

Clinical Outcome of Patients with Glioblastoma is Independent of Peritumoral Edema Shown by Preoperative MRI-Single Center Experience

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Introduction

Glioblastoma multiforme (GBM) is the most common and aggressive malignant brain tumor in adults, of which peritumoral edema is an important feature. Indeed, peritumoral edema makes patients symptoms more severe, but whether peritumoral edema has an influence on overall survival (OS) of those patients is still controversial. Therefore, the aim of our study was to assess the prognostic value of parameters associated with edema in patients with GBM.

Methods

Preoperative magnetic resonance imaging (MRI) of 74 patients with newly diagnosed supratentorial GBM was retrospectively reviewed. The Kaplan-Meier method, COX proportional hazard model and stepwise regression analysis were applied to evaluate the impact on OS of preoperative MRI features and demographic variables that included preoperative Karnofsky performance status (KPS) and postoperative KPS.

Results

Age, tumor size, edema size and tumor volume were found to be independent prognostic indicator for poorer OS by Kaplan-Meier method, while standard regimen (radiotherapy with concomitant and adjuvant temozolomide) indicated a better survival. Age, tumor volume and standard regimen but no edema-related features remained significantly associated with OS by COX proportional hazard model analysis. Postoperative KPS was a favorable marker for OS by both univariate and multivariate analysis, while no statistically significant relationship was found between preoperative KPS and survival.

Conclusions

No edema-related features on preoperative MRI were significantly associated with OS in patients with GBM. Interestingly, an opposite relationship was found between preoperative or postoperative KPS and survival, suggesting the importance of safe resection.

Learning Objectives

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

- 1) Describe the relationship between peritumoral edema and overall survival in patients with glioblastoma,
- 2) Discuss, in small groups, the potential reason for which a greater edema didn't lead to a worse outcome.