

Incidence of Leptomeningeal Disease Following Ventricular Entry During Resection of Supratentorial Grade IV Glioma

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Introduction

Advancements in glioma treatment options have extended survival allowing for a unique set of complications associated with disease progression to surface, one such complication being leptomeningeal disease (LMD). Several surgical risk factors have been previously described to increase the incidence of LMD, though most of the current literature is in regards to the metastatic tumor population. We hypothesized that ventricular entry during the resection of grade IV gliomas is a surgical risk factor for increasing the incidence of LMD.

Methods

Patients with supratentorial grade IV glioma who underwent initial resection at The University of Texas MD Anderson Cancer Center between 1993 and 2013 were eligible for the study. Demographic data as well as details of surgical methodology, extent of resection, and incidence of LMD were obtained. Groups for comparison were divided into ventricular entry versus non-ventricular entry.

Results

Inclusion criteria identified a total of 821 patients. In the case group of 344/821 patients with glioblastoma undergoing resection with ventricular entry, 8.1% (n=27) of patients developed LMD. In the control group of 477/821 patients having resection without ventricular entry, 1.5% (n=7) of patients developed LMD (p<0.001). The median duration from ventricular entry to diagnosis of LMD was 5.6 months (range, 0.5-28.9). The development of LMD was associated with significantly decreased survival (p<0.001).

Conclusions

The risk of leptomeningeal disease is significantly increased with ventricular entry during resection of grade IV glioma. Recognition of these results suggest that neurosurgeons should be aware of ventricular entry during resection, and may take a less aggressive resection when in close proximity of the ventricular system as well as counseling patients of this possible unintended outcome.

Learning Objectives

By the conclusion of this session, participants should be able to:

- 1) Recognize ventricular entry as a surgical risk factor for leptomeningeal disease
- 2) Understand the implications of maximum safe resection versus ventricular entry during the resection of grade IV gliomas

References

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