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Original Research Article

Prognostic Impact of C-Reactive Protein (CRP) and Procalcitonin (PCT) Levels in Patients with Sepsis and Septic Shock

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Abstract:

Introduction: There is limited data on the prognostic value of CRP and PCT in sepsis or septic shock. Therefore, this study aimed to explore the diagnostic and prognostic significance of CRP and PCT in patients with sepsis and septic shock.

Materials and Methods: Total 150 patients with sepsis or septic shock were included. Blood samples were collected on the day of disease onset (day 1), day 3, and 7 for measurement of PCT and CRP.

Results: Out of 150 patients, 72.0% patients presented with a sepsis and 28.0% with a septic shock. Significant positive correlation was observed between SOFA score with serum PCT on day 7 only (r- 0.34, p – 0.03) and with CRP on day 7 only (r- 0.31, p – 0.04). Mortality rate at 30 days at 30 days was 32.0%. PCT was shown to have a good accuracy with regard to mortality on day 7 (AUC with 95% CI: 0.67; 0.46 to 0.82) compared to CRP on day 7 (AUC with 95% CI: 0.54; 0.35 to 0.62).

Conclusion: Procalcitonin (PCT) is a a better indicator in determining severity of infection and the chances of survival for patients with sepsis. PCT is even better than CRP in predicting mortality within 30 days.

Keywords: C-reactive protein, Mortality, Procalcitonin, Sepsis, Septic shock, SOFA score.

Introduction

Sepsis (secondary to infection) and septic shock (sepsis accompanied by hypotension that is difficult to reverse with fluid resuscitation) are common causes a major reason for intensive care unit (ICU) admission and is associated with significant risk of morbidity and mortality. [1] To assess extent of organ dysfunction in sepsis, sequential Organ Failure Assessment (SOFA) score is used. [2] Currently, the diagnosis of such diseases relies on biochemical markers or identification of pathogen through bacterial culture. However, the lack of specificity in these biochemical tests introduces uncertainty into the diagnostic process, presenting a challenge for clinicians. [3]

Bacterial culture has high specificity, but requires an extended incubation period; this leads to treatment delay, as well as antibiotic misuse. [3] Several studies explored novel biomarkers to better assess the risk of mortality in sepsis. However, current guidelines do not yet include inflammatory markers for diagnosis. [4–6]

C-reactive protein (CRP) is a nonspecific acute phase protein and traditional biomarker which increases during sepsis. By activating cytotoxic cascades, CRP is involved in the process of removing microorganisms and necrotic tissue. In clinic routine, CRP is commonly used to diagnose sepsis, assess severity and monitor the therapeutic response. [7] Procalcitonin (PCT) is an important marker for antibiotic treatment. It's higher in fungal, parasitic, and bacterial infections than in viral infections. High early levels of PCT in sepsis have been suggested to be associated with unfavorable prognosis. [2] PCT is also useful for infection diagnosis and antibiotic management.[3] Studies show that changes in PCT and CRP levels are related to prognosis of patients with sepsis. [8] Within a meta-analysis including 9 studies and 1,368 patients, CRP was shown to have a moderate accuracy for the diagnosis of sepsis [area under the curve (AUC) = 0.73], while the diagnostic accuracy of PCT was higher (AUC = 0.85). [9] Use of these parameters may improve accuracy of judgment regarding the prognosis of infection. Thus, this study aimed to investigate the clinical significance of changes in serum PCT and CRP in ICU patients with sepsis or septic shock.

Materials & Methods

The present cross sectional study was conducted among consecutive patients presenting with sepsis or septic shock admitted to the ICU at the tertiary care hospital, Gujarat, from June 2019 to January 2021. Written consent was obtained from all subjects.

Inclusion Criteria: 1) Patients either gender with age more than 18 years admitted with clinical criteria for sepsis or septic shock in ICU; 2) patients who provided written informed consent to participate in the study.

