ACCURACY AND SAFETY OF PRESEPSIN AND OTHER BIOMARKERS IN THE DIAGNOSIS, EXCLUSION, AND PROGNOSIS OF NEONATAL SEPSIS

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Sepsis is an important cause of neonatal morbidity and mortality and late neurodevelopmental impairment, caused by vertically transmitted microorganisms by the mother, requiring antibiotic therapy within the golden hour in critically ill infants for better outcome. Thus, early diagnostic testing is crucial to avoid the indiscriminate use of antibiotics and reduce mortality in true sepsis. The gold standard for diagnosis is blood culture and infection markers, such as C-reactive protein (CRP) and procalcitonin (PCT), associated with risk factors and clinical signs. Current scientific evidence reports more efficient and earlier biomarkers, such as presepsin, an N-terminal fragment of soluble CD14. Thus, the objective of this study is to evaluate the accuracy and safety of the measurement of presepsin and other biomarkers in the diagnosis, exclusion and prognosis of neonatal sepsis. This is a literature review with a search for articles published in the last 7 years in the Scientific Electronic Library Online (SciELO), Public Medicine (PubMed) and Virtual Health Library (VHL Health) databases, using the Health Sciences Descriptors (DeCS) "Biomarkers", "Early Diagnosis" and "Neonatal Sepsis". Original works were included, in English, and articles unavailable in full were excluded, which resulted in 5 articles selected for the production of this work. The result of the blood culture takes time and being negative does not exclude sepsis in a compatible clinical picture, it may present false negative results after maternal use of antibiotics and false positives due to contamination of the sample. CRP and PCT levels may have a physiological increase in the first 48-72 hours of life due to non-infectious inflammatory conditions. In addition, neonates with favorable clinical conditions and/or risk factors for sepsis are treated with preventive antibiotic therapy during the delay in blood culture, which results in risks such as the emergence of resistant bacteria, alteration of the microbiome from newborn to infancy, late-onset sepsis, necrotizing enterocolitis, bronchopulmonary dysplasia, asthma, obesity, and food allergies. Presepsin is released in serum by phagocytes, in response to stimulation by pathogens and emerges as a biomarker of high sensitivity and specificity for early diagnosis of sepsis in neonates, as it is not modified by other perinatal inflammatory factors, it can be measured by point-of-care reading method which allows almost immediate results and its accuracy is not affected by gender and gestational age, in addition to the possibility of the sample being umbilical cord blood from newborns with risk factors for neonatal sepsis. Its values are almost undetectable in healthy patients and markedly elevated within 24 hours after infection, with regression as early as the first day of antibiotic treatment, which allows monitoring of the clinical response, even before the result of the culture. Therefore, presepsin is a promising innovation for the management of neonates with risk factors for sepsis and their antibiotic therapy, but more clinical trials and multicenter studies are needed for its consolidation in care protocols.

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