



Neonatal Thrombocytopenia in Hospitalised Sick Neonates

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Abstract

Thrombocytopenia is one of the common hematological problem encountered in the neonates admitted in NICU and usually indicate an underlying pathologic process. A retrospective review, of case papers of neonates admitted at tertiary level NICU of Govt. medical college Kota from oct. 2012 to sept. 2013, was done to determine the number of cases and manifestations of thrombocytopenia in sick neonates. A total 2256 neonates were included in study, were evaluated for thrombocytopenia. These neonates were categorized into five different groups (A, B, C, D, E), which were of neonatal sepsis, birth asphyxia, preterm and low birth weight, neonatal jaundice and miscellaneous respectively. Out of 2256 cases, 516 (22.87%) had thrombocytopenia (platelet counts $< 150,000 / \text{mm}^3$). In group A (neonatal sepsis), out of 696 neonates, 224 (32.18%) had thrombocytopenia. In group B (birth asphyxia), out of 468 cases, 136 (29.1%) had thrombocytopenia. In group C (preterm and low birth weight), out of 552 cases 132 (23.9%) had thrombocytopenia. In group D (neonatal jaundice), out of 252 cases 12 (4.7%) cases had thrombocytopenia. In group E (miscellaneous), out of 288 cases, only 24 (8.33%) had thrombocytopenia. The common manifestations were petechiae and bruises followed by G.I. hemorrhages and intracranial hemorrhages. The percentage of manifest thrombocytopenia cases was 48.34%. The leading causes of thrombocytopenia in sick neonates are congenital or acquired infections, sepsis, , birth asphyxia, , complicated prematurity and low birth weight. all immune thrombocytopenia Severe thrombocytopenia may be associated with increased risk of hemorrhage, and increased mortality.

Introduction

Thrombocytopenia is defined as platelet count less than $150 \times 10^9 / \text{l}$, ^[1] and is not uncommon among neonates. ^[2] Up to 30% of NICU patients develop

thrombocytopenia at some time during hospital admission. ^[3-6] Platelet transfusion is frequently given to NICU patients and are likely to result in unnecessary transfusion. ^[7] While most neonates

with thrombocytopenia have a moderate reduction in platelet count and resolve with appropriate treatment of underlying cause, about 25% receive one or more transfusion. ^[8] Thrombocytopenia presenting in the first 72 hours of life (Early onset thrombocytopenia) is usually secondary to placental insufficiency and caused by reduced platelet production; fortunately most episodes are mild or moderate and resolve spontaneously. Thrombocytopenia presenting after 72 hours of age (Late onset thrombocytopenia) is usually secondary to sepsis or necrotizing enterocolitis and is usually more severe and prolonged. Present study was undertaken to investigate the prevalence of thrombocytopenia and to ascertain its relationship between clinical condition.

Material and method

A one year retrospective study was done for thrombocytopenia (from the case papers) in all sick neonates (from 0-28 days of age) admitted with different clinical problems irrespective of birth weight and gestational age at NICU of Govt. medical college Kota from oct. 2012 to sept. 2013. A total 2256 neonates were included in study, were evaluated for thrombocytopenia which were categorized into five different groups (A-E), which were of neonatal sepsis, birth asphyxia, preterm and low birth weight, neonatal jaundice and miscellaneous respectively.

Criteria for exclusion are admitted < 5 days, LAMA patient, congenital anomalies and whose records are incomplete.