Exclusion Criteria: 1) Bone marrow irradiation, chemotherapy, or radiation therapy within the past six months, 2) Human immunodeficiency virus (HIV) infection or viral hepatitis, and consumption of immunosuppressive medications 3) Pregnant women

The diagnosis of sepsis and septic shock was determined according to the "Third International Consensus Definition for Sepsis and Septic Shock" (i.e., sepsis-3). Accordingly, sepsis was defined as life-threatening organ dysfunction, caused by a dysregulated host response to infection. Organ dysfunction is defined as an increase of ≥ 2 in the Sequential Organ Failure Assessment (SOFA) score. Septic shock was defined as persistent hypotension, despite adequate volume resuscitation, requiring vasopressors to maintain a mean arterial pressure (MAP) ≥ 65 mm Hg and a lactate ≥ 2 mmol/l. [10]

Demographic data, history, clinical examinations, hospital stays, basic investigations, sepsis-related scores were recorded in a prestructured proforma. Whole blood was taken from the subjects for blood culture, complete blood count (CBC), PCT, CRP measurements. Serum was separated from blood cells by centrifugation and stored in 3 plastic tubes at -20˚C for measurements of PCT, and CRP levels. Blood culture to determine bacteraemia was performed. Serum procalcitonin was measured by immunochromatographic assay using a commercially available test kit and interpreted as per manufacturers recommendations. Laboratory investigations were assessed on disease onset (i.e., day 1), as well as on day 3, and 7. Patients categorized into two groups: 1. Sepsis without shock (n -108) and 2. Septic shock (n -42). Outcome was measured on 30th day.

Statistical Analysis: The data was entered in Microsoft Excel 2016 and analyzed using Epi info version 7.1.4.0 Continuous data was presented with mean and standard deviation (SD) while categorical data was presented with frequency and percentage. Chi-square test and Fischer's Excat test were used to compare categorical data and student-t test for continuous data. Multivariate analyses were performed using a logistic regression with a backward elimination method to predict 30-day mortality. p value less than 0.05 was considered as significant.

Result

Total of 150 consecutive patients with sepsis or septic shock were enrolled in the study. Of them, 108 (72.0%) patients presented with a sepsis and 42 (28.0%) with a septic shock on day 1. Baseline characteristics was described in table 1.

Table 1: Comparison of Baseline characteristics between patients with sepsis and septic shock

Baseline characteristics	Sepsis (n-108)	Septic shock (n-42)	p value
Age (years)	63.3 ± 13.4	72.2 ± 15.6	**0.001**
Male	67 (62.0%)	27 (64.3%)	0.07
BMI (kg/m^2)	25.2 ± 7.4	27.43 ± 6.23	**0.03**
HR (/min)	94.2 ± 15.2	101.7 ± 17.3	**0.01**
SBP (mmHg)	102.1 ± 18.9	90.9 ± 16.5	**0.001**
DBP (mmHg)	58.8 ± 10.2	56.4 ± 9.8	0.13
Cardiovascular risk factors			
Hypertension	67 (62.0%)	25 (59.5%)	0.77
Diabetes mellitus	30 (27.8%)	14 (33.3%)	0.51
Hyperlipidemia	28 (25.9%)	13 (31.0%)	0.53
Smoking	28 (25.9%)	12 (28.6%)	0.74
Prior Medical history			
CAD	32 (29.6%)	14 (33.3%)	0.65
AF	27 (25%)	12 (28.6%)	0.66
CKD	22 (20.4%)	8 (19%)	0.85
COPD	19 (17.6%)	7 (16.7%)	0.89
Liver cirrhosis	11 (10.2%)	3 (7.1%)	0.56
Malignancy	27 (25.0%)	16 (38.1%)	0.11
LVEF < 35%	13 (12.0%)	9 (21.4%)	0.22

Mean age in patients with septic shock (72.2 ± 15.6 years) was higher than patients with sepsis (63.3 ± 13.4 years, p – 0.001). BMI, Heart rate and SBP were also significantly higher in patients with septic shock than patients with sepsis. Majority of the patients were males in both groups (62.0% vs. 64.3%). Cardiovascular risk factors such as hypertension, diabetes mellitus, hyperlipidaemia and smoking did not differ among patients with sepsis or septic shock on admission.

Furthermore, the rates of coronary artery disease (29.6% vs. 33.3%; p = 0.65), atrial fibrillation (25.0% vs. 28.6%; p = 0.66), CKD (20.4% vs. 19.0%; p = 0.85), COPD (17.6% vs. 16.7%; p = 0.89), liver cirrhosis (10.2% vs. 7.1%; p = 0.56), and malignancy (25.0% vs. 38.1%; p = 0.11) were comparable in both groups.

