

Radiation a risk factor for brain tumors in young people, study finds

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In people under age 30, radiation is a risk factor for a type of brain tumor called a meningioma, a Loyola University Medical Center study has found.

Researchers analyzed records of 35 [patients](#) who were diagnosed with meningiomas before age 30. Five had been exposed to ionizing [radiation](#) earlier in their lives. They include two patients who received radiation for leukemia at ages 5 and 6; one who received radiation at age 3 for a brain tumor known as a medulloblastoma; and one who received radiation for an earlier skull base tumor that appeared to be a [meningioma](#). The fifth patient had been exposed at age 9 to radiation from the Chernobyl nuclear power plant disaster in Ukraine. Twenty years later, he was diagnosed with a meningioma.

In the five patients, the average latency period for the tumors was 23.5 years.

The study was published in the online journal *Neuroscience Discovery*.

"The results of this preliminary study have prompted us to look closely at radiation's effects on the brain," said Loyola neurosurgeon Vikram Prabhu, MD, first author of the study. Dr. Prabhu specializes in treating [brain tumors](#).

A meningioma is a tumor, usually benign, that arises from the meninges—the membranes that surround the brain and spinal cord. Meningiomas account for about one-third of all primary brain tumors but are rare in children and young adults.

Dr. Prabhu and his colleagues are doing a follow-up study on patients of all ages who have been treated at Loyola for meningiomas. The researchers are analyzing the genetics and biology of tumor samples to find how they differ from samples of tumors not linked to radiation.

Loyola oncologist Kevin Barton, MD, a co-author of

the study, said: "It is important to compare and contrast these post-radiation meningiomas with de novo meningiomas, both clinically and biologically, in order to further define optimal therapy."

Researchers so far have identified 14 meningioma patients who were exposed to radiation earlier in their lives. They include three patients who were exposed to Chernobyl radiation and 11 patients who received therapeutic radiation for such conditions as leukemia, medulloblastoma tumors and fungal infections of the scalp.

Edward Melian, MD, a [radiation oncologist](#) at Loyola and co-author of the study, said patients generally have done very well with radiation treatments. "Although we have identified radiation as a risk factor for meningiomas, radiation remains an important part of the treatment regimen for certain lesions and is helping us obtain good results for our patients."

Dr. Prabhu said physicians have become more judicious in using radiation for therapeutic purposes. For example, radiation no longer is used to treat fungal scalp infections.

"We have become more aware of the tumor-inducing properties of radiation," Dr. Prabhu said.

People who have been exposed to large doses of radiation to the head may face a small risk of later developing brain tumors. If they later experience symptoms associated with brain tumors, including headaches, seizures, vomiting and blurry vision, they should see a doctor, Dr. Prabhu said.

Dr. Prabhu is a professor in the Department of Neurological Surgery at Loyola University Chicago Stritch School of Medicine. Dr. Melian is an associate professor in the departments of Radiation Oncology and Neurological Surgery. Dr. Barton is an associate professor in the Division of Hematology/Oncology. Other co-authors are Loyola

biostatistician Rong Guo, PhD; Douglas Anderson, MD, a professor in the Department of Neurological Surgery; and Edward Perry, MD, who completed a residency in [neurological surgery](#) at Loyola.

The study is titled "Intracranial meningiomas in individuals under the age of 30; Analysis of risk factors, histopathology and the recurrence rate."

More information: "Intracranial meningiomas in individuals under the age of 30; Analysis of risk factors, histopathology, and recurrence rate."

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