Pediatric Spinal Glioblastoma Multiforme

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Introduction

Spinal Glioblastoma multiforme (GBM) is a rare diagnosis in children. Given the paucity of cases reported, evidence-directed management of these cases relies on studies in which spinal GBMs are only a subset of a larger group. We retrospectively looked at cases of pediatric spinal GBM to assess probable predictors of improved outcomes.

Methods

Outcomes of pathologically-proven pediatric spinal GBM cases were reviewed. Eight cases were available for analysis. Clinical presentations, radiologic findings, surgical variables, radio- and chemotherapeutic management were assessed.

Results

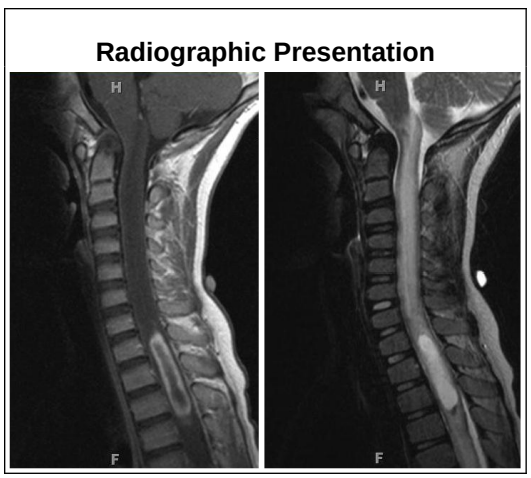


Figure 1. Sagittal T1 and T2-weighted images showing intramedullary spinal cord tumor from T1-T4. Hypointense on T1, Hyperintense on T2, with extensive cord edema.

Demographics

- 3 males, 5 females
- Average age (years): 10 (1.5-17)

Presenting signs and symptoms

- pain (neck and back pain, headaches),
- motor regression
- gait abnormalities
- torticollis
- kyphoscoliosis

Tumor characteristics

- Average span: 4.5±1 levels
- 3 C, 4 T, 1 CT
- 5 with cysts

Surgical Management

- GTR (n=4); STR (n=3); Biopsy (n=1)

Medical Management

- Pre-op: chemo (n=3) , XRT (n=2)
- Post-op: Both (n=4); chemo (n=1); XRT (n=1); neither (n=1)

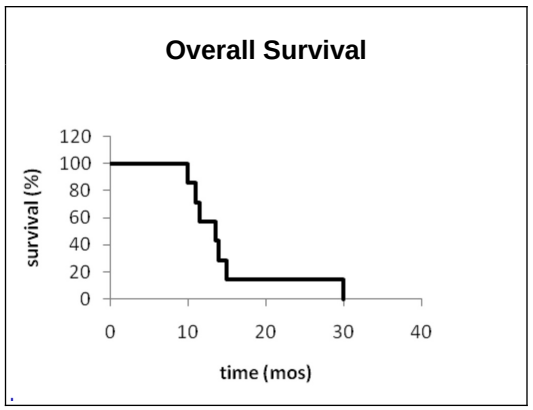
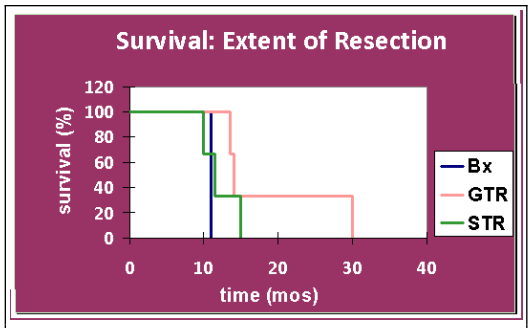
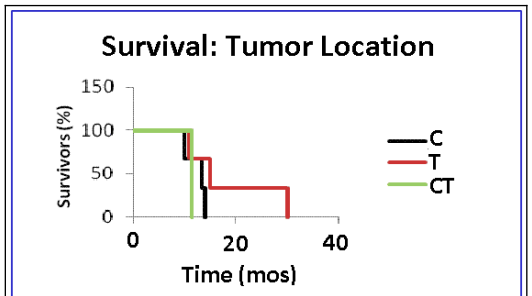


Figure 2. Average ± standard deviation overall survival was 15±6.8 months. One- and two-year mortalities were 42.9 and 85.7% respectively. All mortality was due to disease progression



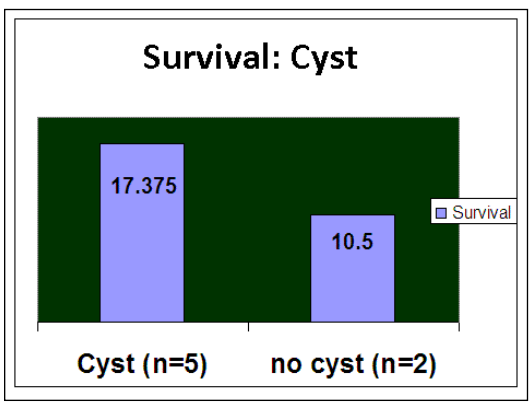
Survival based on extent of resection

Figure 3. GTR=Gross total resection. STR=Subtotal resection. Bx=Biospy only. Mean survival greatest in GTR subset. 19.2 mos vs 12.6 and 11 mos.

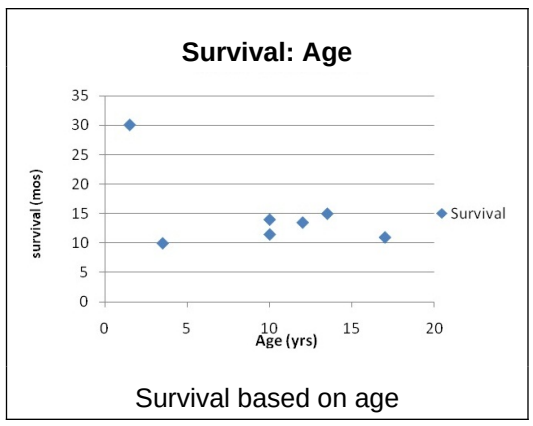


Survival based on tumor location

Figure 4: Patients with thoracic tumors survived the longest (average: 18.7 mos) followed by those with cervical (12.5 mos), and cervicothoracic tumors (11.5 mos).



The presence of a cyst was associated with longer survival: 17.4 vs 10.5 mos.



Survival based on age

The longest surviving patient presented at 18 months and survived 30 months after diagnosis

Conclusions

Pediatric spinal glioblastoma multiforme is a rare disease with a poor prognosis.

Possible predictors of survival:

- thoracic location of the tumor,
- presence of a tumoral cyst
- gross total resection
- younger age

Chemo- and radiation therapy remain widely used.

References

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3. Cohen KJ, Pollack IF, Zhou T et al (2011) Temozolomide in the treatment of high-grade gliomas in children: A report from the children's oncology group. Neuro Oncol 13:317-323.