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Editorial

Role of Biomarkers in Neonatal and Pediatric Sepsis

Avanthika Chaithanya*

Department of Paediatrics, Karnataka Institute of Medical Sciences, India

***Corresponding Author:** Avanthika Chaithanya, Department of Paediatrics, Karnataka Institute of Medical Sciences, India.

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Sepsis is a severe public health issue that affects children all around the world. Because the treatment recommendations emphasise early detection, there is interest in identifying sepsis biomarkers, with diagnostic biomarkers receiving the greatest attention. These biomarkers can provide information on the likelihood of a poor sepsis outcome, the risk of sepsis-related organ dysfunction, and subgroups of sepsis patients that share underlying biological traits that may be susceptible to targeted therapeutics [1].

Current sepsis treatment guidelines stress a high index of suspicion for early identification of sepsis and prompt antibiotic therapy as critical concepts for better outcomes [2]. As a result, sepsis biomarkers, which give information on how to apply treatment guidelines, have sparked a lot of interest. When examining "sepsis biomarkers," it's critical to examine the clinical context as well as the information sought from the biomarker data [3].

This biomarker information can help distinguish people who have an infection from those who have a sterile source of systemic inflammation as the underlying cause of fever [4]. Furthermore, biomarkers can help doctors distinguish between those who have a bacterial illness and those who have a viral infection, which can assist them decide whether or not to provide antibiotics. Procalcitonin, despite its flaws, has become a commonly utilised biomarker in both ambulatory and inpatient settings to address these issues [4,5].

Clinical decision-making, resource allocation, quality improvement activities, and research all benefit from prognostic enrichment. While several biomarkers have been studied to predict the likelihood of a bad outcome from sepsis, only a handful have been confirmed in a rigorous enough way to warrant clinical implementation as a predictive enrichment technique [6]. The Pediatric Sepsis Biomarker Risk Model (PERSEVERE) uses a panel of blood protein biomarkers that are obtained within 24 hours after a sepsis diagnosis to calculate the baseline risk of death in critically unwell infants with septic shock [7,8].

Biomarkers are still being used to detect which people have sepsis, which is an important and well-recognized field of research. The discovery and development of biomarkers for prognostic and predictive enrichment among patients with sepsis is also significant, although less widely known [9]. In the paediatric sector, this topic has advanced significantly in recent years. While there is still a lot of work to be done in terms of validation and development, biomarkers for prognostic and predictive enrichment have the potential to bring precision medicine to the bedside of children with sepsis [10]. Enhancing clinical trial design, developing more focused medicines, and adding biological precision to quality improvement initiatives are ways we can potentially use biomarkers as a prognostic indicator widely in pediatric sepsis cases [11].

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