Circulating presepsin (soluble CD14 subtype) as a novel marker of mortality in patients treated at medical cardiac intensive care units

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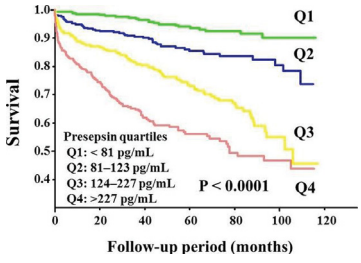
Background: Presepsin, a subtype of soluble CD14, is an inflammatory marker, which largely reflects monocyte activation. The association between presepsin levels and mortality in patients treated at medical cardiac intensive care units (CICUs) remains poorly known.

Objective: We aimed to understand the prognostic value of presepsin levels on admission to medical CICUs for mortality.

Methods: We prospectively studied 1636 heterogeneous patients (median age; 71 years) treated at medical (non-surgical) CICUs. Patients with stage 5 chronic kidney disease (estimated glomerular filtration rate [eGFR] <15 mL/min/1.73 m^2) were excluded. Acute coronary syndrome was present in 46% of the patients, and acute decompensated heart failure in 36%. Upon admission, baseline plasma presepsin levels were measured. The primary endpoint was all-cause death.

Results: During a mean follow-up period of 44.6 months after admission, there were 323 (19.7%) deaths. Patients who died were older (median: 75 vs. 71 years, P<0.0001); had higher levels of presepsin (194 vs. 110 pg/mL, P<0.0001), B-type natriuretic peptide (BNP: 520 vs. 144 pg/mL, P<0.0001), high-sensitivity C-reactive protein (hsCRP: 4.7 vs. 2.0 mg/L, P<0.0001), and sequential organ failure assessment (SOFA) score (3 vs. 2, P<0.0001); and had lower levels of eGFR (55 vs. 69 mL/min/1.73m^2, P<0.0001) and left ventricular ejection fraction (46% vs. 52%, P<0.0001) than those of the survivors. Multivariate Cox regression analyses revealed presepsin levels as independent predictors of all-cause deaths when assessed as either continuous variables (relative risk [RR] 3.33 per 10-fold increment; P<0.0001) or variables categorized according to quartiles (RR quartile 4 vs. 1, 3.60; P<0.0001). Quartiles of presepsin levels were significantly (P<0.0001) associated with increased risk of mortality (Figure). Adding presepsin levels to a baseline model that included established risk factors, BNP, and hsCRP further enhanced reclassification (P=0.009) and discrimination (P=0.0008) beyond that of the baseline model alone.

Conclusions: Circulating concentration of presepsin on admission may be a potent and independent predictor of mortality, and it may improve the risk stratification of patients admitted at medical CICUs.



Presepsin quartiles and mortality