Mortality in Acute Necrotizing Pancreatitis at Baseline (MANP)-B Scoring for Acute Necrotizing Pancreatitis

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INTRODUCTION

Acute necrotizing pancreatitis (ANP) can result in significant healthcare burden. It is essential to accurately identify patients with a high likelihood of mortality promptly to determine the need for aggressive measures. The present study aimed to develop a novel scoring system based on data from the United States population

MATERIALS & METHODS

For the derivation cohort, we carried out a retrospective analysis using the National Inpatient Sample (NIS) database, evaluating adult (≥18 years) hospitalizations for ANP in the US from January 1, 2018, to December 31, 2019. For validation cohort we used the NIS from January 1 to December 31, 2017. We determined independent predictors that had a >50% increased hazard ratio to develop a risk scoring system for 7- and 30-day inpatient mortality for AP hospitalizations. The mortality in acute necrotizing pancreatitis at baseline (MANP)-B scoring system was derived using multivariable cox regression analysis and validated using receiver operating characteristic curves (ROC).

RESULTS

Predictors included in score

Six variables were selected for incorporation into the MANP-B score, including age ≥ 60 years (aHR 2.8 [95% CI 2.03-3.8, P< 0.001), Peripheral vascular disease (aHR 1.79 [95% CI 1.1-2.8, P< 0.001), Chronic kidney disease or ESRD (aHR 1.54 [95% CI 1.09-2.2, P< 0.001), Chronic liver disease (aHR 1.60 [95% CI 1.17-2.17, P< 0.001), Disorders of coagulation (aHR 1.97 [95% CI 1.34-3.24, P< 0.001) and fluid or electrolyte imbalance (aHR 2.1 [95% CI 1.34-3.24, P< 0.001). Each variable was allotted one point except age and fluid/electrolyte imbalance which were allotted two points due to higher hazard ratios. The new scoring system yields a total maximum score of 8 points.

Cut-offs and sensitivity/specificity:

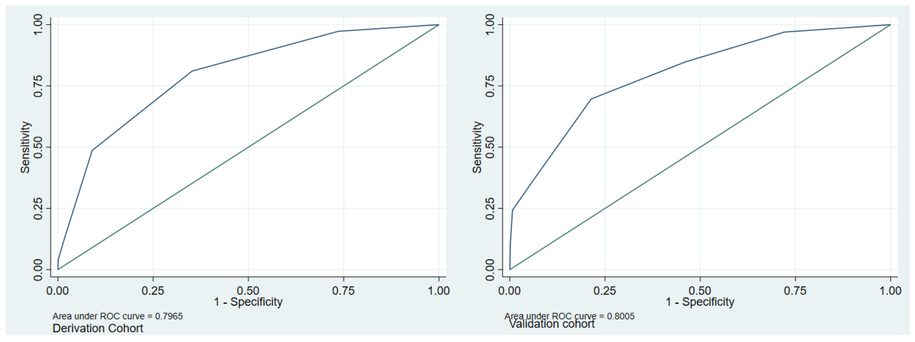
Based on the calculated highest sensitivity and specificity values from the area under ROC, the determined cut-off values for predicting ANP inpatient mortality at 30-day periods was 4 points using Liu index (Sensitivity 70.14%, Specificity 75.82%) and 3 points for mortality at 7-day periods (Sensitivity 69.70%, Specificity 78.60%).

AUC of derivation cohort

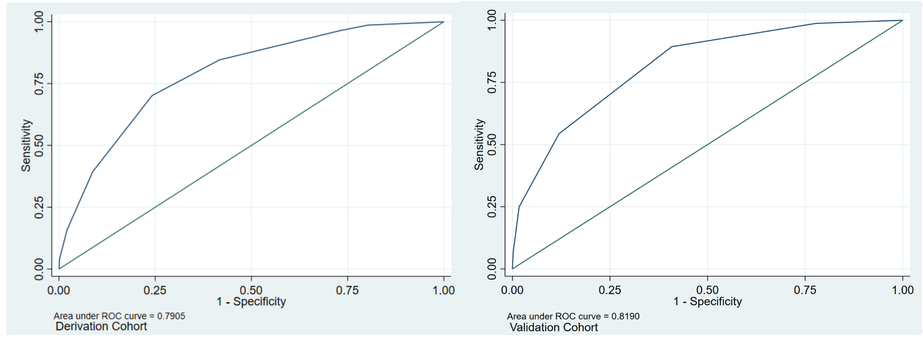
The AUC of derivation cohort was 0.7965 (95% CI 0.74766 - 0.84526, p < 0.01) for 7-day period. The area under the curve (AUC) using the ROC curve of derivation cohort was 0.7905 (95% CI 0.7905 - 0.81896, p < 0.01) for 30-day period.

AUC of validation cohort

The AUC of the validation cohort 0.8005 (95% CI 0.74612 - 0.85479, p < 0.01) for 7-day period. The AUC of the validation cohort 0.8190 (95% CI 0.78883 - 0.84910, p < 0.01) for 30-day period.



ROC curves for in-hospital mortality at 7-day period



ROC curves for in-hospital mortality at 30-day period

DISCUSSION

The MANP-B scoring system can be used as an objective method for predicting 7- and 30-day all-cause mortality for Acute necrotizing pancreatitis hospitalizations on admission