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[J Neurooncol.](#) 2011 Jun 4. [Epub ahead of print]

### **Cerebellar glioblastoma: a retrospective review of 21 patients at a single institution.**

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#### **Abstract**

Primary cerebellar glioblastoma (CGB) comprises only 0.4-3.4% of all intracranial glioblastoma. The impact of surgical resection on survival and the efficacy of adjuvant therapies are uncertain as CGB is underrepresented in most studies. To elucidate prognostic factors we performed a single-institutional review of the largest series to date of CGB. The University of Texas MD Anderson Cancer Center database was reviewed from 1990 to 2010. Twenty-one consecutive patients met criteria for inclusion. The Kaplan-Meier product limit method was used to estimate overall survival (OS) and progression-free survival (PFS); groups were compared using the log-rank statistic. The multivariate Cox proportional hazards models were fitted to examine the association of resection with OS and PFS adjusted for other clinical variables. The median age was 39.9 years, and Karnofsky performance status (KPS) was  $\geq 80$  in 61.5% of patients. The mean extent of resection for contrast enhancement (EOR-CE) was 93.8% (SD = 10.4%; median = 100%), and the median follow-up was 18.4 months (range 1.5-116.1 months). There was no significant association of EOR with OS or PFS. On univariate analysis the presence of leptomeningeal disease (LMD) was associated with a worse OS (6.1 vs. 24.1 months;  $P = 0.0001$ ) and PFS (3.3 vs. 9 months;  $P = 0.019$ ). Patients who had adjuvant chemotherapy (CT) had extended PFS (10.1 vs. 2.8 months;  $P < 0.0001$ ). Adjustment for the presence of leptomeningeal disease (LMD) tended toward an increased risk of progression (HR = 3.46; 95% confidence interval [CI], 0.83-14.5;  $P = 0.09$ ) and was associated with a significantly increased risk of death (HR = 15.2; 95% CI, 1.3-180;  $P = 0.03$ ). Having received adjuvant chemotherapy was associated with a decreased risk of progression (HR = 0.02; 95% CI, 0-0.26;  $P = 0.003$ ). The presence of LMD is a critical factor in the clinical behavior of CGB resulting in markedly decreased OS and PFS. Adjuvant CT resulted in increased PFS but did not significantly affect OS. This was due to a lack of a sizable cohort who did not receive chemotherapy. Furthermore, three of the CT-naïve patients received CT at first progression. In the context of the high EOR in this study, an OS of 18.4 months was achieved.

PMID: 21643841 [PubMed - as supplied by publisher]

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