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PRACTICAL SIGNIFICANCE OF INNOVATIVE BIOMARKERS IN DIAGNOSING SUSPECTED EARLY NEONATAL SEPSIS IN NEONATES AT ≥35 WEEKS GESTATION

Khatuna Lomauri, **Bela Bochorishvili**
Department of Neonatology, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia

Neonatal sepsis remains one of the leading causes of morbidity and mortality in newborns. Its timely diagnosis still represents a major clinical challenge. The integration of innovative biomarkers into clinical practice guidelines may facilitate the early verification of neonatal sepsis, reduce the need for unnecessary antibiotic therapy, and improve overall clinical outcomes. Currently used conventional diagnostic methods for sepsis, such as blood culture, complete blood count, and C-reactive protein (CRP) have multiple limitations in terms of both specificity and sensitivity. Recent studies have demonstrated the diagnostic potential of innovative biomarkers, including interleukin-6 (IL-6) and presepsin (sCD14-ST), in this regard. Objective: The aim of this study is to evaluate the role of innovative biomarkers in the diagnosis of suspected early-onset neonatal sepsis among newborns with a gestational age of ≥35 weeks. Methods: The study focuses on the application of innovative biomarkers, including interleukin-6 (IL-6), interleukin-8 (IL-8), and presepsin (sCD14-ST) complemented by combined "omics" strategies (proteomics). Results: Determining innovative biomarkers (including IL-6, IL-8, presepsin, and procalcitonin) enables the identification of neonates with suspected early-onset sepsis within a shorter time interval, helping to avoid unnecessary antibiotic administration. Implementation of these findings may also positively impact treatment-related costs. Conclusion: The use of innovative biomarkers in the early diagnosis of neonatal sepsis represents an important advancement in modern neonatology. Although their widespread clinical implementation is still under investigation, current evidence demonstrates that this approach significantly improves diagnostic accuracy, accelerates the initiation of treatment, and ultimately enhances neonatal survival rates.

Keywords: Innovative biomarkers, early-onset neonatal sepsis, interleukin-6, interleukin-8, presepsin, procalcitonin.