

J Cancer Res Clin Oncol. 2023 Aug 8. doi: 10.1007/s00432-023-05232-w. Online ahead of print.

Prognostic nomogram models for predicting survival probability in elderly glioblastoma patients

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PMID: 37552311 DOI: [10.1007/s00432-023-05232-w](https://doi.org/10.1007/s00432-023-05232-w)

Abstract

Purpose: To investigate the prognostic factors of survival and develop a predictive nomogram model for elderly GBM patients.

Methods: Elderly patients (≥ 65 years) with histologically diagnosed GBM were extracted from the SEER database. Survival analysis of overall survival (OS) was performed by Kaplan-Meier analysis. Univariate and multivariate Cox regression analyses were used to determine independent prognostic factors and these factors were used to further construct the nomogram model.

Results: A total of 9068 elderly GBM patients (5122 males and 3946 females) were included, with a median age of 72 years (65-96 years). All patients were divided randomly into the training group ($n = 6044$) and the validation group ($n = 3024$) by a ratio of 2:1. Cox regression analyses on OS showed eight independent prognostic factors (race, age, tumor side, tumor size, metastasis, surgery, radiotherapy, and chemotherapy) in the training cohort. Also, seven variables (except for race) were identified on CSS in the training group. By comprising these variables, the nomogram models on OS and CSS for predicting the 6-month, 1-year, and 2-year survival probability were constructed and exhibited moderate consistency, respectively. Then, they could be validated well in the validation cohort and by C-index, time-dependent ROC curve, calibration plot, and DCA curve.

Conclusions: Nomogram models on OS and CSS could provide an applicable tool to predict the survival probability and provide clinical references regarding treatment strategies and prognosis.

Keywords: Cancer-specific survival; Elderly glioblastoma; Nomogram; Overall survival; SEER.

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