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# The role of chemotherapy in patients with gliomatosis cerebri: a population-based study

Jin Zhang <sup># 1</sup>, Hui Shen <sup># 2 3</sup>, Yibo Yang <sup># 4</sup>, Qing Mei <sup>5</sup>, Jiachun Liu <sup>6</sup>, Aihua Liu <sup>7</sup>

Affiliations

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## Abstract

Gliomatosis Cerebri (GC) is a rare and aggressively infiltrative diffuse glioma with a grim prognosis. The efficacy of chemotherapy in GC is controversial. This study aimed to assess the impact of chemotherapy on GC patients in a population-based cohort. Patients with Gliomatosis Cerebri (GC) diagnosed between 2000 and 2021 were identified from the Surveillance, Epidemiology, and End Results (SEER) database. Kaplan-Meier survival curves were utilized and compared using the log-rank test to assess survival disparities. Cox regression analysis was employed to identify prognostic factors, with the results of the multivariate analysis presented in a forest plot. Subgroup analyses were then performed to discern which patient subgroups might potentially benefit from chemotherapy. Our cohort comprised 227 GC patients, with median cause-specific survival (CSS) was 11 months (95% Confidence Interval [CI], 9-16 months) and a 5-year survival rate of 12.8%. Restrictive cubic splines (RCS) regression analysis indicated a significant linear correlation between advancing age and CSS ( $P_{\text{overall}} < 0.001$ ,  $P_{\text{nonlinear}} = 0.590$ ). Multivariate Cox regression confirmed pediatric, primary site and chemotherapy treatment were prognostic factors for GC patients. Additionally, chemotherapy was linked to improved survival in patients who underwent surgery (HR = 0.50; 95% CI: 0.26-0.94) and radiotherapy (HR = 0.47; 95% CI: 0.28-0.82). Chemotherapy may contribute to improved prognosis for patients with GC, especially in those who have undergone surgery or radiotherapy, suggesting that these subgroups should be considered for additional chemotherapy. Nevertheless, prospective studies are warranted to substantiate these observations.

**Keywords:** Chemotherapy; Gliomatosis cerebri; Radiotherapy; SEER; Surgery.

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