

Nomogram for malignancy risk prediction for branch duct IPMN

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Background: Although consensus guidelines list several malignancies predicting factors in patients with BD-IPMN, those variables have different predictability and individual quantitative prediction of malignancy risk is limited. This study evaluated individual risks of malignancy and proposed a nomogram for predicting malignancy of branch duct type intraductal papillary mucinous neoplasms (BD-IPMNs) using the large database for IPMN from Japan and Korea collaboration study group.

Methods: Clinicopathological factors predictive of malignancy were retrospectively analyzed in 2525 patients with biopsy proven BD-IPMN at 22 tertiary hospitals in Korea and Japan. The patients with main duct dilatation >10 mm and inaccurate information were excluded.

Results: The study cohort consisted of 2258 patients. Malignant IPMNs were defined as those with high grade dysplasia and associated invasive carcinoma. Of 2258 patients, 986 (43.7%) had low, 443 (19.6%) had intermediate, 398 (17.6%) had high grade dysplasia, and 431 (19.1%) had invasive carcinoma. To construct and validate the nomogram, patients were randomly allocated into training and validation sets, with fixed ratios of benign and malignant lesions. Multiple logistic regression analysis resulted in five variables (cyst size, duct dilatation, mural nodule, serum CA19-9, and CEA) being selected to construct the nomogram. In the validation set, this nomogram showed excellent discrimination power through a 1000 times bootstrapped calibration test.

Conclusion: A nomogram predicting malignancy in patients with BD-IPMN was constructed using a logistic regression model. This nomogram may be useful in identifying patients at risk of malignancy and for selecting optimal treatment methods. The nomogram is freely available at <http://statgen.snu.ac.kr/software/nomogramIPMN>. Based on this study, we have a plan to extend and modify this nomogram after external validation using western patients with IPMN through international collaboration.