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Procalcitonin

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Keywords

C-protein, infection, organ dysfunction, procalcitonin, sepsis

Comments

In this study, procalatonin (PCT) and C-reactive protein (CRP) lacked sensitivity and specificity for diagnosing infection. PCT was also unable to differentiate between systemic inflammatory response (SIRS), sepsis and severe sepsis. The high PCT levels in non-survivors and patients with four organ dysfunction probably reflects the greater inflammatory response in those patients with septic shock. Several other studies have assessed the value of CRP and PCT in the diagnosis of infection with conflicting results, and unfortunately this paper just adds to the controversy. For the present, these simple markers do not appear to be reliable enough to differentiate SIRS from infection, and so we are left with a high clinical index of suspicion to direct us with management decisions.

Introduction

It has been reported that high plasma PCT levels may be a suitable marker of SIRS, and may therefore aid diagnosis in the critically ill by distinguishing between this and other types of inflammation.

Methods

- A prospective, observational study over a 12 month period was undertaken in a French intensive care unit (ICU)
- PCT and CRP levels were studied over a 5 day period
- A total of 75 patients with severe infection (sepsis [$n = 24$], severe sepsis [$n = 27$], septic shock [$n = 24$]), and 24 patients with SIRS due to other causes (no evidence of infection over the 5 day surveillance period) were assessed

- Evidence of infection was assessed by daily clinical, microbiological and radiological surveillance of all patients. Lumbar puncture, CT scan and echocardiography were performed if indicated

Results

The demographics, including organ dysfunction, were similar for both infected and non-infected patients. Plasma PCT and CRP levels were significantly higher in infected patients on day 1 compared to the SIRS group. Cut-off values of 2 ng/ml PCT and 100 mg/l CRP had a sensitivity and specificity of 65% and 70% PCT, and 74% and 74% CRP respectively. Repeated PCT and CRP levels at days 0, 2 and 4 were significantly greater in patients with septic shock as compared to the three other groups. There were no significant differences in PCT levels between SIRS and sepsis, SIRS and severe sepsis, and sepsis and severe sepsis. However, CRP levels were significantly higher in severe sepsis when compared to SIRS. Higher PCT and CRP levels were seen in non-survivors, and PCT levels were higher in patients with four organ dysfunction.

Additional information

An excellent review examining the biology of PCT with a synopsis of the published work looking at PCT as a marker of the inflammatory response to infection, is published in the same issue of this journal (*Intensive Care Med* 2000, **26**:1193-1200).

References

1. Suprin E, Camus C, Gacouin A, Le Tulzo Y, Lavoue S, Feuillu A, Thomas R: Procalcitonin: a valuable indicator of infection in a medical ICU?. *Intensive Care Med*. 2000, **26**: 1232-1238.