Table 2: Comparison of sepsis related data, laboratory investigations and outcome between patients with sepsis and septic shock

Variables	Sepsis (n-108)	Septic shock (n-42)	p value
Sepsis related score			
APACHE II	21.4 ± 5.6	25.5 ± 7.2	**0.001**
SOFA	9.2 ± 2.3	12.4 ± 3.5	**< 0.001**
Infection			
Pulmonary	63 (58.3%)	22 (52.3%)	0.50
Urogenital	13 (12.0%)	3 (7.1%)	0.45
Intra abdominal	12 (11.1%)	6 (14.3%)	0.59
Wound	1 (0.9%)	1 (2.4%)	0.48
Other	19 (17.6%)	9 (21.4%)	0.58
Positive culture	45 (41.7%)	21 (50%)	0.17
Multiple organ support during ICU			
Dialysis during hospitalization	35 (32.4%)	24 (57.1%)	**0.001**
Mechanical ventilation	52 (48.1%)	25 (59.5%)	0.21
Invasive mechanical ventilation	32 (29.6%)	21 (50%)	**0.02**
Investigation			
Creatinine (mg/dl)	1.5 ± 0.3	1.9 ± 0.4	**< 0.001**
CRP on day 1 (mg/l)	102.8 ± 23.4	134.5 ± 23.4	**< 0.001**
CRP on day 3 (mg/l)	70.5 ± 10.5	192.3 ± 10.5	**< 0.001**
CRP on day 7 (mg/l)	52.1 ± 8.9	236.1 ± 8.9	**< 0.001**
PCT on day 1 (ng/ml)	20.3 ± 5.6	38.9 ± 7.8	**< 0.001**
PCT on day 3 (ng/ml)	8.2 ± 2.5	25.3 ± 5.4	**< 0.001**
PCT on day 7 (ng/ml)	5.6 ± 0.8	10.3 ± 2.4	**< 0.001**
Outcome			
ICU stay	14.3 ± 4.6	9.8 ± 3.7	**0.01**
All-cause mortality at 30 days	28 (25.9%)	20 (47.6%)	**0.01**
Primary sepsis-related death at 30 days	18 (16.6%)	15 (35.7%)	**0.02**
Primary non-sepsis-related death at 30 days	10 (9.2%)	5 (11.9%)	**0.85**

SOFA score and APACHE score were higher in patients with septic shock compared to patients presenting with sepsis (SOFA score: 12.4 ± 3.5 vs. 9.2 ± 2.3, p < 0.001; APACHE score: 25.5 ± 7.2 vs. 21.4 ± 5.6, p - 0.001). In both groups (i.e., sepsis and septic shock), a pulmonary infection was the most common focus (58.3% vs. 52.3%), followed by gastrointestinal (11.1% vs. 14.3%) and urogenital infection (12.0% vs. 7.1%). The distribution of the infectious focus did not statistically differ between both groups (p > 0.05 for all infection). The distribution of blood-culture positive sepsis was comparable (41.7% vs. 50%; p = 0.17).

The CRP level among patients with sepsis on day 1, day 3 and day 7 was 102 ± 23.4 mg/l, 70 ± 10.5 mg/l and 52 ± 8.9 mg/l respectively. These values were significantly lower than patients with septic shock (Day 1: 134.1 ± 23.4 mg/l, Day 3: 192.4 ± 10.5 mg/l, Day 7: 236.5 ± 8.9 mg/l, p value < 0.001 for all days).

The PCT level among patients with sepsis on day 1, day 3 and day 7 was 20.3 ± 5.6 ng/ml, 8.2 ± 2.5 ng/ml and 5.6 ± 0.8 ng/ml respectively. These values were significantly lower than patients with septic shock (Day 1: 20.3 ± 5.4 ng/ml, Day 3: 10.3 ± 2.4 ng/ml, Day 7: 236.5 ± 8.9 ng/ml, p value < 0.001 for all days).

All-cause mortality at 30 days was 32.0% (48/150). It was significantly higher in patients with septic shock compared to patients with sepsis (47.6% vs. 25.0%, p – 0.01). Sepsis related mortality rate was also significantly higher in patients with septic shock than sepsis (35.7% vs. 16.6%, p – 0.02).

