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An Extent of Resection Threshold for Recurrent Glioblastoma

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Introduction

In recent years, several studies have shown extent of resection (EOR) at initial surgery to be an important prognostic factor for overall survival for patients with glioblastoma However, the impact of EOR at subsequent surgeries for glioblastoma recurrence is less well studied. Our study aimed to determine the impact of EOR at the first glioblastoma recurrence on overall survival. Furthermore, we aimed to delineate an extent of resection threshold above which there is a significant overall survival benefit.

Methods

Patients greater than 18 years of age who underwent surgery for first recurrence between July 2001 and August 2011 were retrospectively reviewed. Demographic, clinical, and outcome parameters including EOR at recurrent surgery based on volumetric analysis were obtained. Kaplan-Meier survival estimates and Cox proportional hazards models were used to evaluate the impact of EOR at recurrent surgery on overall survival (OS). We established a minimum EOR threshold that was associated with a significant survival benefit.

Conclusions

Surgical resection for recurrent glioblastoma patients can provide a significant survival benefit as long as an EOR of 99% or greater is achieved. This survival benefit is independent of the EOR at initial surgery.

Learning Objectives

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

1. Describe the newly defined extent of resection threshold for recurrent glioblastoma in achieving greater overall survival.
2. Identify the importance of pre-operative surgical planning and intraoperative adjuvant techniques to safely maximize extent of resection in recurrent glioblastoma.

Results

A total of 93 eligible recurrent glioblastoma patients with a median age of 54.5 years were included in this study. The majority (90.3%) of patients had perioperative KPS of 80 or higher. The mean EOR at first recurrent surgery was 92.7% and the median OS was 22.3 months. Longer survival times were correlated with higher levels of resection. After adjusting for age at diagnosis, perioperative KPS, and initial EOR, EOR at repeat surgery was found to be an independent predictor of survival. Patients who underwent EOR of 99% or greater at first recurrence had a 45% reduction in the hazards of mortality (HR = 0.55, p=0.02).

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