

## Relationship of Blood Plating Gram-positive and Gram-negative Bacteria with Procalcitonin and C-reactive Protein in Serum of Sepsis Patients

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**Introduction.** Procalcitonin (PCT) and C-reactive protein (CRP) are well-known inflammation markers, which have a significant rise in serum of sepsis patients. Nonetheless, connection of these markers to bacterial flora in blood plating is different in various studies.

**Aim, Materials and Methods.** The objective of the study is to determine the PCT and CRP levels in the blood of sepsis patients and to clarify the relationship with bacterial flora in blood plating.

A retrospective analysis of 120 sepsis patients' medical records was carried out. The study included patients with positive blood platings, who were hospitalized at Riga Eastern Clinical University Hospital "Gailezers" in the period from 2015 to 2016. Levels of PCT and CRP were assessed at the same time with the Gram-positive (GP) or Gram-negative (GN) bacteraemia. The data was described using mean value (M) with standard deviation (SD), median (Me) with interquartile scattering (IQR), asymmetric coefficient (A),  $p < 0.05$  was accepted as statistically significant difference. In order to carry out this research, permission from the RSU Ethics Committee was obtained.

**Results.** During summarization of the results, the median patient age was  $M = 68.15$ ;  $SD \pm 11.56$  years. The number of hospital bed days  $Me = 11.00$  days; interquartile scattering (IQR 16.75). Gathering all the results from patients' analyses, CRP median value (Me) was 153.48 mg/L (IQR 180.82). PCT  $Me = 17.85$  ng/mL (IQR 16.73). More than half of the patients samples - 78 (65%) developed Gram-positive (GP) bacteria in the blood plating, but in case of 42 (35%) patients - Gram-negative (GN) bacteria grew. For patients GP blood plating ( $n = 78$ ) CRP, the median (Me) was 155.06 mg/L; asymmetric coefficient (A) = 0.27 (IQR 167.97), respectively  $p = 0.09$ . PCT  $Me = 26.09$  ng/mL, A = 0.27 (IQR 20.65),  $p = 0.11$ . For patients with GN blood plating ( $n = 42$ ) CRP  $Me = 13.55$  mg/L, A = 0.36 (IQR 169.42),  $p = 0.25$  and PCT  $Me = 17.83$  ng/mL, A = 0.36 (IQR 30.94),  $p = 0.18$ . For patients GP blood plating the median of hospital day number was  $Me = 12.50$  (IQR 18.00). Respectively, for patients with GN blood plating the number of hospital days was  $Me = 9.00$  (IQR 14.00),  $p = 0.150$ .

**Conclusions.** CRP and PCT levels in serum are higher in patients with GP sepsis than in those with GN sepsis. These markers could prognostically indicate a GP bacterial flora being sepsis initiator; however, these results could change depending on patient sample size.