

Randomized Controlled Trial

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# Prognostic model for predicting overall survival in patients with glioblastoma: an analysis based on the SEER database

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## Abstract

Predicting the prognosis of glioblastoma (GBM) has always been important for improving survival. An understanding of the prognostic factors for patients with GBM can help guide treatment. Herein, we aimed to construct a prognostic model for predicting overall survival (OS) for patients with GBM. We identified 11,375 patients with pathologically confirmed GBM from the Surveillance, Epidemiology, and End Results database between 2004 and 2015. The 1-, 2-, and 3-year survival probabilities were 48.8%, 22.5%, and 13.1%, respectively. The patients were randomly divided into the training cohort (n = 8531) and the validation cohort (n = 2844). A Cox proportional risk regression model was used to analyze the prognostic factors of patients in the training cohort, and a nomogram was constructed. Then concordance indexes (C-indexes), calibration curves, and receiver operating characteristic (ROC) curves were used to assess the performance of the nomograms by internal (training cohort) and external validation (validation cohort). Log-rank test and univariate analysis showed that age, race, marital status, extent of surgical resection, chemotherapy, and radiation were the prognostic factors for patients with GBM ( $p < 0.05$ ), which were used to construct nomogram. The C-index of the nomogram was 0.717 (95% confidence interval (CI), 0.710-0.724) in the training cohort, and 0.724 (95% CI, 0.713-0.735) in the validation cohort. The nomogram had a higher areas under the ROC curve value. The nomogram was well validated, which can effectively predict the OS of patients with GBM. Thus, this nomogram could be applied in clinical practice.

**Keywords:** Glioblastoma; SEER database; nomogram; overall survival; prognostic factors; prognostic model.

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