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Comorbidities can predict the mortality of acute kidney injury requiring continuous renal replacement therapy: comparison with the Charlson comorbidity index

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Objectives: Comorbid conditions are important in thesurvival of patients with severe acute kidney injury (AKI) requiring continuous renal replacement therapy (CRRT). The weights assigned to comorbidities to predict survival may vary based on the type of index disease and advances in the management of comorbidities. We developed a modified Charlson comorbidity index (CCI) in patients with AKI requiring CRRT (mCCI-CRRT), thereby improving risk stratification for mortality.

Methods: A total of 1,583 patients received CRRT from 2008 to 2016 from two university hospitals were included to develop mCCI-CRRT. The weights of the comorbidities, per the CCI, were recalibrated using a Cox proportional hazards model. The modified index was validated in an independent cohort from another two university hospitals (n=419).

Results: The mCCI-CRRT included 16 comorbidities with recalibrated severity weights using the Kaplan-Meier method and Cox regression analysis. Although the mCCI-CRRT showed no difference in c-statistics compared to the original CCI (both were 0.73), the analysis using cNRI revealed that the mCCI-CRRT improved net mortality risk reclassification by 25.3% (95% CI, 0.09–0.42; P=0.002).

Conclusions: The mCCI-CRRT stratifies the risk for mortality in AKI patients who requiring CRRT better than the original CCI, suggesting that it may be a preferred index for use in clinical practice.