

EARLY THROMBOCYTOPENIA IN PRETERM NEW BORN AND ITS PROGNOSTIC OUTCOME

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INTRODUCTION

In many Study it has been shown that platelet count beyond 2nd trimester of pregnancy reaches and maintain a level above 150×10^9 .^[1-4] Therefore Neonatal Thrombocytopenia is defined as platelet count less than $150 \times 10^9/l$. Its overall prevalence ranges from 1% to 5%.^[5-8] It is severe thrombocytopenia when platelet count is less than $50 \times 10^9/l$, which occurs in 0.1-0.5%.^[9-11] The prevalence of neonatal thrombocytopenia which develop among the baby who are admitted in NICU is much higher which is 22-35%.^[12,13] Among preterm new born admitted in NICU it is 8%, who have severe thrombocytopenia.^[14]

Neonatal thrombocytopenia can be early onset when it is within 72 hour of life, or late onset when it is beyond 72 hours of life, and the cause are different for them.^[15] For early onset thrombocytopenia the most frequent cause is chronic foetal hypoxia, IUGR.^[16-17] and for late onset cause is sepsis or necrotising enterocolitis.^[18]

In preterm new born decrease in platelet count without thrombocytopenia is suggestive of fungal more than bacterial sepsis.^[19]

Neonatal thrombocytopenia in first 24 hour of life may be due to alloimmune thrombocytopenia.^[7,8] Neonatal alloimmune thrombocytopenia can have varied presentation ranging from mild to moderate bleeding which resolves in a week to severe intracranial haemorrhage leading to death or neurodevelopmental sequelae.^[20,21] Disseminated intravascular coagulopathy and necrotising enterocolitis is also independently related to thrombocytopenia.^[22,23]

AIM AND OBJECTIVE

Aim: To asses the decrease in platelet count in first seven day of life in preterm new born and to establish its outcome.

Objective: To study the prognostic outcome associated with early decrease in platelet count among preterm new born.

METHODS

Study design- Retrospective study.

Study duration- January 2019-December 2019.

Study location-Department of paediatrics and neonatology Rims, Ranchi

Data collection – Data were collected from MRD section and transferred to standard form in Microsoft excel sheets for further evaluation.

Data were analysed for Age, Sex, Intraventricular haemorrhage, Other bleeding manifestation, Necrotising enterocolitis, Sepsis, Fungal infection & final outcome.

Statistical analysis: data were analysed using SPSS version 21.

Inclusion criteria-

1. Preterm with gestational age <34 weeks
2. Admission on day of life 1
3. Survived for >7days

Exclusion criteria-

1. No platelet count was done on first day of life
2. Received inadequate treatment
3. Received blood product transfusion within seven day of life

RESULTS

Total no of preterm baby admitted in hospital in the study period were: 512

Male: 252, Female: 260, Mean gestational age for our sample was: 30.2week.

The overall mortality in the study group is 97(19%).

The overall incidence of thrombocytopenia was 172 (33.6%).

Group 1: Thrombocytopenia in <72 hr and Group 2: Thrombocytopenia in >72 hr.

The incidence of thrombocytopenia in Group 1 is 96 (55.81%) and in Group 2 is 76 (44.18%).

In Group 1 the evidence of grade 3 or 4 IVH were 23 (23.5%), other bleeding 6 (7%) NEC 9 (9%), Gram positive bacterial infection 21 (21.5%), Gram negative bacterial infection 26 (27.5%), Fungal infection 11(11.5%).

In Group 2 the evidence of grade 3-4 IVH were 16(21%), Other bleeding 5(6.5%), NEC 11(15%), Gram positive bacterial infection 19 (24.5%), Gram negative bacterial infection 14(18%), Fungal infection 11(15%).

The incidence of thrombocytopenia in Group 1 is 96 (55.81%) and in Group 2 is 76(44.18%)

Table 1:

	Group 1	Group 2
Outcome variables	%	%
Intraventricular haemorrhage	23.5	21.0
Other bleeding	7.0	6.5
Necrotising enterocolitis	9.0	15.0
Gram positive infection	21.5	24.5
Gram negative infection	27.5	18.0
Fungal infection	11.5	15.0
Male : Female	46.7 : 53.3	52.76 : 47.24

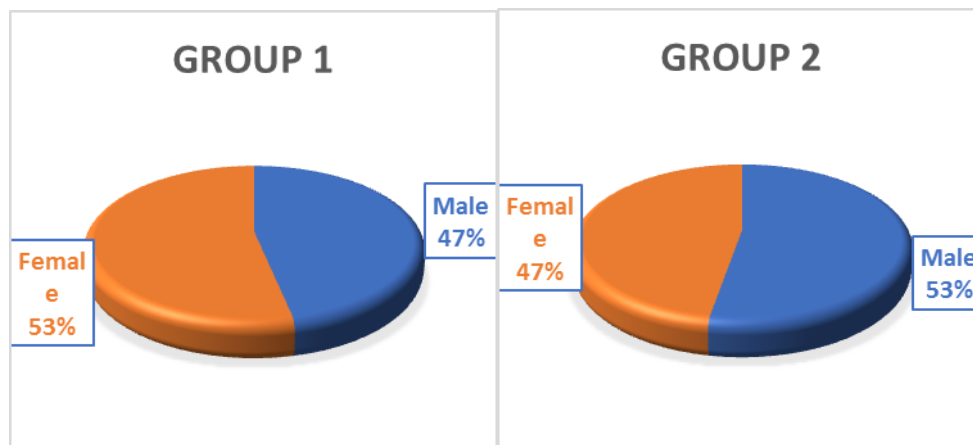


Image 1:

DISCUSSION

The Thrombocytopenia detected in babies admitted in NICU are accidental. Major among them are preterm new born.

Thrombocytopenia can be due to impaired platelet production, increased consumption or both. The pattern of thrombocytopenia is usually constant (mild-moderate) falling in the first 72 hours and resolves by 7-10th day. In very rare cases severe thrombocytopenia is seen. The decline in platelet count in first 72 hours was mainly seen in babies born to mother with pre-eclampsia, foetal hypoxia, IUGR. Immunological causes played a minor role. The decline in platelet count after 72 hours was mainly due to increased platelet consumption caused by sepsis(fungal>bacterial), NEC.

In our study it is seen that the prevalence of thrombocytopenia after 72 hours was more in male gender. Kent et al,^[24] also reported risk of intracranial haemorrhage, septicaemia are higher in males.

In our study there is significant association between early platelet count decline in preterm new born and related mortality & morbidity. Our study has resemblance to many other study group results, such as Rastogi et al,^[25] & Chakravorty et al⁷ in which significant association of mortality and morbidity has been reported in preterm new born with thrombocytopenia in first 7day of life.

LIMITATION OF OUR STUDY

1. Retrospective cohort study-it can have selection bias, information bias.

2. The preterm baby with thrombocytopenia were given more emphasis.
3. Besides routine additional investigation were done such as blood culture, abdominal x-ray, cranial USG. This might have increased association between thrombocytopenia and such morbidities.
4. The new born were treated by different physician which might have lead to opinion bias.

CONCLUSION

This study is suggestive of that there is poor prognostic significance of early platelet decline in preterm new born, and associated mortality & morbidity. In sepsis it was found that if there is platelet count decline without thrombocytopenia, there was association of fungal more than bacterial sepsis.

Conflict of interest: None.

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