Treatment Outcomes of WHO Grade III Malignant Meningioma With and Without Postoperative Radiation Therapy

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OBJECTIVE: Malignant meningioma is a rare disease, the optimal management of which is unclear. Our goal was to review our institution’s treatment and outcomes of World Health Organization (WHO) grade III malignant meningioma.

METHODS: From January 2000 to December 2011, through a retrospective chart review, we identified 16 patients with a pathologic diagnosis of WHO grade III meningioma; 11 of these patients had presented with primary malignant meningioma, and 5 presented after transformation into a malignant meningioma from earlier-grade disease.

RESULTS: Median follow-up was 20.5 months (range: 0.4–140 mo). All patients underwent surgical resection with or without radiation therapy (RT). Doses given ranged from 5,040 to 6,000 cGy. Of the 11 patients with primary malignant meningioma, 6 had gross total resection (GTR), 4 had subtotal resection (STR), and 1 had unknown status. RT was given to 6 of the 11 patients. Median survival was 88.2 months with RT and 8.7 months without RT ($P = .022$). Median time to progression was 48.1 months with RT and 5.1 months without RT ($P = .045$). Of the five patients with transformed meningioma, two received GTR and three had STR. RT was given to four of the five patients. Median survival for these five patients was 16.1 months, with median time to progression of 8.3 months. For all patients, overall survival (OS) and progression-free survival (PFS) rates were 68.8% and 56.3% at 1 year and 39.4% and 21.4% at 5 years, respectively.

CONCLUSIONS: Our study showed that patients with primary malignant meningioma had better outcomes after maximal resection followed by postoperative radiation. In contrast, transformed meningiomas demonstrated more aggressive behavior, with lower median survival despite RT. Further multi-institutional or randomized studies are required to evaluate the effectiveness of postoperative RT to determine the best approach to managing these tumors.

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