

## Article

# Pentraxin-3 Is A Strong Biomarker of Sepsis Severity Identification and Predictor of 90-Day Mortality in Intensive Care Units via Sepsis 3.0 Definitions

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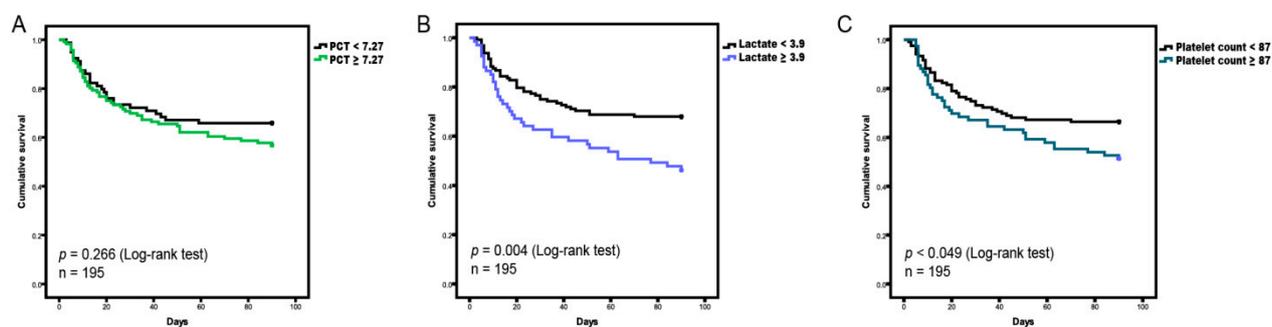
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**Abstract:** Background: Sepsis is the leading cause of mortality in intensive care units (ICUs). However, early diagnosis and prognosis of sepsis and septic shock are still a great challenge. Pentraxin-3 (PTX3) was shown to be associated with the severity and outcome of sepsis and septic shock. This study was to investigate the diagnostic and prognostic value of PTX3 in patients with sepsis and septic shock based on Sepsis 3.0 definitions. Methods: In this single-center prospective observational study, all patients' serum was collected for biomarker measurements within 24 h after admission. Logistic and Cox regression analyses were used to identify the potential biomarkers of diagnosis, severity stratification, and prediction. Results: Serum levels of PTX3 were significantly increased on the first day of ICU admission, while septic shock patients had highest PTX3 levels than other groups. A combination between PTX3 and procalcitonin (PCT) could better discriminate sepsis and septic shock, and PTX3 was an independent predictor of mortality in sepsis and septic shock patients. Conclusion: PTX3 may be a robust biomarker to classify the disease severity and predict the 90-day mortality of sepsis and septic shock based on the latest Sepsis 3.0 definitions.

**Keywords:** Pentraxin-3; sepsis; septic shock; biomarker; prognosis; intensive care units



**Figure S1.** Survival analysis for sepsis patients without or with shock. (A) Kaplan-Meier survival curves for patients between high and low levels of procalcitonin (PCT); the dashed lines represent those with PCT levels above the cutoff value (7.27 ng/mL). (B) Kaplan-Meier survival curves for patients between high and low levels of lactate; the dashed lines represent those with lactate levels above the cutoff value (3.9 mmol/L). (C) Kaplan-Meier survival curves for patients between high and low levels of platelet count; the dashed lines represent those with platelet count levels above the cutoff value ( $87 \times 10^{12}/L$ ).