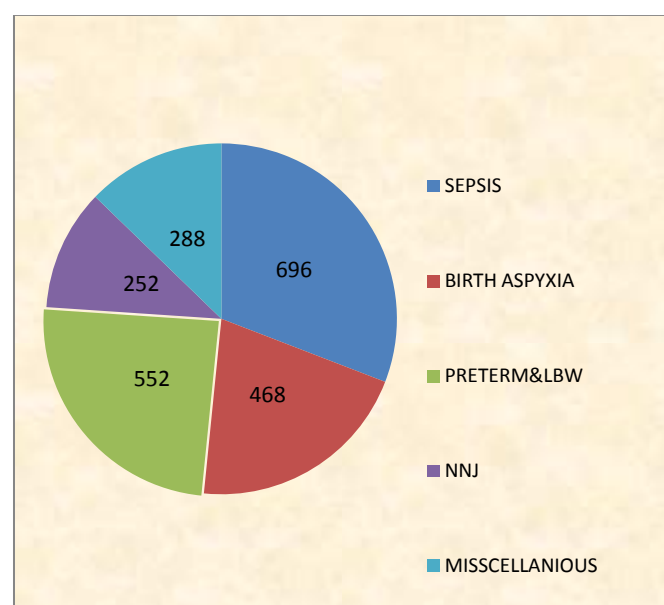
Results

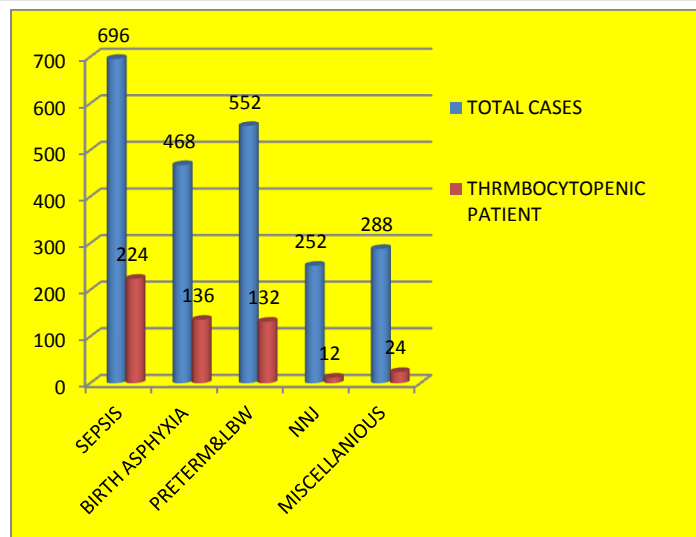
Out of 2256 cases, 516 had thrombocytopenia (platelet counts < 150,000 / mm³) with 22.87% incidence in sick neonates. The percentage of manifest thrombocytopenia cases was 48.34%. These neonates were categorized into five different groups (A, B, C, D, E), which were of neonatal sepsis, birth asphyxia, preterm and low birth weight, neonatal jaundice and miscellaneous respectively.

Out of 2256 cases, 516 (22.87%) had thrombocytopenia (platelet counts < 150,000 / mm³). In group A (neonatal sepsis), out of 696 neonates, 224 (32.18%) had thrombocytopenia. In group B (birth asphyxia), out of 468 cases, 136 (29.1%) had thrombocytopenia. In group C (preterm and low birth weight), out of 552 cases 132(23.9%) had thrombocytopenia. In group D (neonatal jaundice), out of 252 cases 12(4.7%) cases had thrombocytopenia. In group E (miscellaneous), out of 288 cases, only 24 (8.33%) had thrombocytopenia.

The common manifestations were petechiae and bruises followed by G.I. hemorrhages and intracranial hemorrhages.

S.No.	Name of condition	No. of cases	Thrombocytopenia	%
1	Sepsis	696	224	32.18
2	Perinatal asphyxia	468	136	29.1
3	Preterm and LBW	552	132	23.9
4	NNJ	252	12	4.7
5	Miscellaneous	288	24	8.33





Discussion

In the present study, lower platelet count was found in 22.87% neonates. One important factor responsible for neonatal thrombocytopenia is birth weight. LBW babies showed thrombocytopenia due to their limited ability to compensate for accelerated destruction of platelets. Numerous maternal and fetal conditions are associated with low platelet count. Newborn of mothers with maternal hypertension are prone for thrombocytopenia due to disorders associated with placental insufficiency leading to hypoxia.^(9,10)

Newborn with respiratory problems during birth (delayed cry, meconium) often develop thrombocytopenia. The hypoxic injury to baby during birth drives the progenitor cells to produce erythroid cells at the expense of leucocytes and thrombocytes.⁽⁹⁾

Clinical sepsis was found in association with thrombocytopenia in 40% neonates in present study. Bacterial infection causes damage to vascular endothelial lining, thus accelerating adhesion, destruction, and removal of platelets.⁽²⁾ Sepsis also causes DIC, immune-mediated destruction, and decreased production of platelets from infected marrow. Viral infection increases platelet destruction due to loss of sialic acid from platelet membrane, increases platelet aggregation, and decreases production from infected marrow⁽¹¹⁾.

LBW, IUGR, and maternal factors were associated with neonatal thrombocytopenia; however, not to conclude that these factors alone are responsible for thrombocytopenia in neonates independently. These conditions in association with sepsis, GI problems, and hypoxia, rather necessitate more transfusion of platelet and blood components in NICU.

There is practice amongst neonatologist towards more liberal use of platelet transfusion.^[11] The frequent need of repeated platelet transfusion may require use of recombinant thrombopoietin (rTPO) as an alternative^[12] for platelet transfusion, as megakaryocyte progenitors are sensitive and responds even with lower concentration^[13,14] of rTPO.

Conclusion

Thrombocytopenia is more common in sick neonates with Perinatal asphyxia, Sepsis and in LBW babies.

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