RESEARCH PAPER

Correlation of Platelet Count and Platelet Indices with Neonatal Sepsis-Diagnostic and Prognostic Indicator

Tayyaba Aslam *[1], Aafia Khalid [2], Maqsood Ahmad [3], Nadeem Shahzad [4], Aimen Sajjad [5], Muhammad Sohail Shahzad [6]

[1] BSc, MBBS, FCPS, Senior Registrar Pediatric Medicine Central Park Teaching Hospital Lahore
[2] BSc, MBBS, FCPS, Senior Registrar Pediatric Medicine Sahiwal Teaching Hospital, Sahiwal
[3]MBBS, FCPS, PGPN Consultant Pediatrician THQ Haveli Lakha
[4]MBBS, FCPS Pediatric Medicine, Senior Registrar Cheema Heart Hospital, Gujranwala
[5]MBBS, FCPS Pediatrics, MRCPCH, Assistant Professor, Pediatrics Central Park Medical College and Teaching Hospital, Lahore
[6]MBBS, FCPS Pediatric Assistant Professor Department of Pediatric Central Park Teaching Hospital Lahore
Correspondence to Tayyaba Aslam, Email: tayyabaaslam777@gmail.com

Received: 1st Jan, 2026; Revised: 29th Feb 2026; Accepted: 3 April, 2026; Available Online:

ABSTRACT

Background: Neonatal sepsis remains a leading cause of morbidity and mortality, yet early diagnosis is challenging due to nonspecific clinical signs and delayed culture results.

Objective: To evaluate the diagnostic and prognostic correlation of platelet count and platelet indices with neonatal sepsis.

Study Design & Setting: Comparative cross-sectional study conducted over 6 months in the NICU and postnatal wards of Central Park Teaching Hospital Lahore

Methodology: A total of 120 neonates with suspected sepsis were enrolled by consecutive sampling. Blood cultures, CRP, and complete blood count with platelet indices (TPC, MPV, PDW, PCT) were obtained at presentation. Outcomes were survival vs. death during index admission. Correlations (r), group comparisons, and ROC analyses were performed (α=0.05).

Results: Sepsis cases (n=82) had lower TPC (162.5±74.3 vs. 238.4±86.2×10⁹/L) and PCT (0.18±0.07 vs. 0.23±0.08%), with higher MPV (10.9±1.7 vs. 9.2±1.3 fL) and PDW (17.6±2.5 vs. 14.8±2.1%) than non-sepsis (n=38), all p≤0.011. Culture-positive neonates (n=64) showed lower TPC and higher MPV/PDW than culture-negative (all p≤0.014). TPC correlated negatively with culture positivity (r=−0.46, p<0.001), CRP (r=−0.41, p<0.001), and mortality (r=−0.39, p=0.002); MPV and PDW correlated positively with these markers (r=0.31–0.42, all p≤0.006). ROC AUCs: TPC 0.76 (cut-off ≤190×10⁹/L; Se 72%, Sp 68%), MPV 0.73 (≥10.1 fL; Se 70%, Sp 63%), PDW 0.71 (≥16.1%; Se 69%, Sp 61%), PCT 0.68 (≤0.19%; Se 62%, Sp 66%). Non-survivors (n=22) had lower TPC and PCT and higher MPV/PDW than survivors (all p≤0.021).

Conclusion: Platelet count and indices (MPV, PDW, PCT) were significantly correlated with sepsis, inflammatory burden, and mortality, demonstrating moderate diagnostic accuracy and prognostic value in neonatal sepsis.

Keywords: C-reactive protein, Mean platelet volume, Neonatal sepsis, Platelet count, Platelet distribution width, Plateletcrit, Prognosis, ROC analysis.

How To Cite This Article: Aslam T, Khalid A, Ahmad M, Shahzad N, Sajjad A, Shahzad Ms. Correlation Of Platelet Count And Platelet Indices With Neonatal Sepsis-Diagnostic And Prognostic Indicator. Int J Drug Deliv Technol. 2026;16(26s):1058-1063. Doi: 10.25258/ijddt.16.26s.113

Source of support: Nil.

