

Plasma Procalcitonin in Sepsis and Organ Failure

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Abstract

Introduction: Because the use of procalcitonin (PCT) as a marker of bacterial infection has been advocated, this study was carried out to determine the usefulness of plasma PCT in the early diagnosis and differentiation of patients with non-infectious systemic inflammatory response syndrome (SIRS) from those with sepsis, and the relationship between plasma PCT level and severity of organ failure. **Materials and Methods:** Thirty-five patients with non-septic SIRS (n = 16), sepsis (n = 7) or septic shock (n = 12) were included in this study. PCT and C-reactive protein (CRP) levels were measured and sepsis-related organ failure assessment (SOFA) score was calculated for these patients. Plasma PCT was measured by immunoluminometric assay. **Results:** The median (minimum, maximum) plasma PCT levels were 0.6 (0.1, 3.4) ng/mL in non-septic SIRS, 5.4 (0.9, 47.7) ng/mL in sepsis and 73.4 (9.6, 824.1) ng/mL in septic shock, and significant differences existed in plasma PCT levels among the three groups. The median (minimum, maximum) CRP levels were 13.8 (0.3, 48.8) mg/dL in non-septic SIRS, 23.3 (1.4, 26.6) mg/dL in sepsis and 17.4 (2.2, 34.1) mg/dL in septic shock, without significant differences among the three groups. A good correlation was found between plasma PCT level and SOFA score ($r_s = 0.766$, $P < 0.0001$), although no correlation was found between CRP level and SOFA score. **Conclusions:** CRP is increased by inflammatory disease as well as infection and is therefore not a good indicator of infection in patients with severe SIRS. On the other hand, PCT is a good indicator of severity of sepsis and organ failure in patients with severe SIRS since PCT levels correlated with sepsis and SOFA scores. PCT level is useful for diagnosis of sepsis and as an indicator of severity of organ failure in patients with SIRS.

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