Curr Med Sci. 2024 Jul 11. doi: 10.1007/s11596-024-2880-4. Online ahead of print.

Risk Factors and Predictive Nomogram for Survival in Elderly Patients with Brain Glioma

Zhi-Cheng Fan [1], Wen-Jian Zhao [1], Yang Jiao [1], Shao-Chun Guo [1 2], Yun-Peng Kou [1 2], Min Chao [1], Na Wang [1], Chen-Chen Zhou [1 3], Yuan Wang [1], Jing-Hui Liu [1], Yu-Long Zhai [1], Pei-Gang Ji [1], Chao Fan [1], Liang Wang [4]

Affiliations

PMID: 38990448 DOI: 10.1007/s11596-024-2880-4

Abstract

Objective: To determine the factors that contribute to the survival of elderly individuals diagnosed with brain glioma and develop a prognostic nomogram.

Methods: Data from elderly individuals (age ≥65 years) histologically diagnosed with brain glioma were sourced from the Surveillance, Epidemiology, and End Results (SEER) database. The dataset was randomly divided into a training cohort and an internal validation cohort at a 6:4 ratio. Additionally, data obtained from Tangdu Hospital constituted an external validation cohort for the study. The identification of independent prognostic factors was achieved through the least absolute shrinkage and selection operator (LASSO) and multivariate Cox regression analysis, enabling the construction of a nomogram. Model performance was evaluated using C-index, ROC curves, calibration plot and decision curve analysis (DCA).

Results: A cohort of 20 483 elderly glioma patients was selected from the SEER database. Five prognostic factors (age, marital status, histological type, stage, and treatment) were found to significantly impact overall survival (OS) and cancer-specific survival (CSS), with tumor location emerging as a sixth variable independently linked to CSS. Subsequently, nomogram models were developed to predict the probabilities of survival at 6, 12, and 24 months. The assessment findings from the validation queue indicate a that the model exhibited strong performance.

Conclusion: Our nomograms serve as valuable prognostic tools for assessing the survival probability of elderly glioma patients. They can potentially assist in risk stratification and clinical decision-making.

Keywords: Surveillance, Epidemiology, and End Results (SEER); elderly brain glioma; nomogram; prediction model; prognosis.