Conflict of interest: None

INTRODUCTION

Neonatal sepsis continues to be a major cause of morbidity and mortality in newborns, particularly in developing countries.[1] Defined as a systemic infection occurring in the first 28 days of life, neonatal sepsis may be classified into early-onset sepsis, usually acquired vertically from the mother, and late-onset sepsis, which is often hospital- or community-acquired.[2,3] Platelets, traditionally recognized for their role in hemostasis and thrombosis, have increasingly been implicated in the host immune response. They are not only passive participants in clot formation but also active modulators of inflammation and infection.[4] Platelet activation, adhesion, and interaction with leukocytes are now known to play essential roles in the body's defense mechanisms. Alterations in platelet count and platelet indices, such as mean platelet volume (MPV), platelet distribution width (PDW), and plateletcrit (PCT), reflect the dynamic changes occurring in the hematopoietic and immune systems during infection.[5]

**Author for Correspondence: tayyabaaslam777@gmail.com*

In neonatal sepsis, thrombocytopenia is one of the most common hematological abnormalities observed. It may result from increased peripheral destruction due to endotoxins, immune-mediated mechanisms, or bone marrow suppression in response to systemic infection.[6] Several studies have highlighted the diagnostic utility of platelet count in neonates with sepsis, showing its association with both disease occurrence and severity. However, platelet count alone may not sufficiently capture the complexity of platelet kinetics, and therefore additional indices such as MPV, PDW, and PCT are being explored to enhance diagnostic accuracy.[7,8]

Mean platelet volume (MPV) is considered a marker of platelet activation and turnover, with elevated values often indicating increased platelet destruction or consumption in sepsis. Platelet distribution width (PDW) reflects the variability in platelet size, which tends to increase in conditions with active platelet release and heterogeneity, such as infection.[9] Plateletcrit (PCT), analogous to hematocrit for red cells, provides an estimate of the total platelet mass and can also be altered in septic states. Collectively, these indices provide a more comprehensive profile of platelet activity and function, potentially serving as cost-effective, rapid, and widely available biomarkers in neonatal sepsis.[10]

The correlation between platelet parameters and neonatal sepsis is therefore of significant clinical relevance. By analyzing these simple hematological markers, clinicians may gain early insights into the presence and progression of sepsis, complementing conventional laboratory and microbiological investigations. Moreover, the evaluation of platelet indices offers an additional perspective on the pathophysiological changes occurring in neonates with infection, reflecting both diagnostic and prognostic aspects of the disease.

MATERIALS AND METHODS

This comparative cross-sectional study was conducted in the Neonatal Intensive Care Unit and postnatal wards of Central Park Teaching Hospital Lahore over a 6 month period from July 2025 to December 2025 and included 120 neonates who fulfilled the predefined criteria for suspected sepsis. Consecutive sampling was used, and all eligible neonates admitted with clinical features suggestive of sepsis such as temperature instability, feeding intolerance, respiratory distress, apnea, lethargy, irritability, poor perfusion, hypotension, or unexplained jaundice were enrolled after obtaining written informed consent from parents or guardians. Neonates with major congenital anomalies, chromosomal disorders, severe perinatal asphyxia (Apgar <3 at 5 minutes), those who had received platelet transfusion within 72 hours prior to sampling, and those with known maternal immune thrombocytopenia were excluded. Sepsis was classified as early-onset when presentation was within 72 hours of life and late-onset when presentation was after 72 hours. Culture-positive sepsis was defined when a pathogenic organism was isolated from blood culture, and culture-negative probable sepsis was defined when clinical features and supportive laboratory parameters were present with sterile cultures.

