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Assessment of biomarkers in early-onset neonatal sepsis among preterm infants

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INTRODUCTION: Neonatal sepsis is a potentially fatal condition with nonspecific clinical signs and high morbidity and mortality, particularly among preterm infants. Confirmatory tests for differential diagnosis may be time-consuming, leading to early antibiotic use with the associated risks of adverse effects and selection of new resistant bacterial strains. This study aimed to assess early biomarkers of neonatal sepsis. **METHOD:** This observational cross-sectional study used umbilical cord blood samples to analyze biomarkers of neonatal sepsis, C-reactive protein (CRP), and leukocyte counts. The sample comprised 50 neonates born at less than 37 weeks of gestation: 25 with infectious risk and 25 without infectious risk (controls). All were born at Hospital da Mulher de São Bernardo do Campo between February 2024 and April 2025. **RESULTS:** Mean maternal age was 29 ± 5 years in the risk group and 28.4 ± 9.4 years in the group without risk ($p=0.902$). Mean neonatal weight was $2,100 \pm 450$ g in the risk group and $2,090 \pm 694$ g in the group without risk ($p=0.979$). Total leukocyte counts were also similar between groups, averaging $8,308 \pm 1,627$ in the risk group and $9,140 \pm 2,911$ in the group without risk ($p=0.596$). The mean Rodwell score was 0.6 ± 0.9 in the risk group and 0.2 ± 0.4 in the group without risk ($p=0.406$). CRP concentrations were 0.288 ± 0.176 in the risk group and 1.362 ± 2.58 in the group without risk ($p=0.406$). Finally, NGAL gene expression levels were 0.0025 ± 0.0045 in the risk group and 0.00773 ± 0.010 in the group without risk ($p=0.344$). **DISCUSSION:** No statistically significant differences have been found to date among the biomarkers assessed, unlike the findings of Midan et al. (2022). This may be because the sample analyzed thus far ($n=10$) is insufficient for broader conclusions. NGAL analysis of the remaining viable samples collected to date is currently underway. **CONCLUSION:** The absence of significant differences between groups for the variables analyzed highlights the importance of expanding the study and including other, more sensitive and specific biomarkers to assess the occurrence of early-onset neonatal sepsis in preterm infants.

KEYWORDS: Biomarkers; Neonatal sepsis; Preterm infant.