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Long-term outcomes of central neurocytoma - an institutional experience

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Abstract

Introduction: Central Neurocytoma (CN) is a rare, WHO grade 2 brain tumor that predominantly affects young adults. Gross total resection (GTR) is often curative for CNs, but the optimal treatment paradigm including incorporation of RT, following subtotal resection (STR) and for scarcer pediatric cases has yet to be established.

Methods: Patients between 2001 and 2021 with a pathologic diagnosis of CN were reviewed. Demographic, treatment, and tumor characteristics were recorded. Recurrence free survival (RFS) and overall survival (OS) were calculated according to the Kaplan Meier-method. Post-RT tumor volumetric regression analysis was performed.

Results: Seventeen adults (≥ 18 years old) and 5 children (< 18 years old) met the criteria for data analysis (n = 22). With a median follow-up of 6.9 years, there was no tumor-related mortality. Patients who received STR and/or had atypical tumors (using a cut-off of Ki-67 > 4%) experienced decreased RFS compared to those who received GTR and/or were without atypical tumors. RFS at 5 years for typical CNs was 67% compared to 22% for atypical CNs. Every pediatric tumor was atypical and 3/5 recurred within 5 years. Salvage RT following tumor recurrence led to no further recurrences within the timeframe of continued follow-up; volumetric analysis for 3 recurrent tumors revealed an approximately 80% reduction in tumor size.

Conclusion: We provide encouraging evidence that CNs treated with GTR or with RT after tumor recurrence demonstrate good long-term tumor control.

Keywords: Neurocytoma; Radiosurgery; Radiotherapy; Resection; Surgery.