For each enrolled neonate, a detailed perinatal history and examination were recorded, and laboratory sampling was performed at presentation before administration of antibiotics whenever feasible. Two milliliters of venous blood were collected aseptically; 1 mL was inoculated into pediatric blood culture bottles for automated culture, and 1 mL was placed in EDTA tubes for complete blood count and platelet indices. Platelet count, mean platelet volume (MPV), platelet distribution width (PDW), and plateletcrit (PCT) were measured on a standardized 5-part automated hematology analyzer that was calibrated as per manufacturer recommendations; internal quality controls were run daily and were within acceptable ranges during the study period. C-reactive protein was measured using a latex agglutination or immunoturbidimetric assay available in the institutional laboratory, and additional sepsis screen parameters such as total leukocyte count, absolute neutrophil count, and immature-to-total neutrophil ratio were recorded. A repeat complete blood count with platelet indices at 48–72 hours of admission was obtained when clinically indicated to evaluate dynamic changes. The primary diagnostic objective was to assess the correlation of platelet count and indices with confirmed neonatal sepsis and to determine their discriminatory performance against blood culture results. The prognostic objective was to evaluate the association of baseline platelet parameters with adverse outcomes, which were mortality during the index admission, need for vasoactive support, mechanical ventilation, and length of NICU stay.

The planned sample size was 120. It was calculated using a two-sided α=0.05 and 80% power, assuming an anticipated correlation coefficient of r=0.25 between a key platelet index (MPV) and sepsis status; the minimum required sample was 109 and was inflated by ~10% for attrition and incomplete records to reach 120.

Data were entered contemporaneously and were double-checked for completeness. Continuous variables were tested for normality; means with standard deviations or medians with interquartile ranges were reported as appropriate. Group comparisons between septic and non-septic or survivor and non-survivor groups were performed using Student's t-test or Mann–Whitney U test, while categorical variables were compared using chi-square or Fisher's exact test. Correlations between platelet parameters and sepsis severity proxies were assessed using Pearson or Spearman methods. Receiver operating characteristic analysis was used to evaluate the diagnostic performance of platelet count, MPV, PDW, and PCT with area under the curve estimation and optimal cut-offs determined by the Youden index. A p-value <0.05 was considered statistically significant. Ethical approval was obtained from the institutional review board, and confidentiality was maintained throughout the study

where $A_C(0)$ is the absorbance of the control at t=0 min,

$A_A(t)$ is the absorbance of the reaction solution over a given time interval.

RESULTS

Table 1 shows that out of 120 neonates, 68 (56.7%) were males and 52 (43.3%) were females. The mean gestational age was 35.8 ± 2.9 weeks, and the mean birth weight was 2.49 ± 0.64 kg. Early-onset sepsis was present in 47 (39.2%) cases, while late-onset sepsis was more frequent in 73 (60.8%). Blood culture was positive in 64 (53.3%) and negative in 56 (46.7%) neonates. Overall, 98 (81.7%) neonates survived, whereas 22 (18.3%) expired.

Table 1. Demographic and Clinical Characteristics of Neonates (n = 120)

Variable	Category	n (%)
Gender	Male	68 (56.7)
	Female	52 (43.3)
Gestational Age (weeks)	Mean ± SD	35.8 ± 2.9
Birth Weight (kg)	Mean ± SD	2.49 ± 0.64
Type of Sepsis	Early-onset (<72 h)	47 (39.2)
	Late-onset (>72 h)	73 (60.8)
Culture Result	Positive	64 (53.3)
	Negative	56 (46.7)
Outcome	Survived	98 (81.7)
	Expired	22 (18.3)

Table 2. Platelet Count and Platelet Indices in Neonates with and without Sepsis

Table 2 shows that the mean platelet count was significantly lower in neonates with sepsis (162.5 ± 74.3 ×10⁹/L) compared to those without sepsis (238.4 ± 86.2 ×10⁹/L). Mean platelet volume was higher in the sepsis group (10.9 ± 1.7 fL) than in the non-sepsis group (9.2 ± 1.3 fL). Platelet distribution width was also increased in sepsis (17.6 ± 2.5%) compared to non-sepsis (14.8 ± 2.1%). Plateletcrit was reduced in sepsis cases (0.18 ± 0.07%) compared to non-sepsis (0.23 ± 0.08%). All differences were statistically significant.

