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Clinical results of BNCT for malignant brain tumors in children.

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It is very difficult to treat the patients with malignant brain tumor in children, especially under 3 years, because the conventional irradiation cannot be applied due to the damage of normal brain tissue. However, boron neutron capture therapy (BNCT) has tumor selectivity such that it can make damage only in tumor cells. We evaluated the clinical results and courses in patients with malignant glioma under 15 years. Among 183 patients with brain tumors treated by our group using BSH-based intra-operative BNCT, 23 patients were under 15 years. They included 4 patients under 3 years. There were 3 glioblastomas (GBM), 6 anaplastic astrocytomas(AAS), 7 primitive neuroectodermal tumors (PNET), 6 pontine gliomas and 1 anaplastic ependymoma. All GBM and PNET patients died due to CSF and/or CNS dissemination without local tumor regrowth. All pontine glioma patients died due to regrowth of the tumor. Four of 6 anaplastic astrocytoma and 1 anaplastic ependymoma patients alive without tumor recurrence. BNCT can be applied to malignant brain tumors in children, especially under 3 years instead of conventional radiation. Although it can achieve the local control in the primary site, it cannot prevent CSF dissemination in patients with glioblastoma.

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