

Variation in Management of Spinal Gliobastoma Multiforme: Results from a National Cancer Registry

F.M. Moinuddin MBBS; PhD; Mohammed Ali Alvi MD; Waseem Wahood MS; Anshit Goyal MBBS; Yagiz Ugur Yolcu; Mohamad Bydon MD

1.Mayo Clinic Neuro-Informatics Laboratory, Mayo Clinic College of Medicine and Science, Rochester, MN, USA 2.Department of Neurologic Surgery, Mayo Clinic, Rochester, MN, USA.

Introduction

Primary glioblastoma of the spinal cord (spinal GBM) is a rare tumor, relative to its cranial counterpart (cranial GBM). Our current knowledge of spinal GBM epidemiology, tumor characteristics and treatment is insufficient and mostly based on single-institution case series.

Methods

Figure 1 presents the flow chart of patients selection method.



Results

Median survival for spinal GBM was found to be higher compared to cranial GBM with data trending towards statistical significance (11.2 months vs 9.2 months, p = 0.07). Among patients < 18 years of age, cranial GBM had a better median survival compared to spinal GBM (15.5 months vs 11.9 months, p = 0.08). For other age groups (18 – 65 years and > 65 years), median survival was found to be similar between spinal GBM and cranial GBM (13.3 months vs 13.8 months, p = 0.83; 4 months vs 4.8 months, p = 0.89).



Among all 190 spinal GBM cases, 18 to 65 years age group had a longer median survival (13.2 months) compared to <18 years age and >65 years age groups, who had a median survival of 11.9 months and 3.9 months, respectively (p=0.003) (Fig 3)



Among 95 spinal GBMs, no significant difference was found in survival for patient who underwent surgery, biopsy and no surgery (median survival = 9, 11.4 and 4.1 months, respectively, p=0.738) (Fig. 4).



Patients who received radiation with or without chemotherapy had a median survival of 15 months, followed by surgery with adjuvant therapy (9.3 months), surgery alone (8.87 months) and palliative care only (3.32 months) (p= 0.28) (Fig. 5).

Fig 5. Kaplan-Meier plot of overall survival by treatment modality in spinal GBM. RT- radiotherapy, CTchemotherapy.

0.2

0.0

10

On multivariable analysis, <18 years age group was associated with improved survival (HR= 0.50, 95% CI 0.23–1.00, p=0.046), while tumor extension was associated with poor survival (HR= 2.71, 95% CI= 1.04–6.22, p=0.041). (Table 1)

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Table 1: Univariate and Multivariate-adjusted analysis of factors associatedwith time to death among patients withspinal GBM

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spinal GBM							
		Univariate			Multivariable		
Factors		HR	95%CI	p Value	HR	95%CI	p Value
Age							
	18to65						
	<18	0.63	0.31-1.21	0.17	0.50	0.23-1.00	0.046
	65>	1.75	0.84-3.35	0.13	1.68	0.72-3.66	0.22
Sex							
	Male						
	Female	1.13	0.64-1.93	0.66			
Race							
	White						
	Black	1.09	0.54-2.04	0.81			
	Hispanic	1.24	0.56-2.52	0.57			
	Other	0.44	0.02-2.06	0.36			
Insurance							
	Private						
	Medicaid	0.87	0.42-1.80	0.69			
	Medicare	1.72	0.86-3.44	0.14			
	Not ins	0.41	0.10-1.73	0.17			
	Other	1.27	0.58-2.82	0.56			
CCI							
	0						
	1	1.49	0.64-3.04	0.33	1.51	0.60-3.47	0.36
	2+	1.30	0.63-2.46	0.45	1.25	0.56-2.59	0.56
Tumor exte	ension						
	Localized						
-	Extentened	1.93	0.78-4.08	0.14	2.71	1.04-6.22	0.041
Surgery							
	Surgery	0.9 5000	10-2011 N. 1000	10000			
	Biopsy	0.81	0.33-1.70	0.60			
	No surgery	1.20	0.56-2.30	0.63			
Treatment							
rreadfight	Surgopundi						
	Surgery alone	1.20	0.26-2.01	0.72	1.01	0.20-2.62	0.00
	RT+/_CT	0.73	0.33-1.44	0.75	0.71	0.30-2.02	0.41
	Palliative	1.83	0.78-3.75	0.42	2.46	0.98-5.66	0.055
	- uniquive	1.00	0.10-0.10	0.42	2.40	0.55-5.00	0.000

Conclusions

We found trend of increased survival in patients with spinal GBM compared to cranial GBM. Surgery with adjuvant therapy was found to have no survival benefit for patients with spinal GBM. However, due to its rarity, a multi-institutional, prospective, controlled study is required to define the optimal treatment of spinal GBM.

Learning Objectives

 Characterize the demography, treatment and survival of the rare spinal glioblastoma (GBM) in comparison with cranial GBM
Find out the factors associated with the survival of spinal GBM.
Evaluate the optimal treatment modality for spinal GBM.