MO307 PROGNOSTIC VALUE OF SEA-MAKE SCORE IN PREDICTING MAJOR ADVERSE KIDNEY EVENTS AMONG ADULT FILIPINO PATIENTS WITH ACUTE KIDNEY INJURY

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BACKGROUND AND AIMS: Acute kidney injury (AKI) is a prevalent complication among hospitalized patients worldwide and is associated with a high morbidity and mortality rate. The SEA-MAKE score is a scoring tool recently introduced to predict major adverse kidney events (MAKE), defined as need for renal replacement therapy, sustained loss of kidney function or death occurring within 28 days among AKI patients. The use of a predictive scoring tool for MAKE would help clinicians identify and risk-stratify patients early in the course of hospitalization, allowing aggressive provision of renoprotective measures and targeted treatment. The objective of this study was to evaluate the diagnostic performance of the SEA-MAKE score in determining MAKE among adult Filipino patients with acute kidney injury admitted in the ICU.
METHOD: This study utilized a single-center, retrospective, cohort study design, which reviewed records of adult patients with a diagnosis of acute kidney injury admitted at the intensive care unit of San Pedro Hospital from 2011 to 2020. Patients were excluded if they had underlying chronic kidney disease. The parameters under the SEA-MAKE score were assigned score points of 3 for low Glasgow coma scale, 1 for tachypnea, 1 for vasopressor use, 2 for intubation status, 2 for oliguria, 5 for serum creatinine rising $\geq$ 3 times, 3 for high blood urea nitrogen, 2 for low hematocrit, and 1 for thrombocytopenia. Our study evaluated the diagnostic performance of the SEA-make score by measuring its sensitivity, specificity, negative predictive value, positive predictive value and accuracy. The association between the score of seven and above with the presence of MAKE was analyzed using the Fisher exact test, while the evaluation of the cut-off score was done using the receiver operating characteristic curve. All tests were done at a 5% level of significance.
RESULTS: Of the 265 eligible cases analyzed, 181 (68%) developed MAKE and 84 (32%) fell under the non-MAKE group. These 181 (67.3%) patients met one or more criteria for MAKE: death ($n = 126$; 47.5%), need for renal replacement therapy ($n = 46$; 17.4%) and sustained loss of kidney function ($n = 9$; 3.4%). When the SEA-MAKE score was correlated with the actual presence of major adverse kidney events, the result was statistically significant ($P < .01$). Utilizing the cut-off score of seven, the SEA-MAKE score showed a sensitivity of 76.24% and a specificity of 76.24%, with a positive and negative predictive value of 86.25% and 59.05%, respectively. These results are comparable to the SEA-MAKE development cohort, which used the same cut-off value and yielded the sensitivity, specificity and positive predictive values of 75%, 76% and 84%, respectively [1].
CONCLUSION: The SEA-MAKE score is capable of predicting major adverse kidney events among patients with acute kidney injury, and is a very simple and useful tool especially in resource-limited hospitals similar to our setting. In our study, the SEA-MAKE score showed a good predictive index for MAKE in the background of AKI. This is the first external validation study done for the SEA-MAKE score. However, a larger prospective cohort study design would yield results with a higher statistical significance.

REFERENCE

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MO308 URINARY BIOMARKERS TO PREDICT ACUTE KIDNEY DAMAGE AND MORTALITY IN COVID-19

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BACKGROUND AND AIMS: Acute kidney injury (AK) is a frequent condition in patients hospitalized for COVID-19. There are only few reports on the use of urinary biomarkers in COVID-19 and no data comparing the prognostic use of individual biomarkers in the prediction of adverse outcome so far.
METHOD: We performed a prospective monocentric study on the value of urinary biomarkers to predict the composite endpoint of a transfer to the intensive care unit (ICU), the need for renal replacement therapy (RRT), mechanical ventilation and in-hospital mortality. A total of 41 patients hospitalized for COVID-19 were enrolled in this study. Urine samples were obtained shortly after admission in order to assess neutrophil gelatinase-associated lipocalin (NGAL), kidney injury molecule-1 (KIM-1), calprotectin and vanin-1.
RESULTS: We identified calprotectin as a predictor of a severe course of the disease, requiring intensive care treatment (AUC 0.728, $P = .016$). Positive and negative predictive values were 78.6% and 76.9%, respectively, using a cut-off concentration of 127.8 ng/mL. NGAL tended to predict COVID-19 associated AKI without reaching statistical significance (AUC 0.669, $P = .053$). The best parameter in the prediction of in-hospital mortality was NGAL as well (AUC 0.674, $P = .077$). KIM-1 and vanin-1 did not reach significance for any of the investigated endpoints.
CONCLUSION: While KIM-1 and vanin-1 did not provide prognostic clinical information in the context of COVID-19, this study shows that urinary calprotectin and NGAL concentrations are independent predictors of an adverse course of the disease. Calprotectin and NGAL may thereby constitute helpful adjuncts in the identification of patients at increased risk who may benefit from upcoming antiviral agents to SARS-CoV-2.

MO309 SERUM SODIUM TRAJECTORY DURING AKI AND MORTALITY RISK

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BACKGROUND AND AIMS: Kidneys play a primary role in electrolyte homeostasis. The association between serum sodium level and mortality or the need for kidney replacement therapy during acute kidney injury has not been adequately explored.
METHOD: In this prospective cohort study, we enrolled patients admitted to the Civil Hospital of Guadalajara from August 2017 to March 2020. We divided patients into five groups based on the serum sodium level trajectories up to 10 days following hospitalization: (1) stable normonatremia (serum sodium 135 and 145 mEq/L), (2) fluctuating serum sodium levels (increased/decreased in and out of normonatremia), (3) uncorrected hyponatremia, (4) corrected hyponatremia and (5) uncorrected hypernatremia. We assessed the association of serum sodium trajectories with mortality and the need for kidney replacement therapy (secondary objective).
RESULTS: A total of 288 patients were included. The mean age was 55 $\pm$ 18 years, and 175 (60.7%) were male. Acute kidney injury stage 3 was present in 145 (50.4%). Kidney replacement therapy started in 72 (25%) patients, and 45 (15.6%) died. After adjusting for confounders, 10-day hospital mortality was significantly higher in group 5 {HR, 3.12; [95% confidence interval (95% CI) 1.05–9.24]; $P = .03$}, and kidney replacement therapy initiation was higher in group 3 (HR, 2.44; 95% CI 1.04– 5.70; $P = .03$) compared with group 1.
CONCLUSION: In our prospective cohort, most patients with acute kidney injury had alterations in serum sodium. Uncorrected hypernatremia was associated with death, and uncorrected hyponatremia was correlated with the need for kidney replacement therapy.