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Intensive chemotherapy improves survival in pediatric high-grade glioma after gross total resection: results of the HIT-GBM-C protocol.

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BACKGROUND:: The authors hypothesized that intensified chemotherapy in protocol HIT-GBM-C would increase survival of pediatric patients with high-grade glioma (HGG) and diffuse intrinsic pontine glioma (DIPG). **METHODS::** Pediatric patients with newly diagnosed HGG and DIPG were treated with standard fractionated radiation and simultaneous chemotherapy (cisplatin 20 mg/m² x 5 days, etoposide 100 mg/m² x 3 days, and vincristine, and 1 cycle of cisplatin + etoposide + ifosfamide 1.5 g/m x 5 days [PEI] during the last week of radiation). Subsequent maintenance chemotherapy included further cycles of PEI in Weeks 10, 14, 18, 22, 26, and 30, followed by oral valproic acid. **RESULTS::** Ninety-seven (pons, 37; nonpons, 60) patients (median age, 10 years; grade IV histology, 35) were treated. Resection was complete in 21 patients, partial in 29, biopsy only in 26, and not performed in 21. Overall survival rates were 91% (standard error of the mean [SE] +/- 3%), 56%, and 19% at 6, 12, and 60 months after diagnosis, respectively. When compared with previous protocols, there was no significant benefit for patients with residual tumor, but the 5-year overall survival rate for patients with complete resection treated on HIT-GBM-C was 63% +/- 12% SE, compared with 17% +/- 10% SE for the historical control group (P = .003, log-rank test). **CONCLUSIONS::** HIT-GBM-C chemotherapy after complete tumor resection was superior to previous protocols. Cancer 2010. (c) 2009 American Cancer Society.

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