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[Journal of the National Cancer Institute](#)

Radiation increases risk of second primary tumors for childhood survivors

Radiation exposure may increase the risk of brain and spinal column tumors in survivors of childhood cancer, according to a study in the November 1 *Journal of the National Cancer Institute* .

Survivors of childhood cancer are at an increased risk for developing second cancers, but the risk of these cancers varies based on the original cancer, age at first cancer diagnosis, and primary cancer therapy given. Secondary tumors of the central nervous system (CNS) can have particularly devastating consequences and have been linked to prior treatment for childhood leukemia and brain tumors.

Joseph P. Neglia, M.D., pediatric oncologist and researcher with the University of Minnesota Medical School and Cancer Center in Minneapolis, and colleagues identified secondary CNS tumors in a group of 14,361 5-year survivors of childhood cancer. They also obtained information regarding the patients' exposure to radiation and the chemotherapy used to treat the first cancer.

The authors found that 116 survivors of childhood cancer developed subsequent CNS tumors. Childhood radiation exposure was associated with a higher risk of developing both malignant brain tumors like glioma and benign tumors like meningiomas. The risk of a second tumor increased as the dose of radiation used to treat the first cancer increased. Children under age 5 were especially vulnerable to the development of secondary gliomas. The authors suggest that the increased tumor incidence in children exposed at an early age may mean the developing brain is highly susceptible to radiation's toxic effects.

"Prolonged follow-up of all childhood cancer survivors, particularly those exposed to radiation, is crucial to the early detection of these tumors and should be considered part of the effective therapy of the primary disease," they write.

In an accompanying editorial, Elaine Ron, Ph.D., of the National Cancer Institute in Bethesda, Md., writes, "By identifying persons at high risk of long-term treatment effects, it may be possible to reduce the growing number of patients who develop secondary malignancies by individualizing treatment."

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- Editorial: Ron E. Childhood Cancer--Treatment at a Cost. *J Natl Cancer Inst* 2006; 98:1510-1511.

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