The Prognostic Value of the Systemic Immune-Inflammation Index in Glioblastoma Patients and the Establishment of a Nomogram

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Abstract

Objective: The systemic immune-inflammation index (SII) has recently attracted significant interest as a new biomarker for predicting the prognosis of patients with glioblastoma (GBM). However, the predictive significance of it is still a subject of debate. This study intended to assess the clinical effectiveness of the SII in GBM and establish a nomogram.

Methods: Receiver operating characteristic (ROC) curves were utilized to determine the optimal cut-off values of the SII. Kaplan-Meier (KM) survival curves were used to analyze the median overall survival (OS). Cox regression analysis was carried out to evaluate the associations between OS and different clinical factors. Based on the SII and clinical characteristics, a nomogram was constructed, and its value in clinical application was evaluated by means of decision curve analysis.

Results: The optimal SII cut-off value was 610.13. KM analysis revealed that GBM patients with higher SII values had shorter OS (15.0 vs. 34.0 months, P = 0.044). Multivariate analysis demonstrated that a high SII was an independent predictor of poor outcome in GBM (HR = 1.79, P = 0.029). The nomogram incorporating the preoperative SII showed good predictive accuracy for GBM patient prognosis (C-index = 0.691).

Conclusions: The SII is an independent predictive indicator for GBM. Patients with elevated SII levels tend to have a poorer prognosis. A nomogram combining the SII with clinical and molecular pathological features can assist clinicians in assessing the risk of death in GBM patients, providing a basis for individualized treatment decisions.

Keywords: Glioblastoma; Overall survival; Prognostic prediction; Systemic immune-inflammation index.

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