Table 3: Correlation of SOFA score with PCT and CRP

Investigations	SOFA score	
	Correlation (r)	p value
PCT on day 1 (ng/ml)	0.17	0.12
PCT on day 3 (ng/ml)	0.23	0.07
PCT on day 7 (ng/ml)	0.34	0.03
CRP on day 1 (mg/l)	0.13	0.18
CRP on day 3 (mg/l)	0.19	0.09
CRP on day 7 (mg/l)	0.24	0.04

Positive correlation between SOFA score and serum PCT at day 1 (r- 0.17, p – 0.12), day 3(r- 0.23, p – 0.07) and day 7 (r- 0.34, p – 0.03) was reported but statistically significant on day 7 only. Similarly, positive correlation between SOFA score and serum CRP at day 1 (r- 0.13, p – 0.18), day 3 (r- 0.19, p – 0.09) and day 7 (r- 0.24, p – 0.04) was reported but statistically significant on day 7 only.

Table 4: Baseline and clinical characteristics of the study population grouped into survivors and non-survivors.

Characteristics	Survivor (n-102)	Non survivor (n-48)	p value
Age (years)	62.3 ± 11.5	73.2 ± 14.7	**0.002**
Male	65 (60.2%)	28 (58.3%)	0.64
BMI (kg/m^2)	23.7 ± 8.9	29.87 ± 6.3	**0.002**
HR (/min)	96 ± 15.3	102 ± 18.9	0.06
SBP (mmHg)	102 ± 18.9	90 ± 16.5	**0.01**
DBP (mmHg)	58 ± 10.2	56 ± 9.8	0.24
Cardiovascular risk factors			
Hypertension	61 (56.5%)	31 (64.6%)	0.59
Diabetes mellitus	24 (23.5%)	20 (41.7%)	**0.03**
Hyperlipidemia	26 (24.1%)	15 (31.3%)	0.55
Smoking	26 (24.1%)	14 (29.2%)	0.69
Prior Medical history			
CAD	27 (25%)	19 (39.6%)	0.12
AF	22 (20.4%)	17 (35.4%)	0.07
CKD	16 (14.8%)	14 (29.2%)	0.07
COPD	17 (15.7%)	9 (18.8%)	0.8
Liver cirhossis	9 (8.8%)	5 (10.4%)	0.76
Malignancy	24 (22.2%)	19 (39.6%)	**0.04**
LVEF < 35%	8 (7.8%)	14 (29.1%)	**0.001**
Infection			
Pulmonary	53 (52.0%)	32 (66.7%)	0.11
Urogenital	11 (10.8%)	5 (10.4%)	1.0
Gastro intenstinal	10 (9.8%)	8 (16.67%)	0.28
Wound	1 (1.0%)	1 (2.1%)	0.53
Other	17 (16.7%)	11 (22.9%)	0.37
Positive culture	38 (37.3%)	28 (58.3%)	**0.02**
Severity score			
SOFA	7.8 ± 4.6	15.6 ± 7.8	**< 0.001**
APACHE II	18.4 ± 7.6	27.9 ± 8.9	**< 0.001**
Multiple organ support during ICU			
Dialysis during hospitalization	31 (30.4%)	28 (58.3%)	**0.001**
Mechanical ventilation	47 (46.1%)	30 (62.5%)	0.07
Invasive mechanical ventilation	26 (25.5%)	27 (56.3%)	**0.004**
Investigation			
Creatinine (mg/dl)	1.3 ± 0.3	2.1 ± 0.4	**< 0.001**
PCT on day 1 (ng/ml)	18.4 ± 5.4	32.6 ± 9.8	**< 0.001**
PCT on day 3 (ng/ml)	13.5 ± 5.2	35.7 ± 9.5	**< 0.001**
PCT on day 7 (ng/ml)	2.1 ± 0.9	45.6 ± 7.6	**< 0.001**
CRP on day 1 (mg/l)	113.5 ± 34.5	158.3 ± 59.7	**0.002**
CRP on day 3 (mg/l)	69.9 ± 18.9	132.6 ± 46.7	**< 0.001**
CRP on day 7 (mg/l)	30.4 ± 8.9	93.5 ± 25.6	**< 0.001**

