Radiotherapy with concurrent and adjuvant temozolomide in children with newly diagnosed diffuse intrinsic pontine glioma.


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Abstract

The purpose of this study is to evaluate the efficacy and toxicity of radiation therapy (RT) with concurrent temozolomide (TMZ) chemotherapy followed by adjuvant TMZ in children with diffuse intrinsic pontine glioma (DIPG). Newly diagnosed patients younger than 18 years with histologically proven DIPG were treated with focal radiotherapy to a dose of 54 Gy in 30 fractions along with concurrent daily TMZ (75 mg/m²/day). Four weeks after completing the initial RT-TMZ schedule, adjuvant TMZ (200 mg/m²/day, days 1-5) was given every 28 days up to six cycles. Responses/progressions were assessed by clinical and 2-monthly MRI follow-up studies. Between September 2005 and September 2009, 21 patients with newly diagnosed histologically confirmed DIPG were eligible for this study. Median age at diagnosis was 6.4 years (range 4-16 years). At last update in August 2010, 17 children have died, 1 child was alive with progressive disease and 3 with stable disease. Metastatic relapse was documented in the cerebral site in two patients and in spinal cord in two cases. The median time to progression was 7.5 months (range 28 days-14.5 months) and the median survival was 11.7 months (range 26 days-17.5 months). The 1-year PFS and the 1-year OS were 33 and 50%, respectively. Five patients presented radiological findings compatible with pseudoprogression during the treatment. Haematological toxicity (Grade III/IV thrombocytopenia and leucopenia) was the most commonly found and led to dose reductions of TMZ in 58% of the patients. TMZ with radiation therapy has not yielded any significant improvement in outcome of children with DIPG and is associated with higher toxicity compared with radiotherapy alone. Novel treatment modalities are needed to improve the outcome of these patients.

PMID: 21858607 [PubMed - as supplied by publisher]