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Profile of interleukin for differential diagnosis of sepsis and other diagnoses in neonates.

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Abstract

Neonatal sepsis constitutes a life threatening condition with very few decisive diagnostic methods. The authors aim with this review is to map and synthesize the existing evidence on the use of cytokines as biomarkers for the differential diagnosis of neonatal sepsis and other clinical conditions in newborns. The review will systematically identify the types of biomarkers studied, their diagnostic accuracy, and the clinical contexts in which they have been applied.

The expected results include a comprehensive overview of the cytokines most frequently evaluated for neonatal sepsis, their reported diagnostic performance, and the gaps in current evidence. With these findings, the authors aim to inform clinical practice and guide future research on inflammatory biomarkers in neonatal care.

Steps

1 We will conduct a systematic literature search in the PubMed, EMBASE, Scopus, BIREME, and Scielo databases with the aim of mapping the available scientific evidence on the use of interleukins and other cytokines in the differential diagnosis of sepsis and other diagnoses in newborns. This study is a scoping review, designed to identify, describe, and synthesize the existing body of evidence, with no restriction regarding the date of publication.

The guiding research question was structured using the PCC strategy (Population: newborn; Concept: cytokines; Context: sepsis and differential diagnosis), considering newborns as the population, the use of cytokines/interleukins as the concept, and neonatal sepsis and differential diagnosis with other neonatal clinical conditions as the context. Based on this framework, the search will focus on studies that evaluate the role of these molecules as auxiliary tools in the diagnostic process.

Controlled descriptors and free-text terms related to newborns, cytokines, interleukins, neonatal sepsis, and differential diagnosis will be used, combined using Boolean operators AND and OR, with adaptation of the search strategy according to the specific syntax of each database. Searches will be conducted using English-language terms, respecting available controlled vocabularies when applicable.

Original published studies involving a neonatal population, defined as newborns, that evaluate the measurement, expression, or use of interleukins or cytokines in the context of the diagnosis or differential diagnosis of neonatal sepsis in comparison with other clinical conditions will be included. Observational or experimental studies presenting quantitative data will be considered eligible, allowing analysis of the role of these molecules in the diagnostic process. No restrictions will be applied regarding language or year of publication.

Review articles, editorials, letters to the editor, clinical guidelines, conference abstracts, and case reports will be excluded, as well as studies conducted exclusively in adult populations, animal or in vitro experimental studies, or studies that do not address the use of cytokines/interleukins in the neonatal diagnostic context. Cited references can be used if are considered in inclusion criteria.

Study selection will be performed through the screening of titles and abstracts and, when necessary, full-text review. This process will be conducted by two independent reviewers, blinded to each other's decisions, using the Rayyan platform for reference management, duplicate identification, and screening organization. In cases of disagreement, a third reviewer will be consulted to resolve discrepancies.

2 Following study selection, all included articles will be read in full for data extraction. Reviewers will aim to identify and systematize information regarding the cytokines and interleukins evaluated, characteristics of the studied population, clinical context, comparative groups used in the differential diagnosis, main findings related to diagnostic performance, and limitations reported by the authors.

3 For data synthesis, included studies will be organized into tables in accordance with the PRISMA-ScR recommendations, including information such as author, year of publication, country, study design, neonatal population characteristics, cytokines/interleukins analyzed, diagnostic context, main findings, and conclusions. Results will be presented descriptively, allowing the mapping of existing evidence and the identification of gaps in the literature regarding the use of cytokines in the differential diagnosis of neonatal sepsis.

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