Subjects were older (73.2 ± 14.7 years vs. 62.3 ± 11.5 years, p - 0.002) and had more co-morbidities, including diabetes and malignancy (41.7% vs. 23.5%, p = 0.03; 39.6% vs. 22.0%, p = 0.04;

respectively), than the survivors. Pulmonary infection and gastro intestinal infection were more frequent in the non-survivors (66.7% vs. 52.0%, p – 0.11 and 16.7% vs. 9.8%, p – 0.28); however, this difference was not statistically significant. The severity scores, including SOFA and APACHE II scores were higher in the non-survivor group (15.6 ± 7.8 vs. 7.8 ± 4.6, p < 0.001 and 27.9 ± 8.9 vs. 18.4 ± 7.6, p < 0.001 respectively). Mean PCT in non-survivor group on 1st day, 3rd day and 7th day were significantly higher than patients who survived (Day 1: 32.6 ± 9.8 ng/ml vs. 18.4 ± 5.4 ng/ml, , Day 3: 35.7 ± 9.5 ng/ml vs. 13.5 ± 5.2 ng/ml, Day 7: 45.6 ± 7.6 ng/ml vs. 2.1 ± 0.9 ng/ml, p < 0.001 for all days). This suggests a positive correlation between high PCT values and mortality. Similarly CRP level was also significantly higher in non-survivor group on day 1, 3 and 7 compared to survivor group. Creatinine was also significantly higher in non-survivor group compared to survivor group.

Table 5: Multivariate Logistic regression analysis for 30 day mortality.

Variables	OR (95% CI)	p value
Age (years)	1.04 (1.01–1.34)	**0.04**
SBP (mmHg)	0.87 (0.69–1.17)	0.43
Diabetes mellitus	1.28 (0.95–2.67)	0.08
LVEF < 35%	2.05 (1.38–3.87)	**0.004**
Positive culture	2.38 (1.71–4.52)	**0.002**
SOFA	1.64 (1.21–2.86)	**0.01**
APACHE II	1.52 (1.26–2.12)	**0.02**
Dialysis during hospitalization	0.54 (0.23–1.65)	0.58
Invasive mechanical ventilation	1.15 (0.98–2.54)	0.09
Creatinine (mg/dl)	0.96 (0.76–1.66)	0.13
PCT on day 1 (ng/ml)	0.56 (0.21–1.23)	0.56
PCT on day 3 (ng/ml)	0.89 (0.78–1.56)	0.25
PCT on day 7 (ng/ml)	1.94 (1.45–3.84)	0.01
CRP on day 1 (mg/l)	0.23 (0.11–1.01)	0.78
CRP on day 3 (mg/l)	0.45 (0.33–1.23)	0.10
CRP on day 7 (mg/l)	1.57 (1.31–2.98)	0.02

In the multivariate logistic regression analysis, age, LVEF < 35%, positive culture, SOFA, APACHE II, CRP on day 7 and PCT on day 7 were an independent predictor of 30-day mortality.

Table 6: Comparison of PCT and CRP at days 1, 3, and 7 to discriminate between sepsis and septic shock; non-survivors and survivors

Prediction	PCT [AUC (95 % CI)]	CRP [AUC (95 % CI)]	p-value for AUC difference
Septic shock			
Day 1	0.66 (0.45 to 0.78)	0.41 (0.30 to 0.61)	0.02
Day 3	0.78 (0.51 to 0.89)	0.57 (0.34 to 0.75)	0.04
Day 7	0.83 (0.68 to 0.98)	0.68 (0.52 to 0.86)	0.01
30 day Mortality			
Day 1	0.56 (0.32 to 0.67)	0.47 (0.29 to 0.53)	0.08
Day 3	0.58 (0.29 to 0.74)	0.52 (0.37 to 0.60)	0.2
Day 7	0.67 (0.46 to 0.82)	0.54 (0.35 to 0.62)	0.01

PCT was shown to have good diagnostic accuracy for septic shock on day 7 (AUC with 95% CI: 0.83; 0.68 to 0.98), as compared to day 3 (AUC with 95% CI: 0.78; 0.51 to 0.89) and day 1 (AUC with 95% CI: 0.66; 0.45 to 0.78). Similarly, diagnostic accuracy of CRP for mortality was good on day 7 as compared to day 1 and day 3. PCT has good accuracy compared to CRP.

Similarly, PCT was shown to have good diagnostic accuracy for mortality on day 7 (AUC with 95% CI: 0.67; 0.46 to 0.82), as compared to day 1 (AUC with 95% CI: 0.56; 0.32 to 0.67) and day 3 (AUC with 95% CI: 0.58; 0.29 to 0.74). Similarly, diagnostic accuracy of CRP for mortality was good on day 7 as compared to day 1 and day 3. However, PCT has good accuracy compared to CRP.

