Prognosis of Patients with Cystic Glioblastoma Multiforme: a case controlled study

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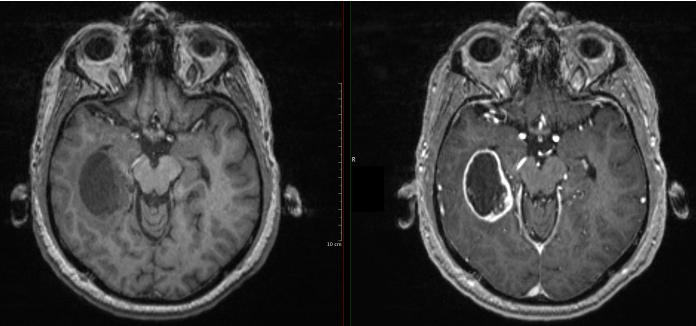
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Introduction

The presence of cysts has been described as a favorable prognostic factor in low-grade gliomas. It is unclear if cysts have the same effect in high-grade tumors. This study was conducted to evaluate the outcomes of patients undergoing resection of a newly diagnosed primary glioblastoma multiforme (GBM) with a significant cystic portion (>50%).

Methods

28 patients with cystic GBMs were selected from a single institution database consisting of 368 consecutive patients with newly diagnosed GBM. Patients in the cystic group were matched with non-cystic patients based on age, Karnovsky performance score (KPS) and extent of resection using a propensity score matching methodology. Outcomes of cystic patients were compared to matched patients as well as a large cohort of GBM patients to minimize any bias. Kaplan-Meir estimates, log-rank tests and multivariate analysis were used to compare survival.
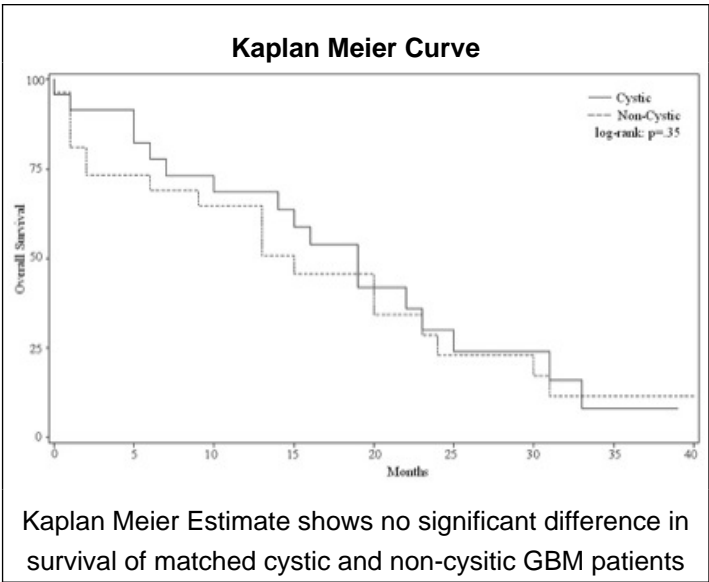
Patient with Cystic GBM

T-1 weighted pre-contrast (left) and post-constrast (right) images show a right sided cystic GBM

Results

The median age of cystic GBM patients was 55 years, 75% had a KPS>70, and 57% had either biopsy or partial tumor resection. The 28 cystic patients were matched on the basis of age (p= 0.11), extent of resection (p= 0.13) and KPS (p= 0.84) with 28 non-cystic patients. The cystic patients had a median survival of 15 months [95% CI: 6-23] while the non-cystic patients had a median survival of 19 months [95% CI: 7-23]. The 12 and 24-month survival rates were 65% and 23% in the cystic group and 68% and 26% in the non-cystic GBM group respectively. There was no significant difference in survival between cystic and non-cystic GBM patients (p= 0.35).

Hazards ratio (HR) and p values for multivariate analysis of survival for 28 cystic and 147 non-cystic patients.		
Characteristics	HR	p value
Tumor type (ref: non-cystic)		
cystic	0.91	.71
Karnofsky Performance Status (ref: KPS>70)		
KPS≤70	2.11	.0001
Age in years (ref: ≤65)		
age>65	2.38	<.0001
Extent of resection (ref: high)*		
low resection	1.49	.03

*high resection corresponds to gross-total and near gross total resection.
*low resection corresponds to biopsy and partial resection.

Kaplan Meier Curve

Kaplan Meier Estimate shows no significant difference in survival of matched cystic and non-cysitic GBM patients

Conclusions

The cystic nature of GBM is not a significant prognostic factor. Our study showed that patients with cystic GBM have similar survival as non-cystic GBM patients.

Learning Objectives

By the conclusion of this session participants should be able to describe the prognostic significance of cystic GBMs.