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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\textsubscript{CG}, eGFR\textsubscript{MDRD}, eGFR\textsubscript{CKD-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.