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Introduction

Pancreatic stone protein (PSP) has recently emerged as a promising biomarker for the early detection of sepsis in both adults and pediatric populations. Early and accurate diagnosis is critical in pediatric sepsis, where clinical presentation may be nonspecific and delayed treatment can lead to poor outcomes.

Methods

In this prospective observational study, we enrolled 99 pediatric patients admitted to the intensive care unit (ICU) with clinical signs and symptoms consistent with systemic inflammatory response syndrome (SIRS), regardless of the presence of associated organ dysfunction. Eligible participants were aged between >1 month and <18 years. Blood levels of pancreatic stone protein (PSP) were measured within 24 hours of ICU admission using a nanofluidic point-of-care immunoassay (abioSCOPE®, Abionic SA, Switzerland).

Results

Patients with sepsis had significantly higher PSP levels compared to those with non-infectious systemic inflammation ($p < 0.001$). The optimal PSP cutoff value for diagnosing sepsis was determined to be 123 ng/mL, yielding a sensitivity of 0.63 (95% CI, 0.43–0.80) and a specificity of 0.89 (95% CI, 0.77–0.95). The area under the receiver operating characteristic curve (AUROC) for PSP was 0.82 (95% CI, 0.73–0.91), indicating good diagnostic performance. In comparison, the AUROCs for procalcitonin and C-reactive protein were 0.70 (95% CI, 0.58–0.82) and 0.72 (95% CI, 0.60–0.84), respectively (figure 1).

Conclusion

Our findings support the potential utility of pancreatic stone protein (PSP) as a biomarker for the early diagnosis of sepsis. PSP demonstrated superior diagnostic performance compared to procalcitonin and C-reactive protein. However, due to residual diagnostic uncertainty associated with a positive PSP result, further studies are warranted—particularly those assessing PSP in combination with other established biomarkers—to better define its role in clinical decision-making.

Figure 1 (A, Area under the receiver operating characteristic curve (AUROC) analysis of pancreatic stone protein (PSP), C-reactive protein (CRP), procalcitonin (PCT), and WBC for the diagnosis of sepsis (see Methods). B, AUROC analysis of PSP plus PCT, PSP plus CRP, and PSP plus WBC for the diagnosis of sepsis. C, AUROC analysis of PSP, CRP, PCT, and WBC for the diagnosis of sepsis according to the Phoenix criteria (see Methods). D, AUROC analysis of PSP plus PCT, PSP plus CRP, and PSP plus WBC for the diagnosis of sepsis according to Phoenix criteria.

