



Philippine Children's Medical Center

THE UTILIZATION OF MEAN PLATELET VOLUME AS INDICATOR OF EARLY ONSET NEONATAL SEPSIS: A SYSTEMATIC REVIEW AND META-ANALYSIS

Ma. Aileen Bianca R. Bose-Armeña, MD
Sheila Ann D. Masangkay, MD

Introduction:

Neonatal sepsis continues to be a major problem worldwide. Blood culture is the gold standard in its diagnosis. However, due to its limitations, other parameters—including the mean platelet volume (MPV), are being used as early screening tools. Several studies have evaluated its clinical utility, however, there are still a lot of conflicting reports.

Objectives:

1. To determine the sensitivity, specificity, and likelihood ratio of MPV as indicator of early onset neonatal sepsis (EONS)
2. To compare the pooled MPV estimate of neonates with EONS to those without.

Methodology:

A literature search of observational studies from 2000 to 2020 in PubMed, Google Scholar, HERDIN, and Cochrane Library, and international clinical practice guidelines (WHO) was done. Risk assessment was done using the Newcastle-Ottawa Quality Assessment Scale (NOS). Standard mean difference (SMD) for the analysis of MPV values was presented using Forest plots.

Results:

Ten studies on 654 neonates with EONS were included. The SMD of MPV was higher in patients with EONS compared to controls (SMD = 1.87; 95% CI: 1.06 – 2.67; $p < 0.0001$). The sensitivity and specificity range from 71 to 97.8% and 32 to 100%, respectively. Meanwhile, the likelihood ratio of a positive test ranges from 1.18 to 5.9.

Conclusion:

This meta-analysis showed that the MPV is significantly higher in patients with EONS. However, more studies with larger sample sizes should be conducted to assess its clinical value and to set at standard cut-off value of MPV.

Keywords:

early-onset neonatal sepsis, mean platelet volume, mean difference, meta-analysis