Table 2. Platelet Count and Platelet Indices in Neonates with and without Sepsis

Parameter	Sepsis (n = 82) Mean ± SD	Non-Sepsis (n = 38) Mean ± SD	p-value
Platelet Count (×10⁹/L)	162.5 ± 74.3	238.4 ± 86.2	<0.001
Mean Platelet Volume (fL)	10.9 ± 1.7	9.2 ± 1.3	0.002
Platelet Distribution Width (%)	17.6 ± 2.5	14.8 ± 2.1	0.001
Plateletcrit (%)	0.18 ± 0.07	0.23 ± 0.08	0.011

Table 3 shows that the mean platelet count was lower in culture-positive neonates (148.7 ± 70.2 ×10⁹/L) compared to culture-negative neonates (197.5 ± 81.3 ×10⁹/L). Mean platelet volume was higher in culture-positive cases (11.3 ± 1.8 fL) than in culture-negative cases (9.8 ± 1.5 fL). Platelet distribution width was also raised in culture-positive neonates (18.1 ± 2.6%) compared to culture-negative neonates (15.3 ± 2.3%). Plateletcrit was reduced in culture-positive cases (0.16 ± 0.06%) compared to culture-negative cases (0.21 ± 0.07%). All parameters showed statistically significant differences.

Table 3. Platelet Parameters in Culture-Positive vs Culture-Negative Neonates

Parameter	Culture Positive (n = 64) Mean ± SD	Culture Negative (n = 56) Mean ± SD	p-value
Platelet Count (×10⁹/L)	148.7 ± 70.2	197.5 ± 81.3	0.003
Mean Platelet Volume (fL)	11.3 ± 1.8	9.8 ± 1.5	0.005
Platelet Distribution Width (%)	18.1 ± 2.6	15.3 ± 2.3	0.002
Plateletcrit (%)	0.16 ± 0.06	0.21 ± 0.07	0.014

Table 4 shows that the mean platelet count was higher in survivors (178.3 ± 76.1 ×10⁹/L) compared to expired neonates (124.7 ± 68.9 ×10⁹/L). Mean platelet volume was raised in expired cases (12.2 ± 1.9 fL) compared to survivors (10.4 ± 1.5 fL). Platelet distribution width was also higher in expired neonates (19.2 ± 2.8%) compared to survivors (16.9 ± 2.4%). Plateletcrit was greater in survivors (0.19 ± 0.07%) than in expired neonates (0.14 ± 0.05%). All parameters showed statistically significant differences.

Table 4. Prognostic Association of Platelet Parameters with Neonatal Outcome

Parameter	Survived (n = 98) Mean ± SD	Expired (n = 22) Mean ± SD	p-value
Platelet Count (×10⁹/L)	178.3 ± 76.1	124.7 ± 68.9	0.008
Mean Platelet Volume (fL)	10.4 ± 1.5	12.2 ± 1.9	0.004
Platelet Distribution Width (%)	16.9 ± 2.4	19.2 ± 2.8	0.002
Plateletcrit (%)	0.19 ± 0.07	0.14 ± 0.05	0.021

Table 5 shows that platelet count had a significant negative correlation with culture positivity ($r = -0.46$, $p < 0.001$), CRP levels ($r = -0.41$, $p < 0.001$), and mortality ($r = -0.39$, $p = 0.002$). Mean platelet volume showed a positive correlation with culture positivity ($r = +0.39$, $p = 0.001$), CRP ($r = +0.36$, $p = 0.002$), and mortality ($r = +0.42$, $p < 0.001$). Platelet distribution width was positively

correlated with culture positivity (r = +0.34, p = 0.004), CRP (r = +0.31, p = 0.006), and mortality (r = +0.37, p = 0.001). Plateletcrit demonstrated a negative correlation with culture positivity (r = -0.29, p = 0.009), CRP (r = -0.25, p = 0.018), and mortality (r = -0.32, p = 0.005).

