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Construction and Validation of Nomograms for Predicting Overall Survival and Cancer-Specific Survival in Patients with Primary Anaplastic Oligodendroglioma

Shuoming Zhou ¹, Shuaishuai Wu ¹, Zhaoming Li ¹, Xiangyu Wang ²

Affiliations

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Abstract

Background: Anaplastic oligodendroglioma (AOD) is a rare high-grade central nervous system tumor. The current research on prognostic prediction of AOD remains limited. This study aimed to identify prognostic factors and establish the nomograms to predict overall survival (OS) and cancer-specific survival (CSS) for patients with AOD.

Methods: Patients diagnosed with AOD between 1992 and 2020 were extracted from the Surveillance, Epidemiology, and End Result (SEER) database. We performed univariate and multivariate Cox regression analyses to identify independent prognostic factors based on the training group. KM survival curves were used to compare the impact of various independent factors on patient prognosis. For OS and CSS, the nomograms were constructed, and verified by the validation group. C-index, ROC curves, calibration curves, and DCA were used to assess the discrimination, consistency and clinical value of the nomograms.

Results: A total of 1202 AOD patients were enrolled, being randomly divided into training (n=841) and validation (n=361) groups (7:3 ratio). Univariate and multivariate Cox analysis identified four significant independent factors (tumor site, age, surgery, chemotherapy). For OS and CSS, C-index were 0.731 (0.705-0.757) and 0.728 (0.701-0.754) in the training group, 0.688 (0.646-0.731) and 0.684 (0.639-0.729) in the validation group, respectively. ROC curves and Calibration curves showed good discrimination and consistency, respectively. In addition, the DCA curves showed the nomograms have good clinical benefits.

Conclusions: We successfully established the nomograms to predict the OS and CSS for AOD patients. The nomograms showed good performance in prognostic prediction, assisting clinicians in evaluating patient prognosis and personalizing treatment plans.

Keywords: Anaplastic oligodendroglioma; Cancer-specific survival; Nomogram; Overall survival; Prognosis; SEER.

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