

Boron neutron capture therapy for newly diagnosed glioblastoma

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journal or publication title	Radiotherapy and oncology
volume	91
number	1
page range	80-84
year	2009-04
権利	(C) 2009 Elsevier Ireland Ltd
URL	http://hdl.handle.net/2241/102536

doi: 10.1016/j.radonc.2009.02.009

Figure and Table Legends

Figure 1. EB-NCT procedure.

^{18}F -labeled positron emission tomography (PET) was performed prior to external beam NCT (EB-NCT) in order to calculate the lesion-to-normal ratio of BPA-mediated ^{10}B , followed by debulking surgery. BSH (5 g/body) and BPA (250 mg/kg) were intravenously injected before neutron irradiation. Blood samples were drawn serially after intravenous injection to estimate the total blood boron level. Neutron irradiation was performed in a single fraction using an epithermal beam of Japan Research Reactor No. 4 (JRR-4).

Figure 2. Kaplan-Meier estimation of overall survival (OS) and time to tumor progression (TTP) according to treatment group.

OS for the all patients (thick solid line), Protocol-1 (thick broken line) and Protocol-2 (thick dotted line), and TTP for the all patients (fine solid line), Protocol-1 (fine broken line) and Protocol-2 (fine dotted line) are shown. The number of patients at risk shows values at NCT (in parentheses), at 6 months and every 6 months. The median OS and TTP were 23.3 M and 12.0 M for protocol-1, and 27.1 M and 11.9 M for protocol-2, respectively. The 1- and 2-year survival rates for all patients were 80.0% and 53.3%, respectively.

Table 1. Characteristics of the present 15 patients with newly diagnosed, histologically confirmed glioblastoma who were treated with boron neutron capture therapy.

All patients underwent surgical removal before BNCT, which consisted of gross total removal in 4 (26.7%), partial removal in 10 (66.7%) and biopsy in 1 (6.6%). Two of 15 patients (13.3%) were categorized in the best prognostic group of GBM (class III) by the Radiation Therapy Oncology Group (RTOG) Recursive Partitioning Analysis (RPA) as were 3 of 15 patients (20%) by the European Organization for Research and Treatment of Cancer (EORTC) RPA.