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Multi-marker approach using procalcitonin, presepsin, galectin-3, and soluble suppression of tumorigenicity 2 in sepsis

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Background: Timely diagnosis and risk stratification in sepsis are important to make appropriate and prompt treatment decisions. We investigated the prognostic utilities of emerging biomarkers in septic patients.

Material/methods: In a total of 157 septic patients (112 patients with sepsis; 45 patients with septic shock), procalcitonin (PCT), presepsin, galectin-3, and soluble suppression of tumorigenicity 2 (sST2) were measured. The assay results were analyzed in relation to sepsis severity and 30-day mortality.

Results: PCT, presepsin, galectin-3, and sST2 increased significantly according to the sepsis severity (all $P < 0.01$). PCT, presepsin, galectin-3, and sST2 were all comparable for the prediction of septic shock. Galectin-3 was a risk predictor for 30-day mortality (hazard ratio [HR] = 11.03, 95% confidence interval [CI] = 2.69 - 45.25). The risk of 30-day mortality increased stepwise as the number of biomarkers above cut-offs increased, and the highest risk was observed when all four biomarkers increased (HR = 3.3, 95% CI = 1.3 - 8.5).

Conclusions: This is the first study that demonstrated the utility of PCT, presepsin, galectin-3, and sST2, as a single measurement or combination, for the prediction of disease severity and clinical

outcome in sepsis. Multi-marker approach would be beneficial for the appropriate management of septic patients.