



## A STUDY ON PLATELET COUNT AND PLATELET INDICES IN NEONATAL SEPSIS IN A TERTIARY CARE CENTER

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### ABSTRACT

**Background:** To determine the significance of platelet count and platelet indices (MPV, PDW, P-LCR and PCT) in septicemic patients. **Materials & Methods:** A Prospective study of Platelet count and platelet indices of 100 consecutive hemograms with a clinical diagnosis of neonatal sepsis were retrieved. The analysis was done on automated blood cell counter. The parameters of platelet indices were analyzed statistically. **Results:** In our study 85 (85.00%) out of 100 cases had increased values of mean platelet volume (MPV) and 75 (75.00%) out of 100 cases had increased platelet distribution width (PDW), were statistically significant. **Conclusion:** Platelet count and platelet indices, which are easily available hematological parameters in remote and resource poor areas of our country, should be taken into consideration for suspected cases of sepsis so that prompt treatment can be given accordingly and morbidity and mortality can be significantly reduced.

**KEYWORDS :** Platelet indices, Platelet count, MPV, PDW, P-LCR, Sepsis

### INTRODUCTION:

Sepsis in newborn continues to be serious problem leading to significant morbidity and mortality worldwide contributing around 38% of all deaths in neonate. Neonates are fragile and can deteriorate rapidly, so rapid diagnosis and management is required.

Blood culture and sepsis screening are currently used method, but their utility is limited due to delayed reporting and increased cost. Platelet indices can be helpful in the future diagnosis of neonatal sepsis.

### AIM:

The aim of the present study is to determine the significance of platelet count and platelet indices (MPV, PDW, P-LCR and PCT) in neonatal septicemic patients.

### MATERIALS AND METHODS:

A Prospective study of platelet count and platelet indices of 100 consecutive hemograms were retrieved over a period of six months extending from January 2022-June 2022, with a clinical signs and symptoms of sepsis with either positive culture (confirmed neonatal sepsis) or other laboratory findings suggestive of bacterial and fungal infection without positive culture (probable sepsis) were included. After taking written informed consent from parents.

### INCLUSION CRITERIA:

1. All neonates (<28 days) with symptoms and signs of sepsis like poor feeding, lethargy, tachypnoea, hypothermia etc. along with positive culture and other laboratory findings.
2. Neonates of mother with predisposing factors were included in the study.

### EXCLUSION CRITERIA:

1. Neonates with congenital anomalies, and congenital heart disease.
2. Congenital and acquired causes of thrombocytopenia other than sepsis.
3. All newborns with neonatal hyperbilirubinemia due to causes other than sepsis like physiological jaundice, Rh, and ABO incompatibility without clinical and laboratory suspicion of sepsis.

### STATISTICAL ANALYSIS:

Quantitative parameters such as platelet indices computed, the platelet count was grouped into mild moderate and severe. Frequencies were expressed in percentage. ANOVA was used to assess the quantitative variables. A p value of <0.05 using a two-tailed test was taken as being of significance for all statistical test.

### RESULTS:

**Table 1: SEPSIS IN RELATION TO PLATELET COUNT:**

Platelet count	Proven neonatal sepsis		Probable sepsis		No sepsis	
	N	N%	N	%	N	%
Normal	6	14.63	4	9.09	4	26.67

Mild thrombocytopenia	9	21.9	21	47.72	5	33.3
Moderate thrombocytopenia	12	29.26	9	20.45	3	20
Severe Thrombocytopenia	14	34.14	10	22.72	3	20
Total	41	100%	44	100	15	100

Out of 100 cases 86 (86.00%) had thrombocytopenia, out of which 35 (35.00%) had mild degree of thrombocytopenia, 24 (24.00%) had moderate degree of thrombocytopenia and 27 (27.00%) neonates had severe degree of thrombocytopenia. 85 (85.00%) out of 100 cases had increased values of mean platelet volume. In sepsis proven group 35 (92.10%) had increased values of MPV. In probable sepsis 42 (87.5%) and in no sepsis group 8 (57.14%) cases had increased values of MPV. This difference was statistically significant (P Value <0.05). 75 out of 100 cases had increased values of platelet distribution width. In proven sepsis group 33 (84.61%) cases had increased values of PDW, in probable sepsis group 33 (67.34%) and in No sepsis group 9 (75%) cases having increased values of PDW. This difference was statistically not significant (P value is >0.05).

**Table 2: SEPSIS IN RELATION TO MPV (fl):**

MPV (fl)	Neonatal sepsis		Probable sepsis		No sepsis	
	N	%	N	%	N	%
≤10.8	3	7.89	6	12.5	6	42.85
>10.8	35	92.10	42	87.5	8	57.14
Total	38	100	48	100	14	100

**Table 3: SEPSIS IN RELATION TO PDW (fl)**

PDW (fl)	Neonatal sepsis		Probable sepsis		No sepsis	
	N	%	N	%	N	%
≤19.1	6	15.38	16	32.65	3	25
>19.1	33	84.61	33	67.34	9	75
Total	39	100	49	100	12	100

### DISCUSSION:

Sepsis is the commonest cause of mortality and is probably responsible for 30-50% of total neonatal deaths each year in developing countries. One of the most difficult tasks faced by neonatologist is to clinically differentiate between septicemic and non septicemic cases. This is because several other conditions like birth asphyxia, hypoglycaemia and hypothermia will have clinical features of septicemia. The gold standard for diagnosis of neonatal sepsis is a positive blood culture which requires a minimum period of 48-72 hours.

In present study 85 out of 100 cases had increased values of MPV and 75 cases showed increased PDW. The difference between proven sepsis, probable sepsis and no sepsis group were statistically significant (MPV).

The present study was in concordance with the study by Neha et al in which 81% cases of sepsis proven cases had increased values of MPV, and 71% cases of sepsis proven group showed increased PDW. Similar results were found in study by Ishwar et al where 84.6% cases of sepsis proven cases had increased values of MPV and increased values of PDW were found 79% cases of sepsis proven group.

#### CONCLUSION:

Platelet count and platelet indices which are easily available hematological parameters in remote and resource poor areas of our country, should be taken into consideration for suspected cases of neonatal sepsis. So that prompt treatment can be given accordingly, and morbidity and mortality can be significantly reduced.

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