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NEUTROPHIL-LYMPHOCYTE RATIO IN SURGICAL PATIENTS WITH NEONATAL SEPSIS

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Background: Neonatal sepsis is a leading cause of mortality among newborns; approximately 2–2.5% of newborns develop sepsis, with a mortality rate ranging from 11% to 19%. Early diagnosis and treatment of neonatal sepsis help prevent severe, life-threatening complications and, consequently, reduce mortality. Sepsis is a systemic inflammatory response syndrome triggered by an infection; neutrophils and lymphocytes play a crucial role in the immune system's defense against infection. Clinical studies have demonstrated that the neutrophil-to-lymphocyte ratio (NLR) serves as a prognostic indicator for sepsis. Furthermore, the NLR is considered a more significant marker than the absolute counts of neutrophils or lymphocytes alone, as it incorporates data from both cell types. Numerous epidemiological and meta-analysis studies have shown that the NLR can be a useful prognostic indicator for sepsis, and that patients with high NLR levels may be at a higher risk of an unfavorable outcome.

Case presentation: Most studies regarding the relationship between the Neutrophil-to-Lymphocyte Ratio (NLR) and sepsis have been conducted in adults. Therefore, we decided to conduct a study involving patients with neonatal sepsis who underwent surgery for abdominal pathology. Our findings indicate that patients who exhibited a high NLR during the first days of life faced a greater risk of adverse outcomes and subsequent sepsis-related complications. Consequently, we believe that the NLR should be determined during every routine blood analysis in newborns; this process is non-invasive—posing virtually no risk of iatrogenic anemia—and requires no additional human or material resources.

Conclusion: The NLR, calculated based on a complete blood count, can serve as a simple and relatively inexpensive alternative marker for neonatal sepsis—particularly in developing countries. Sepsis caused by microbial infection can lead to an increase in the neutrophil count and a decrease in the lymphocyte count, suggesting that patients with sepsis may exhibit higher NLR levels.

Keywords: The neutrophil-to-lymphocyte ratio, Newborn, Neonatal sepsis, Abdominal pathologies