Table 5. Correlation of Platelet Count and Platelet Indices with Neonatal Sepsis Markers

Parameter	Correlation with Culture Positivity (r)	p-value	Correlation with CRP Levels (r)	p-value	Correlation with Mortality (r)	p-value
Platelet Count (×10⁹/L)	-0.46	<0.001	-0.41	<0.001	-0.39	0.002
MPV (fL)	+0.39	0.001	+0.36	0.002	+0.42	<0.001
PDW (%)	+0.34	0.004	+0.31	0.006	+0.37	0.001
PCT (%)	-0.29	0.009	-0.25	0.018	-0.32	0.005

DISCUSSION

Its diagnosis is often difficult due to nonspecific clinical features and delayed culture results. Platelets, beyond their role in hemostasis, are active participants in inflammation and host defense. Alterations in platelet count and platelet indices such as MPV, PDW, and PCT occur during systemic infections.[11] Evaluating these parameters may provide valuable diagnostic and prognostic insights in neonatal sepsis.

In the present study, platelet count was significantly reduced in septic neonates (162.5 ± 74.3 ×10⁹/L) compared to non-septic neonates (238.4 ± 86.2 ×10⁹/L), while MPV (10.9 ± 1.7 fL) and PDW (17.6 ± 2.5%) were elevated, and PCT was reduced (0.18 ± 0.07%). These findings closely resemble those of Arshad et al. (2024), who reported significantly lower platelet counts and reduced PCT, with elevated MPV and PDW in septic neonates.[12] Similarly, Niharika et al. (2024) observed thrombocytopenia in 66% of cases, MPV elevation in 62%, and PDW increase in 68%, further supporting our finding that altered platelet indices are strong indicators of sepsis.[15]

Culture-positive neonates in our study had lower platelet counts (148.7 ± 70.2 ×10⁹/L) and higher MPV (11.3 ± 1.8 fL) compared to culture-negative cases. This agrees with Choudhary et al. (2020), who noted thrombocytopenia in 38% of septic neonates, with higher mortality in moderate to severe thrombocytopenia and elevated MPV and PDW.[13] Kavitha et al. (2024) also found thrombocytopenia in 60% of culture-positive neonates, with greater antibiotic requirement and threefold longer hospital stays, again supporting thrombocytopenia as a poor prognostic marker.[16] Our study demonstrated that expired neonates had significantly lower platelet counts (124.7 ± 68.9 ×10⁹/L), higher MPV (12.2 ± 1.9 fL), and higher PDW (19.2 ± 2.8%), findings consistent with Kumhar et al. (2022), who reported thrombocytopenia in 81.8% and high MPV in 76.6% of cases, with all expired neonates showing elevated MPV and PDW.[18] In contrast, Ahmad et al. (2014) found thrombocytopenia in 24.7% of cases, with mortality significantly higher among thrombocytopenic neonates (27.7% vs. 12.1%), but MPV and PDW did not differ significantly with outcome. This discrepancy may be due to population size (469 cases) and varying definitions of sepsis severity. Our ROC analysis revealed platelet count ≤190 ×10⁹/L had an AUC of 0.76, sensitivity of 72%, and specificity of 68%, while MPV ≥10.1 fL had AUC of 0.73.[14] These values are in agreement with Panda et al. (2022), who reported AUC values of 0.797 for platelet count and 0.641 for MPV, and Abdelfattah et al. (2025), who reported sensitivity and specificity of 84% and 88% for platelet count <208.5 ×10³/µL, and 80% and 88% for MPV <9.95 fL, highlighting the strong diagnostic performance of platelet indices.[19,20] Furthermore, our correlation analysis showed platelet count negatively correlated with culture positivity (r = -0.46), CRP (r = -0.41), and mortality (r = -0.39), while MPV and PDW correlated positively with these markers. These findings are supported by Tahir et al. (2025), who reported significantly higher MPV (11.29 ± 1.37 fL vs. 9.69 ± 1.11 fL, p < 0.05) in sepsis, with an optimal cut-off of 10 fL, closely matching our cut-off of 10.1 fL.[17]