Discussion

The present study comprehensively investigates the diagnostic and prognostic role of CRP and PCT in patients admitted with sepsis or septic shock. In the present study, 150 patients were enrolled in the study. Of them, 72.0% patients presented with a sepsis and 28.0% with a septic shock. About 2/3rd patients (62.7%) were males. Other studies by Martin GS et al. [11] and Todi S et al. [12] also found that sepsis tends to be more prevalent in males.

Sepsis vs. Septic Shock

In this study, the levels of CRP and PCT were significantly higher in patients with septic shock compared to patients with sepsis. However, different studies have conflicting findings. Nargis et al. [13] also found significantly higher PCT and CRP values in cases with sepsis, severe sepsis, and septic shock ($p < 0.01$). Lee et al. [6] found that PCT could help differentiate septic shock from sepsis, while CRP was not shown to discriminate septic shock from sepsis. On the other hand, Cui N et al. [3] observed higher CRP levels in the septic shock group, but no difference in PCT levels between sepsis and septic shock groups.

Severity of Sepsis

In the present study, we observed significant positive correlation between SOFA score with serum PCT on day 7 only (r- 0.34, p – 0.03) and with CRP on day 7 only (r- 0.31, p – 0.04). but PCT and CRP levels on initial days (day 1 and day 3) were not significantly associated with SOFA score. PCT was found to be a better indicator of sepsis severity compared to septic shock. Songlin Su et al. reported that positive correlation between PCT and SOFA scores ($r = 0.334$, $P < 0.05$); while CRP levels showed negative correlation with SOFA scores ($r = -0.102$, $P > 0.05$). Huang et al. [14] also found positive statistical correlation between PCT and SOFA score ($r = 0.979$, $p < 0.05$). Silvestre et al. [15] found no association of the CRP concentration on day 1 with the severity of the sepsis. Wang and Chen et al. [16] and Nargis et al. [13] found that PCT was more significantly correlated with the SOFA score compared to CRP. It seems like PCT can be a valuable indicator for evaluating the degree of sepsis.

Mortality

In the present study, mortality rate at 30 days was 32.0% which was significantly higher in patients with septic shock than patients with sepsis (47.6% vs. 25.0%, p – 0.01). A systemic review and meta-analysis study showed mortality ranged from 13% to 69%. [17]

In the present study, CRP level and PCT level among non-survivor group was significantly elevated compared to survivor group. The multivariate logistic regression analysis also reported that age, low LVEF, positive culture, SOFA, APACHE II, CRP on day 7 and PCT on day 7 were an independent predictor of 30-day mortality. PCT was shown to have a good diagnostic accuracy with regard to mortality on day 7 (AUC with 95% CI: 0.67; 0.46 to 0.82) compared to CRP on day 7 (AUC with 95% CI: 0.54; 0.35 to 0.62).

Various studies investigated the prognostic role of CRP and PCT in patients with sepsis with conflicting findings. Ryoo S et al. [2] noted elevated CRP and PCT level in the non-survivor group. Multivariate analysis showed that initial levels of CRP and PCT were not independent prognostic markers. A study performed in pediatrics reported that median CRP and PCT of first day were not associated with mortality.[18] PCT induction occurs at approximately 2–4 hours after the onset of sepsis, and peaks at 24–48 hours. [19] Thus, because CRP elevation is also expected to occur 24–48 hours after the initial inflammatory response4, initial CRP and PCT may not be considered to be useful markers in patients with acute and critical conditions. Koozi et al. [20] found an increased risk of mortality in patients with CRP > 100 mg/l. Lobo SMA et al.[21] reported that increasing CRP levels were associated with more severe organ dysfunction, longer ICU stay, and increased risk of all-cause mortality. Wang et al. [22] demonstrated a reliable prognostic value of the CRP to predict ICU mortality (AUC = 0.65). Liang P et al. [23] demonstrated that especially PCT and NLR were associated with 28-day mortality. Both PCT and NLR revealed a reliable prognostic discrimination (AUC - 0.830 and 0.791) for 28-day all-cause mortality.

Conclusion

Procalcitonin (PCT) is a really helpful marker in determining severity of infection and the chances of survival for patients with sepsis. PCT is better than CRP in predicting mortality within 30 days. Based on this, it's suggested that PCT should be assessed frequently as and when required for sepsis patients who are hospitalized in the ICU.

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