National Trends for Reoperation in Elderly Patients with Glioblastoma Multiforme

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CNS 2017 ANNUAL MEETING
BOSTON, MASSACHUSETTS
OCTOBER 7–11, 2017

Introduction

Despite multimodal therapies extending patient survival, Glioblastoma multiforme (GBM) recurrence is all but a certainty. To date, there have only been a few single-center studies looking at reoperations. Our study aimed to assess GBM reoperation trends nationally in elderly patients, with emphasis on outcomes.

Methods

The linked Surveillance, Epidemiology, and End Results (SEER) – Medicare database was searched to identify patients 66 years and older with GBM from 1997-2010. The primary outcome was survival after diagnosis. Kaplan-Meier curves and multivariate analysis with proportional hazard ratios were used.

Results

A total of 3,963 patients with recurrent GBM who initially received a surgical resection were identified, with a mean age of 74.7 years. 496 (12%) of the patients with recurrent GBM underwent at least one reoperation at an average of 7.2 months after the initial diagnosis. Reoperation increased survival in patients, with a median survival of 5 months in the group that did not receive reoperation vs. 12 months in the group that did (p<.0001) (HR 0.666). Within the reoperated cohort, extent of the initial surgery differentially affected survival, with gross total resection appearing to improve median survival over subtotal resection (HR 0.779). Two or more reoperations upon GBM recurrence improved survival to 17 months (P = 0.002). The overall complication rate was 21.7% in the initial resection only group, versus 20.4% in the one reoperation group and 25.3% in the two reoperation group.

Conclusions

Though definitive conclusions cannot be made given the lack of granularity, our national database study supports gross total resection as the initial treatment of choice, followed by reoperation at the time of recurrence, if tolerated, even in elderly patients.

Learning Objectives

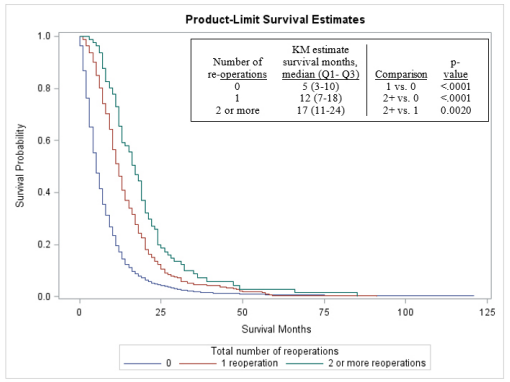
By the conclusion of this session, participants should be able to: 1) understand that reoperation at the time of recurrence should be considered in GBM patients, even in elderly patients (average age in our study was 74.7, N = 3963), 2) each reoperation appears to give a survival benefit of 6 months, 3) describe any changes in complication rates when comparing initial resection versus reoperations.

References

1. Chaichana KL, Zadnik P, Weingart JD, et al. Multiple resections for patients with glioblastoma: prolonging survival. Journal of neurosurgery. Apr 2013;118(4):812-820.

2. Bloch O, Han SJ, Cha S, et al. Impact of extent of resection for recurrent glioblastoma on overall survival: clinical article. Journal of neurosurgery. Dec 2012;117(6):1032-1038.

Figure 1



Survival from diagnosis for GBM patients with the resection as the initial surgery

Figure 2

Cohort Associated to	Patients with 0+ Re-operation (n=3963) Initial resection n	% (95% CI)	Patients with 1+ Re-operation (n=469) 1st Re-operation n	% (95% CI)	Patients with 2+ Re-operations (n=81) 2nd Re-operation n	% (95% CI)	Statistically Different Re-operation 1 vs 0	2 vs 0	2 vs 1
Complications									
Depression, n (%)	125	3.15% (2.60% -3.69%)	12	2.56% (1.13%-3.99%)	n/a	n/a			
Deep vein thrombosis	197	4.97% (4.29% -5.65%)	24	5.12% (3.12%-7.11%)	n/a	n/a			
Pulmonary embolism	92	2.32% (1.85% -2.79%)	12	2.56% (1.13%-3.99%)	n/a	n/a			
Intracranial bleed/stroke	419	10.6% (9.61% -11.5%)	22	4.69% (2.78%-6.60%)	n/a	n/a	*		*
Systemic infection	n/a	n/a	n/a	n/a	n/a	n/a			*
Seizure	114	2.88% (2.36% -3.40%)	11	2.35% (0.98%-3.72%)	n/a	n/a			
Wound infection	20	0.50% (0.28% -0.72%)	37	7.89% (5.45%-10.3%)	n/a	n/a	*	*	
Adverse drug reaction	n/a	n/a	n/a	n/a	n/a	n/a	*		
Hemiparesis	445	11.2% (10.2% -12.2%)	23	4.90% (2.95%-6.85%)	n/a	n/a	*	*	
At least one of the above	858	21.7% (20.4%-23.0%)	96	20.4% (16.8%-24.1%)	21	25.3% (15.8%-34.8%)	*		*
Back to the OR within 30 days	92	2.32% (1.18%-2.79%)	34	7.24% (4.89%-9.58%)	n/a	n/a	*		
30-Day Mortality, n (%)	186	4.69% (4.03% -5.35%)	n/a	n/a	n/a	n/a	*		*

Complications and mortality