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Management and Long-term Outcomes of Adults With Medulloblastoma: A Single Center Experience

Bryan J Neth [1], Aditya Raghunathan [2], Sani H Kizilbash [3], Joon H Uhm [1 3], William G Breen [4], Derek R Johnson [1 5], David J Daniels [6], Ugur Sener [1 3], Ivan D Carabenciov [1 3], Jian L Campian [3], Soumen Khatua [7], Anita Mahajan [4], Michael W Ruff [8 3]

Affiliations
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Abstract

Objective: Medulloblastomas are embryonal tumors predominantly affecting children. Recognition of molecularly defined subgroups has advanced management. Factors influencing the management and prognosis of adult patients with medulloblastoma remains poorly understood.

Methods: We examined management, prognostic factors, and when possible molecular subgroup differences (subset) in adult medulloblastoma patients (>18 years) from our center (specialty Neuro-Oncology clinic within a large academic practice) diagnosed between 1992-2020. Molecular subtyping corresponding to the 2021 WHO Classification was performed. Kaplan-Meier estimates (with Log-rank test) were performed for univariate survival analysis with cox regression used for multivariate analyses.

Results: We included 76 adult medulloblastoma patients (62% male), with a median age of 32 years at diagnosis (range: 18-66), and median follow-up of 7.7 years (range: 0.6-27). A subset of 58 patients had molecular subgroup characterization - 37 SHH-activated, 12 non-WNT/non-SHH, and 9 WNT-activated. 67% underwent gross total resection, 75% received chemotherapy at diagnosis, and 97% received craniospinal irradiation with boost. Median overall survival (OS) for the whole cohort was 14.8 years. The 2, 5, and 10-year OS was 93% (95% CI: 88-99%), 86% (78-94%), and 64% (53-78%), respectively. Survival was longer for younger patients (≥30 years old: 9.9 years; <30 years old: estimated >15.4 years; Log-rank p<0.001). There was no survival difference by molecular subgroup or extent of resection. Only age at diagnosis remained significant in multivariate survival analyses.

Conclusion: We report one of the largest retrospective cohorts in adult medulloblastoma patients with molecular subtyping. Survival and molecular subgroup frequencies were similar to prior reports. Survival was better for adult patients younger than 30 years at diagnosis and was not significantly different by molecular subgroup or management characteristics (extent of resection, RT characteristics, or chemotherapy timing or regimen).

Keywords: adult; medulloblastoma; molecular subgroup; prognosis.