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Mortality Prediction of Plasma Presepsin in Patients with Urinary Tract Infection

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Objectives : Presepsin has recently been recognized as a reliable biomarker for sepsis. Nevertheless, there is a paucity of studies specifically focusing on its predictive value for mortality in patients with urinary tract infection (UTI). This study aimed to evaluate the utility of plasma presepsin as a mortality predictor in patients with UTI compared to traditional infection biomarkers.
Methods : A single-center retrospective study was conducted from May 2022 to August 2023, enrolling 74 patients with UTI. Collected data at admission included vital signs, plasma presepsin, procalcitonin, C-reactive protein (CRP), white blood cell (WBC) count, and other laboratory values. Predictive values for 28-day mortality of plasma presepsin, procalcitonin, CRP, and WBC were analyzed using receiver operating characteristic (ROC) curve analysis. Multivariate Cox regression analysis was performed on 28-day mortality according to the cut-off values of plasma presepsin, procalcitonin, CRP, and WBC.
Results : Plasma presepsin showed a higher area under ROC curve (AuROC) of 0.781 for predicting 28-day mortality, surpassing procalcitonin (AuROC 0.606), CRP (AuROC 0.496), and WBC (AuROC 0.495). Elevated plasma presepsin levels (>831pg/mL) were independently associated with an increased risk of 28-day mortality in patients with UTI (hazard ratio: 8.753, P = 0.041).
Conclusions : Presepsin may serve as a significant prognostic biomarker for mortality in patients with UTI, suggesting its superiority over traditional infection biomarkers.

Figure 1.jpg

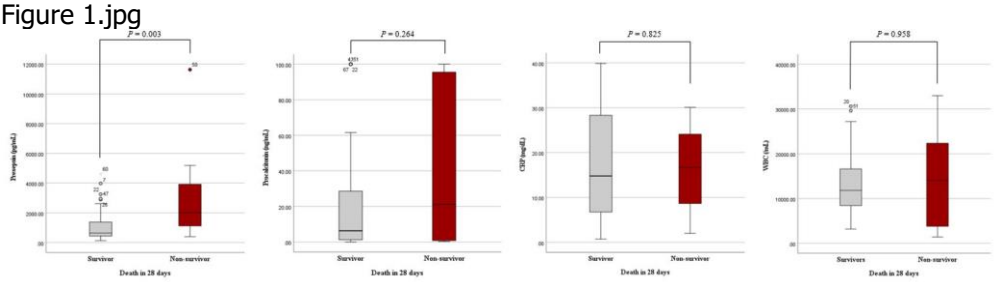

Figure 1.jpg

Variable	Univariate analysis			Multivariate anaylsis		
	P value	HR	95% CI	P value	HR	95% CI
Sex	0.230	2.558	0.553-11.841			
AGE	0.692	1.011	0.957-1.069			
WBC (≥19600 vs <19600)	0.068	3.022	0.922-9.906			
CRP (≥12.45 vs <12.45)	0.422	1.723	0.457-6.494			
PCT (≥16.575vs <16.575)	0.030	3.902	1.141-13.342	0.127	2.645	0.759-9.213
AST (≥34 vs <34)	0.578	1.457	0.387-5.495			
ALT (≥28 vs <28)	0.961	0.967	0.257-3.646			
Albumin (≥2.8 vs <2.8)	0.635	0.743	0.217-2.537			
AKI	0.136	4.779	0.612-37.340			
CKD	0.143	2.428	0.741-7.959			
DM	0.033	3.800	1.112-12.990	0.067	3.184	0.924-10.974
Presepsin 831	0.020	11.493	1.470-89.846	0.041	8.753	1.093-70.080