

Early Detection of Neonatal Sepsis: Critical Appraisal

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The current paper provides a critical appraisal of literature on the topic.

Nakstad, B., Sonerud, T., & Solevåg, A. L. (2016). Early detection of neonatal group B streptococcus sepsis and the possible diagnostic utility of IL-6, IL-8, and CD11b in a human umbilical cord blood in vitro model. *Infection and Drug Resistance*, 9, 171-179.

The authors conducted a research to establish the viability and sensitivity of biomarkers for initial diagnosis of neonatal sepsis from group B streptococci (GBS). An additional objective was to appraise the usability of blood from the human umbilical cord (HUCB) to achieve the above. The researchers utilized two strains of GBS, one extracted from a patient (GBS III) while the other was a commercially available strain (GBS Ia). Umbilical blood specimen from fit pregnant women were prompted for two hours with either strain. Unstimulated blood served as the control sample. Both leukocyte surface and soluble markers were used in the experiment. To determine the specificity and sensitivity of the biomarkers to studied GBS serotypes, researchers calculated the area under the ROC curve (AUC).

Highest AUC values were observed for GBS III. IL-6 and -8 had the highest specificity and sensitivity for both serotypes, strongly suggesting these biomarkers could be effective in early detection of neonatal GBS. Additionally, the HUCB model provided a non-invasive diagnostic alternative. Nevertheless, there are some weaknesses and gaps in the evidence. To begin with, artificial preparation of GBS Ia may have attenuated its pathogenicity. Secondly, the researchers did not establish biomarker responses with leukocyte concentrations in the HUCB, which are individual specific. Thirdly, the study excludes the possibilities of organ involvement in sepsis as the researchers do not analyze *in vivo* and

inflammatory responses. Lastly, umbilical blood was harvested from healthy term pregnancies. As such, the results may not be applicable for premature neonates.

The importance of early diagnosis of neonatal sepsis cannot be overemphasized. The study has highlighted the potential of biomarkers in achieving this early diagnosis. Nonetheless, further research is needed in this field, particularly in investigating inflammatory responses.

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References

- Nakstad, B., Sonerud, T., & Solevåg, A. L. (2016). Early detection of neonatal group B streptococcus sepsis and the possible diagnostic utility of IL-6, IL-8, and CD11b in a human umbilical cord blood in vitro model. *Infection and Drug Resistance*, 9, 171-179.

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