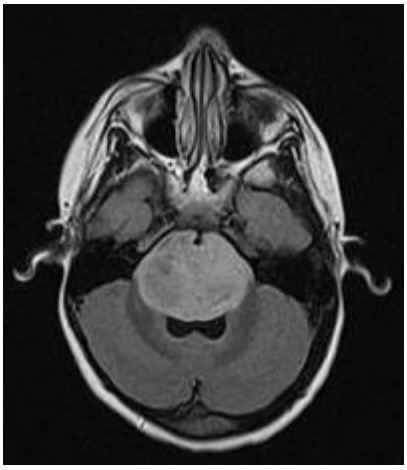
Brainstem glioma outcome



High-grade brainstem gliomas have a worse prognosis. Early diagnosis and surgery appear to be associated with improved survival, while the role of radiation is unclear [1].

Brain stem glioma in pediatric age group is associated with worse outcomes than in adults [2].

A single-institution retrospective study demonstrates excellent survival rates for children with brainstem low-grade gliomas. The efficacy of the well-tolerated chemotherapy in this series supports its role in the treatment of unresectable or progressive brainstem low-grade gliomas [3]. Low grade histology is a possible favorable prognostic factor of progression-free survival in pediatric brainstem glioma patients [4].

Utilizing the SEER database, Kaalid et al., from the Rush University Medical Center, retrospectively assessed survival in histologically confirmed brainstem gliomas in patients aged 17 and younger. Survival was described with Kaplan-Meier curves and multivariate regression analysis.

The analysis of 180 cases showed that age (hazard ratio [HR] 1.04, 95% CI 0.96-1.14, p = 0.34), non-white race (HR 1.00, 95% CI 0.35-2.85 p > 0.99), distant or invasive extension of the tumor (HR 0.4, 95% CI 0.08-2.53, p = 0.37), and radiation therapy (HR 1.27, 95% CI 0.52-3.11, p = 0.61) were not associated with decreased survival. High-grade tumor status (HR 8.64, 95% CI 3.49-21.41, p < 0.001) was associated with decreased survival. Partial resection (HR 0.11, 95% CI 0.04-0.30, p < 0.001) and gross total resection (HR 0.03, 95% CI 0.01-0.14, p < 0.001) were associated with improved survival.

High-grade brainstem gliomas have a worse prognosis. Early diagnosis and surgery appear to be associated with improved survival, while the role of radiation is unclear [5].

Upadhyaya et al., reviewed the clinical characteristics, therapy, and outcomes of all children with nontectal brainstem low-grade gliomas treated at the University of Michigan between 1993 and 2013. Median age at diagnosis was 6 years; histology was confirmed in 23 of 25 tumors, 64% were pilocytic astrocytoma. Nineteen patients underwent initial tumor resection; 14/19 received no upfront adjuvant therapy. Eight patients in the study had progressive disease; 5 initially resected tumors received chemotherapy at tumor relapse, all with partial or complete radiographic responses. Ten-year progression-free survival is 71% and overall survival, 100%. This single-institution retrospective study demonstrates excellent survival rates for children with brainstem low-grade gliomas. The efficacy of the well-tolerated chemotherapy in this series supports its role in the treatment of unresectable or

progressive brainstem low-grade gliomas [6].

Records of 48 patients with brainstem glioma treated between January 2007 and January 2013 were reviewed. Demographic variables, clinical variables, radiological findings and treatment details with respect to age, sex, location of tumor (pontine Vs non pontine), signs and symptoms, RT dose, follow up period and outcomes were recorded. Patients were subdivided into two groups based on their age, age <15 years (Group I) and age >=15 yrs (Group II).

The median age at diagnosis was 10 years (range 4-50). Male to female ratio was 11:10. Of the 48 cases analyzed, 27 patients (56%) were in group I and 21 (44%) were in group II. Radiologically, 90.5% had involvement of pons. 10 (21%) patients received RT dose >60 Gy and 38 (79 %) patients received RT dose of 54-60 Gy. Median overall survival was 7months (range 3-44 months). Median overall survival in Group I and Group II was 4 months and 10 months respectively (P = 0.042).

Brain stem glioma in pediatric age group is associated with worse outcomes than in adults [7].

Between 1986 and 2001, 45 childhood patients with diffuse brainstem glioma were treated. There were 26 boys and 19 girls, with a median age of 7 years (range 3 approximately 18). The histopathological diagnoses were confirmed in 13 patients, which revealed a low-grade glioma in four patients, and high-grade glioma in the other nine. Before 1993, radiation therapy using a regime of 1.8 to 2.0 Gy once a day was performed in 16 cases; thereafter, a regimes of 1.1 or 1.5 Gy twice a day was given in 15 and 14 cases, respectively. Nine patients were treated with adjuvant chemotherapy. The response to the treatment was evaluated by the MRI findings 4 weeks after radiotherapy.

After radiotherapy, the neurological deficit improved in 42 of the 45 patients (93%). The MRI responses were as follows; partial response 22/39 (56%), minimal to no response in 16/39 (41%) and tumor progression in 1/39 (3%). The median time to disease progression was 7 months, and the median survival was 12 months; the overall survival rate at 1 year was 41%. There was no significant prognostic factor for overall survival. The progression-free survival was influenced by the tumor histology (low grade vs. high grade, p=0.05) in those patients whose pathology was confirmed.

The radiation therapy fractionation schedule did not influence the survival. Low grade histology was a possible favorable prognostic factor of progression-free survival in pediatric brainstem glioma patients [8].

References

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