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The Diagnostic and Predictive Value of Plasma Cystatin C in Acute Kidney Injury Secondary to Sepsis in The Intensive Care Unit

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Introduction: Plasma Cystatin C (pCysC) is one of the functional biomarker for AKI. This study evaluates the utility of pCysC in diagnosing AKI, predicting death and its correlation with eGFR in septic critically ill patients. **Materials and Methods:** This is a two centre, prospective observational study of septic critically ill patients. The inclusion criteria were patients older than 18 years old with sepsis, SOFA score of≥2 and procalcitonin level ≥ 0.5 ng/ml. Serum Creatinine (sCr) and pCysC were measured at 0, 4, 24, 28, 48, and 52 hours. AKI was defined based on creatinine criteria of the KDIGO guideline. **Results:** Seventy patients were recruited into this study, of which 32 (45.7%) had AKI and 15 (21.4%) died. pCysC diagnosed AKI in all six time intervals with AUC of 0.859, 0.858, 0.876, 0.918, 0.887, and 0.879 for 0 hour, 4, 24, 28, 48, and 52 hours, respectively ($p < 0.0001$). It did not predict death at any time interval, with an AUC range of 0.053 to 0.608 ($p > 0.1$). pCysC showed strong negative correlation with all estimates of GFR, with the best profile recorded at 28 hours. Correlation coefficient for $eGFR_{CG}$, $eGFR_{MDRD}$, $eGFR_{CKD\text{-}EPI}$ and keGFR were -0.778, -0.763, -0.808, and -0.781, respectively ($p < 0.0001$). There is no correlation between cardiac output and pCysC, and eGFR. Correlation coefficient were between -0.208 to 0.267 ($p > 0.1$). **Conclusion:** pCysC diagnosed AKI in septic critically ill patients and strongly correlated with all estimates of GFR. However, pCysC did not predict death, nor correlate with cardiac output.