Acute kidney injury should not be neglected: optimization of quick Pitt bacteremia score for predicting mortality in critically ill patients with bloodstream infection

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Abstract

Background: Taking the therapeutic difficulties and mortality of bloodstream infection (BSI) into consideration, it is essential to investigate other potential affecting factors on mortality in BSI patients and examine the utility of current quick Pitt bacteremia (qPitt) score for improving survival rate. Methods: Medical information from MIMIC-IV database was utilized to perform a retrospective cohort investigation. Risk factors associated with mortality were examined by multivariate logistic regression modelling. The area under the receiver operating characteristic curve (AUC) was used for assessing the discriminatory capability of prediction models. Results: In total, 1,240 eligible BSI patients were included. After adjustment of age, community-onset BSI, indwelling invasive lines and Glasgow Coma Scale (GCS) ≤ 8, acute kidney injury (AKI) was identified as a notable risk factor on 14-day mortality. Except for altered mental status, four other main components of the original qPitt were significantly associated with 14-day mortality. Hence, we established a modified qPitt (m-qPitt) by adding AKI and replacing altered mental status with GCS ≤ 8. AUC for m-qPitt and qPitt were 0.723 (95% confidence interval [CI] 0.683-0.759) and 0.708 (95% CI 0.669-0.745) in predicting 14-day mortality, respectively. Moreover, the m-qPitt also had an acceptable performance and discrimination power [0.700 (95% CI 0.666-0.732)] in predicting 28-day mortality. Conclusions: AKI was a significant influence factor on BSI patients’ survival. Compared with original qPitt, our new m-qPitt was proved to have a better predictive performance for predicting mortality in BSI patients. More studies should be carried out to validate the practicability of m-qPitt further.

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