Insular Glioma Resection: The MD Anderson Experience

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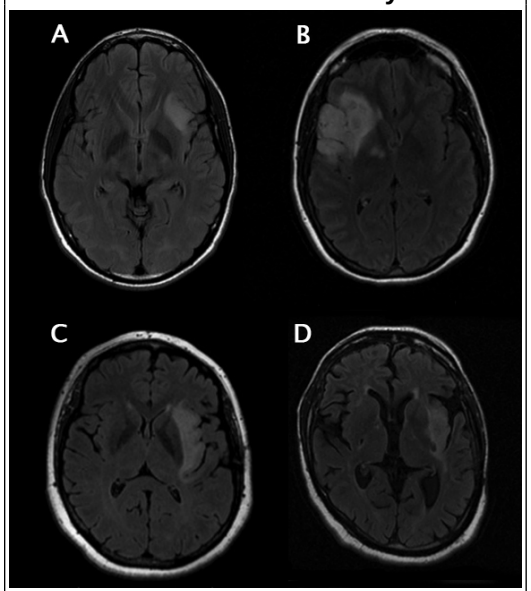
Introduction

Low and high-grade gliomas can arise within the insula. This study compares biopsy versus resection for the treatment of insular gliomas, and quantifies extent of resection (EOR), defines morbidity, and identifies prognostic factors on survival.

Methods

All adult patients with a diagnosis of an insular glioma at our institution between 1996 and 2012 were included. Clinical and outcome data were collected. Gliomas were classified by location using a modified classification system.

Modified Classification System

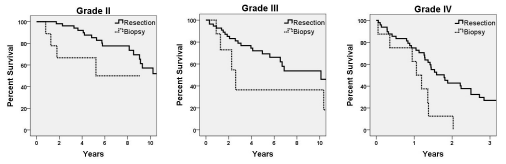


A-anterior only, lateral only. B-anterior only, medial extension. C-posterior component, lateral only. D- posterior component, medial extension

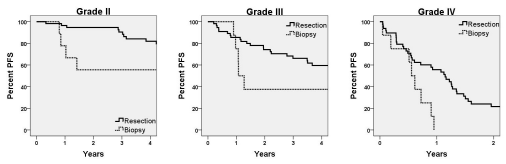
Results

The study included 25 biopsy and 161 resection patients, with no significant differences in baseline clinical and tumor characteristics between the groups. Overall survival was significantly longer (P=0.05 in all instances) with resection compared to biopsy for grade II (medians 10.9 and 5.2 years, respectively), III (medians 10.1 and 2.6 years, respectively) and IV gliomas (medians 1.8 and 1.1 years, respectively). Progression-free survival was significantly longer with resection versus biopsy for grade III (medians 5.9 and 1.1 years, respectively) and IV gliomas (medians 1.1 and 0.6 years, respectively), and non-significantly improved for grade II gliomas (medians 6.1 years in the resection group and not reached in the biopsy group). Malignant progression-free survival was significantly longer with resection versus biopsy for grade III gliomas (medians 6.1 and 1.3 years, respectively) and non-significantly improved for grade II gliomas (medians 8.1 in the resection group and not reached in the biopsy group). Factors associated with longer survival included younger age, higher Karnofsky Performance Status score, histology of oligodendroglioma or mixed oligoastrocytoma, and greater EOR. Significantly lower EOR and higher neurologic deficits occurred for gliomas with posterior insular involvement and/or medial extension.

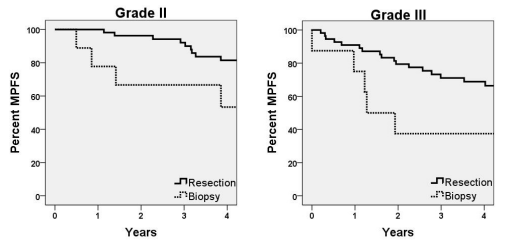
Kaplan-Meier Curve of OS for Grades II, III, and IV



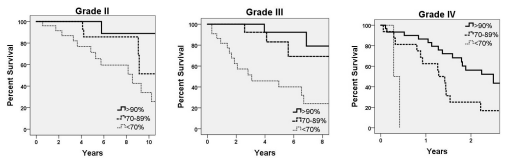
Kaplan-Meier Curve of PFS for Grades II, III, and IV



Kaplan-Meier Curve of MPFS for Grades II and III



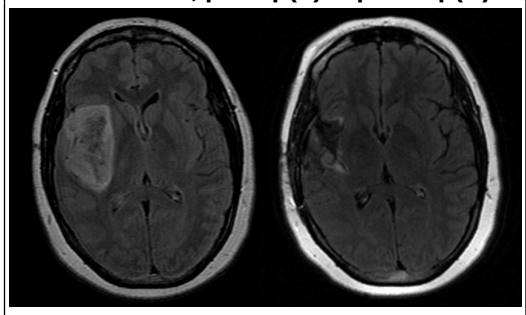
Kaplan-Meier Curve of OS for Grade II, III, and IV Gliomas, stratified by EOR



Conclusions

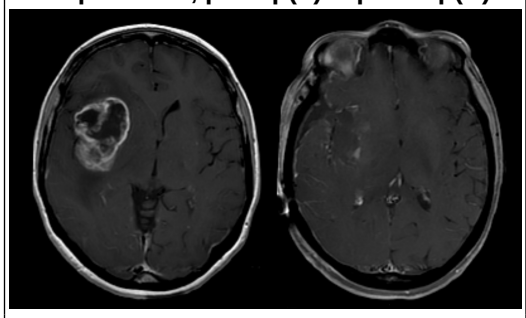
Resection of both low and high-grade insular gliomas improves survival compared to biopsy. For insular gliomas with a posterior component and/or medial extension, resection comes with a significantly lower EOR and higher rates of post-operative neurologic deficits.

T2 Flair MRI, pre-op(L) & post-op(R)



45 yo female presenting with seizures, found to have a right insular glioma, s/p resection via a frontal and temporal transcortical approach, with an EOR >90% achieved and pathology consistent with grade II astrocytoma. No immediate or permanent neurologic deficits.

T1 post MRI, pre-op(L) & post-op(R)



61 yo female presenting with seizures and mild left lower facial and upper extremity weakness, found to have a right enhancing insular tumor, s/p resection via a transsylvian approach, with an EOR >90% achieved and pathology consistent with glioblastoma multiforme. No worsening of her pre-operative deficits after surgery.