

# ONCODAILY MEDICAL JOURNAL

*abstract*

## **Radiation-induced gliomas of the brain in children**

**Darya Drozdovskaya**

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## Radiation-induced gliomas of the brain in children

**Authors:** Darya Drozdovskaya

**Affiliation:** Center of Oncology of the Ministry of Health of the Russian Federation (N.N. Blokhin NMRCO)

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**Introduction:** Radiation-induced gliomas are a rare complication of cranial irradiation, occurring 5 or more years after treatment. Despite the rarity of this complication, the treatment of patients with secondary tumors of the central nervous system is complicated by the need for repeated radiation therapy to the brain area. Therefore, the use of proton beam therapy (PBT) may be most relevant in the treatment of radiation-induced tumors, especially in pediatric patients.

**Methodology:** Eight patients in the case series who previously underwent cranial irradiation were included in this study.

**Results:** The average age of the patient at the time of the initial diagnosis was 5.4 years (range 3 to 9.6). Distribution of patients by gender: 6 male, 2 female. In most cases, primary tumors were represented by brain tumors (medulloblastoma (n = 3), 37.5%, astrocytoma (n = 1), 12.5%) and acute lymphoblastic leukemia (50%, n = 4). Among the secondary tumors of the central nervous system, high grade glioma (HGG) was diagnosed in 100% of cases. The localization of secondary tumors corresponded to the fields of previous radiation therapy. The latency period between the primary tumor and the diagnosis of the secondary tumor was 7 years (from 4.7 to 10.3 years).

All patients with high-grade radiation-induced glioma underwent proton beam therapy with a total focal dose of 54 Gy to 59.4 Gy and monochemotherapy (Temozolomide). At the time of publication, 4 patients are alive, 4 died from the progression of the tumor process. The median OS – 19 months, and the median EFS – 11 months.

**Conclusion:** The results of treatment of radiation-induced HGG may be comparable with the results of treatment of primary HGG. PBT has advantages in the treatment of radiation-induced HGG.