

Development and Validation of a Nomogram for Predicting Overall Survival of Head and Neck Adenoid Cystic Carcinoma

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Abstract
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Abstract

Objectives:

To develop and validate a predictive nomogram with clinical variables for guiding personalized therapy selection in adenoid cystic carcinoma of the head and neck (ACCHN).

Methods:

We constructed our novel model using data from the Surveillance, Epidemiology and End Results (SEER) database of 1069 ACCHN patients diagnosed between 2004 and 2015. An independent cohort of 70 ACCHN patients from Fujian Provincial Cancer Hospital was used for external validation. The nomogram was developed using the results of both univariate and multivariate Cox analysis, which utilized baseline variables from the training group. It was determined that the predicted accuracy of the model could be verified by using the validation set.

Results:

Independent predictors, including age, tumor site, surgery, N stage, M stage, and TNM stage, were identified through univariate and multivariate Cox regression analyses. Our nomogram exhibited superior clinical value to the TNM staging system, with a C-index of 0.769 in the training cohort and 0.741 in the validation cohort. ROC curve presented great prognostic accuracy, with 5-, 7-, and 9-year AUC values of 0.80, 0.80, and 0.82 in the training set, and 0.73, 0.84, and 0.83 in the external validation set, respectively. We classified patients into high-risk and low-risk subgroups using the risk score. The survival curves depicted significantly lower survival probability in the high-risk group compared to the low-risk group ($p < 0.0001$) in both the training and validation cohorts.

Conclusion(s):

Our nomogram is an invaluable resource to estimate the prognosis of ACCHN patients and direct individualized treatment.