Pediatric brainstem high grade glioma

Due to high-grade pediatric brainstem tumors' relative rarity, most studies have been small clinical trials or single-institution studies [1) 2) 3) 4) 5)]

2016

Between January 2000 and December 2014, 29 patients were identified. The mean age at diagnosis was 8.4 years (range 2 months to 25 years), and 17 (59%) patients were male. The most common presenting signs and symptoms were cranial neuropathies (n = 24; 83%), hemiparesis (n = 12; 41%), and ataxia or gait disturbance (n = 10; 34%). There were 18 glial and 11 embryonal tumors. Of the glial tumors, 5 were radiation-induced and 1 was a malignant transformation of a previously known low-grade tumor. Surgical intervention consisted of biopsy alone in 12 patients and some degree of resection in another 15 patients. Two tumors were diagnosed postmortem. The median overall survival for all patients was 196 days (range 15 to 3999 days). There are currently 5 (17%) patients who are still alive: 1 with an anaplastic astrocytoma and the remaining with embryonal tumors.

In general, malignant non-DIPG tumors of the brainstem carry a poor prognosis. However, maximal cytoreductive surgery may be an option for select patients with focal tumors. Long-term survival is possible in patients with nonmetastatic embryonal tumors after multimodal treatment, most importantly maximal resection [6)].

2015

In a cohort of 124 patients, those with AA had a median survival of 13 months and those with GBM 9 months. Higher-grade tumors were associated with statistically significantly increased mortality (hazard ratio [HR]: 1.74, confidence intervals [CIs]: 1.17-2.60). Surgical intervention was associated with a significantly lower mortality, either alone (HR: 0.14, CI: 0.04-0.5) or in combination with radiation (HR: 0.35, CI: 0.15-0.82). Radiation therapy alone was significantly associated with decreased mortality within the first 9 months after diagnosis but not with overall mortality. No demographic characteristics were significantly associated with mortality.

Outcome remains poor in the pediatric high-grade brainstem glioma population. Survival is correlated with lower-grade tumor histology, radiation therapy only in the first 9 months after diagnosis, and surgical resection [7)].

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