Overall, our study findings are consistent with multiple reports, reinforcing that thrombocytopenia, along with elevated MPV and PDW, are not only diagnostic indicators but also prognostic markers of adverse outcomes in neonatal sepsis. The slight variations across studies, particularly with Ahmad et al. (2014), may reflect differences in study design, population characteristics, and thresholds used for defining abnormal platelet indices.

The study had adequate sample size, used standardized laboratory methods, and evaluated both diagnostic and prognostic platelet markers. However, it was limited by being single-centered, lacking serial follow-up of all neonates, and excluding certain confounders such as maternal conditions

CONCLUSION

Platelet count and platelet indices were significantly altered in neonates with sepsis and correlated with both culture positivity and adverse outcomes. Thrombocytopenia with raised MPV and PDW emerged as important markers. These parameters may serve as supportive, rapid, and cost-effective tools in the diagnosis and prognosis of neonatal sepsis

REFERENCE

1. Popescu CR, Cavanagh MM, Tembo B, Chiume M, Lufesi N, Goldfarb DM, Kissoon N, Lavoie PM. Neonatal sepsis in low-income countries: epidemiology, diagnosis and prevention. Expert review of anti-infective therapy. 2020 May

3;18(5):443-52. https://doi.org/10.1080/14787210.2020.1732818
2. Fleischmann C, Reichert F, Cassini A, Horner R, Harder T, Markwart R, Tröndle M, Savova Y, Kissoon N, Schlattmann P, Reinhart K. Global incidence and mortality of neonatal sepsis: a systematic review and meta-analysis. Archives of disease in childhood. 2021 Aug 1;106(8):745-52. https://doi.org/10.1136/archdischild-2020-320217
3. Zelellw DA, Dessie G, Worku Mengesha E, Balew Shiferaw M, Mela Merhaba M, Emishaw S. A Systemic Review and Meta-analysis of the Leading Pathogens Causing Neonatal Sepsis in Developing Countries. BioMed research international. 2021;2021(1):6626983. https://doi.org/10.1155/2021/6626983
4. Scridon A. Platelets and their role in hemostasis and thrombosis—From physiology to pathophysiology and therapeutic implications. International Journal of Molecular Sciences. 2022 Oct 23;23(21):12772. https://doi.org/10.3390/ijms232112772
5. Wilhelm G, Mertowska P, Mertowski S, Przysucha A, Strużyna J, Grywalska E, Torres K. The crossroads of the coagulation system and the immune system: interactions and connections. International journal of molecular sciences. 2023 Aug 8;24(16):12563. https://doi.org/10.3390/ijms241612563
6. Adane T, Worku M, Tigabu A, Aynalem M. Hematological abnormalities in culture positive neonatal sepsis. Pediatric Health, Medicine and Therapeutics. 2022 Jun 7:217-25. https://doi.org/10.2147/PHMT.S361188
7. Milas GP, Karageorgiou V, Bellos I. Mean platelet volume and neonatal sepsis: a systematic review and meta-analysis of diagnostic accuracy. The Journal of Maternal-Fetal & Neonatal Medicine. 2022 Dec 12;35(25):5324-36. https://doi.org/10.1080/14767058.2021.1879039
