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Stereotactic Radiosurgery for Brain Metastases Secondary to Peripheral Neural Crest Tumors: A Single Institution Retrospective Experience

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Abstract

Objectives:

Intracranial BM of peripheral neural crest tumors (PNCTs) are rare, and portent a poor prognosis. No standard treatment has been established to date, and only a few case reports describe the usage of stereotactic radiosurgery (SRS). This study aims to evaluate the efficacy of SRS for BM secondary to PNCTs. Additionally, a comparison between SRS and other treatment modalities has been conducted

Methods:

We retrospectively reviewed all patients diagnosed with BM from PNCTs between 2001 and 2024 at our institution. LTC was defined as a reduction/stable in tumor size, with no recurrence or hemorrhage as evidenced by radiological assessment.

Results:

Among the 8 patients (15 BM) identified, 3 with 6 BM underwent SRS, and 5 with 9 BM underwent other treatments (radiotherapy, craniotomy, both or none). Amongst the patients treated with SRS, the median age was 4.0 years (IQR: 1.8-4.0 years) at diagnosis and 100% were male. The median follow-up was 5.5 months (IQR: 2-7 months). Amongst the patients not treated with SRS, the mean age was 2.5 years (Std. deviation: 1.4 years) at diagnosis and 60% were female. The median follow-up was 28 months (IQR: 1- 85 months). The group treated with SRS had LTC rate of 100% with no complications and a survival rate of 33.3% at one year follow up. LTC rate in the group treated with other modalities was 55.6%, with a survival rate of 60% for a one year follow up. There was no significant difference in LTC and survival between groups ($p > 0.05$).

Conclusion(s):

SRS provides a LTC rate of 100% within one year of follow up for BM from PNCTs. We do suggest that there is similarity of outcomes between SRS and other treatment modalities. SRS may be an alternative to more invasive treatments such as craniotomy or conventional radiation in these patients.