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Evaluating prognosis and survival in patients with glioblastoma in contact with subventricular zone: Tumor location and its correlation with prognosis

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Abstract

Background: To explore the altered malignant behavior, prognosis and survival of glioblastoma in contact with Subventricular Zone (SVZ) and independent predictors on patients' overall survival.

Method: The records of 131 patients with supratentorial primary glioblastoma who underwent surgery at our hospital between 2012 and 2018 were reviewed retrospectively. The authors reviewed preoperative MRI images and divided patients into two groups: Glioblastoma not in contact with SVZ (G-SVZ) and glioblastoma in contact with SVZ (G + SVZ). They computed and compared the overall survival (OS) of these two groups using the Kaplan-Meier method. The correlation between G + SVZ and OS was investigated using the Cox Proportional Hazard Ratio Model.

Results: The median progression-free survival (PFS) of the patient was 10 months (Interquartile Range), and the median OS was 13 months. At six months and one year, the OS was 81 percent and 51.1 percent, respectively. Patients with G + SVZ and G-SVZ had a median OS of 12 months and 15 months, respectively ($p = 0.0093$). According to Cox Multivariate model, repeat surgery ($p = 0.001$), among other independent predictors, including age ≥ 60 , Karnofsky Performance Score (KPS) < 70 , and extent of resection (Subtotal/biopsy vs total resection), had the strongest associated decreased OS. G + SVZ independently correlated significantly with reduced patient survival ($p = 0.014$).

Conclusion: Repeat surgery had the strongest association with decreased OS among the independent predictors of survival in patients with G + SVZ lesions. Prospective studies about molecular mechanisms are needed to explain why G + SVZ lesions are thought to be aggressive and associated with a poor prognosis.

Keywords: Glioblastoma; MRI imaging; Prognosis; Subventricular zone; Survival rate.

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