8. Li X, Li T, Wang J, Feng Y, Ren C, Xu Z, Yang J, Zhang Q, An C. Clinical value of C-reactive protein/platelet ratio in neonatal sepsis: a cross-sectional study. Journal of Inflammation Research. 2021 Oct 6:5123-9. https://doi.org/10.2147/JIR.S334642
9. Vélez-Páez JL, Legua P, Vélez-Páez P, Irigoyen E, Andrade H, Jara A, López F, Pérez-Galarza J, Baldeón L. Mean platelet volume and mean platelet volume to platelet count ratio as predictors of severity and mortality in sepsis. Plos one. 2022 Jan 6;17(1):e0262356. https://doi.org/10.1371/journal.pone.0262356
10. Jabeen J, Jha S, Garg V, Datta S. Normative Data on Platelet Count, Mean Platelet Volume, Platelet Distribution Width, Platelet-Large Cell Ratio, and Plateletcrit in Neonates. Cureus. 2025 Aug 3;17(8):e89293. DOI 10.7759/cureus.89293
11. Portier I, Campbell RA. Role of platelets in detection and regulation of infection. Arteriosclerosis, thrombosis, and vascular biology. 2021 Jan;41(1):70-8. https://doi.org/10.1161/ATVBAHA.120.314645
12. Arshad H, Latif T, Usman M. Evaluation of Platelet Indices and Sepsis Markers in Neonates with Different Types of Sepsis: Platelet Indices and Sepsis Markers in Neonatal Sepsis. Pakistan Journal of Health Sciences. 2024 Nov 30:19-23. https://doi.org/10.54393/pjhs.v5i11.2195
13. Choudhary D, Tiwari A, Narang S, Chhabra J. Correlation of platelet count and platelet indices with neonatal sepsis-Diagnostic and prognostic indicator. Pediatric Rev. 2020;17:16. https://doi.org/10.17511/ijpr.2017.i08.03
14. Ahmad MS, Waheed A. Platelet counts, MPV and PDW in culture proven and probable neonatal sepsis and association of platelet counts with mortality rate. J Coll Physicians Surg Pak. 2014 May 1;24(5):340-4. PMID: 24848393
15. Niharika TV, Rao VSC. Platelet count and platelet indices in neonatal sepsis. Int J Toxicol Pharmacol Res. 2024;14(9);22-25. http://www.ijtpr.com/
16. Kavitha DS, Lavhale B, Salunkhe Y. Correlation of Platelet Count With Neonatal Sepsis–Diagnostic And Prognostic Indicator at a Low Resource Setting. Indian Journal of Critical Care Medicine: Peer-reviewed, Official Publication of Indian Society of Critical Care Medicine. 2024 Mar 7;28(Suppl 1):S180. https://doi.org/10.5005/jaypee-journals-10071-24667.64
17. Tahir A, Aziz R, Tabassum R, Hashmi F, Hashmi MA, Hussain SI. Role of mean platelet volume in diagnosis of neonatal sepsis. JPMA. The Journal of the Pakistan Medical Association. 2025 Jul;75(7):1049-52. https://doi.org/10.47391/JPMA.9612
18. Kumhar S, Verma C, Gupta N, Verma S, Kumar P, Sehra RN. Utility of platelet count and platelet indices in the diagnosis and prognosis of neonatal sepsis: a prospective study.2022;23(1):31-35. https://www.perinatology.com
19. Abdelfattah AM, Ismail AM, Sayed MA,

Abdelnaem EA. Platelet parameters and red cell distribution width as diagnostic markers for early diagnosis of neonatal sepsis: a prospective comparative study. Ann Neonatol. 2025;7(2):1-20. doi:10.21608/anj.2025.360024.1108

20. Panda SK, Nayak MK, Thangaraj J, Das P, Pugalia R. Platelet parameters as a diagnostic marker in early diagnosis of neonatal sepsis-Seeking newer answers for older problems. Journal of Family Medicine and Primary Care. 2022 May 1;11(5):1748-54. https://doi.org/10.4103/jfmpc.jfmpc_1271_21