Validation of a prognostic scoring system for critically ill patients with cirrhosis admitted to ICU

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ICU admissions due to cirrhotic liver disease are rising in the UK. Current prognostic scoring tools to predict ICU mortality have performed poorly in this group. In previous research from a single centre, a novel prognostic scoring tool (the CTP + L score), which modified the existing Child-Turcotte Pugh score by adding serum arterial Lactate concentration, was strongly associated with mortality.¹ This study aims to validate the use of the CTP + L scoring tool for predicting ICU mortality in patients admitted to a general ICU with cirrhotic liver disease. This study will also explore the use of the Royal Free Hospital (RFH) scoring system in this cohort.²

Methods

Eighty-four patients admitted to the Glasgow Royal Infirmary ICU with cirrhosis were included. An additional cohort of 115 patients was obtained from two ICUs in London (St George's and St Thomas').³ Liver-specific and general ICU scoring tools were calculated for both cohorts and compared using area under the receiver operating characteristic curves. Independent predictors of ICU mortality were identified by univariate analysis.

Results

Within the Glasgow cohort, independent predictors of ICU mortality were identified as Lactate ($p < 0.001$), Bilirubin ($p = 0.0048$), $\text{PaO}_2/\text{FiO}_2$ ratio ($p = 0.032$) and PT ratio ($p = 0.012$). Within the London cohort, independent predictors of ICU mortality were Lactate ($p < 0.001$), PT ratio ($p < 0.001$), Bilirubin ($p = 0.027$), $\text{PaO}_2/\text{FiO}_2$ ratio ($p = 0.0011$) and Ascites ($p = 0.023$). Multivariate analysis identified Lactate and Bilirubin as the most significant predictors of ICU mortality in the Glasgow cohort, and Lactate and PT ratio in the

London dataset. Based on area under the receiver operating characteristic curves, the CTP + L and RFH scoring tools were the most predictive of ICU mortality in both cohorts.

Discussion

The CTP + L and RFH scoring tools are validated prognostic scoring tools for predicting ICU mortality in patients admitted to a general ICU with cirrhotic liver disease. However, the CTP + L can be calculated quickly and simply, in contrast to the RFH score which utilises a complex equation.

Declaration of Conflicting Interests

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