fatigue, constipation and irregular menstrual cycles.

"Our study is one of the largest studies published to date suggesting that headache disorders are a risk factor for the future development of hypothyroidism," explains Andrew Martin, lead author and a fourth-year medical student at the University of Cincinnati (UC) College of Medicine.

Andrew Martin, his father, Vincent Martin, MD, and colleagues at the UC College of Medicine, looked at data from 8,412 people enrolled in the Fernald Medical Monitoring Program (FMMP), a 20-year medical monitoring project designed to examine health outcomes of residents living near a former uranium processing plant in Crosby Township, Ohio, 18 miles northwest of Cincinnati.

They found that residents living near Fernald with pre-existing headache disorders had a 21 percent increased risk of developing new onset hypothyroidism while those with possible migraine showed an increased risk of 41 percent, says Vincent Martin, who is co-director of the Headache and Facial Pain Center at the UC Gardner Neuroscience Institute and professor of medicine in the Department of Internal Medicine.

The data showed that those with migraine had the highest likelihood of developing hypothyroidism, which could suggest that persons with

migraine are particularly susceptible to this disorder, explains Vincent Martin. Migraine affects about 12 percent of the U.S. population and hypothyroidism typically impacts about 2 percent of Americans, he says. Though rarely life-threatening, migraine and hypothyroidism both lead to decreased quality of life if not treated adequately.

Our results may most apply to those with "more frequent" headaches as a large percentage of those with headache affirmed that they had "frequent headaches" on a screening questionnaire, states Vincent Martin, who is the study's corresponding author and a UC Health physician.

The Fernald study results are consistent with past studies showing hypothyroidism to be more common in those with migraine or other headache disorders, but there are differences in how this study was designed compared to previous ones, says Andrew Martin.

"We have a very large sample size and we have measurements of thyroid hormones at different time points throughout the study. We identified people with headache disorders and we followed them forward in time. It is a much stronger study than studies just looking at the association at one point in time," says Andrew Martin. "We also followed these persons for 12 years on average."

The researchers found that female gender, increasing age, obesity and hypothyroid-inducing medications were associated with new onset hypothyroidism, says Susan Pinney, PhD, co-investigator and professor in the Department of Environmental Health at the University of Cincinnati. The findings from the Fernald study are consistent with previous studies.

"One of our study's strengths was our ability to use various forms of data to identify those persons with hypothyroidism," says Pinney, who is also

research director of the Fernald Community Cohort. "We also looked at extensive medication logs for certain medications known to cause hypothyroidism. We had yearly information on smoking status and analyzed gender as women are more likely to have both hypothyroidism and migraine."

Researchers found smoking was actually protective against hypothyroidism which has been shown in past studies.

"However, I don't recommend smoking to prevent hypothyroidism as the risk of cardiovascular disease and cancers far outweigh any benefit," explains Vincent Martin. "Our study also corroborated past research which suggested certain medications increase the risk of hypothyroidism."

Radiation is a known risk factor for developing hypothyroidism, but no association of uranium exposure and thyroid disease was found in the Fernald study, says Pinney. "Most of the radiation exposure to the community around Fernald came from radon gas, which would not cause thyroid cancer. Radiation exposure from the types of uranium dust released by the plant was relatively small," she says.

Andrew Martin says there are several proposed mechanisms that might explain the association between headache disorders and hypothyroidism. Headache disorders activate the immune system, which could predispose to the future development of hypothyroidism. In addition, stress induced by headache disorders could increase its likelihood. Other environmental or genetic factors could be at play as well, explains Andrew Martin.

It is unknown how these two disorders interact with one another. "It is possible that the development of hypothyroidism in a headache patient might further increase the frequency of headache as past studies have found that treatment of hypothyroidism reduces the frequency of

headache," according to Vincent Martin. "Regardless, physicians should be more vigilant in testing for hypothyroidism in persons with headache disorders."

More information: Andrew T. Martin et al. Headache Disorders May Be a Risk Factor for the Development of New Onset Hypothyroidism, *Headache: The Journal of Head and Face Pain* (2016). DOI: 10.1111/head.12943

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