



STUDY OF NEONATAL THROMBOCYTOPENIA ETIOLOGY, CLINICAL PROFILE, IMMEDIATE OUTCOME AND SHORT TERM FOLLOW UP OF NEONATAL THROMBOCYTOPENIA

Amutha, J., Ramesh, S and Vinoth S

Department of Pediatrics Annamalai University, Rajah Muthiah Medical College, Annamalai Nagar

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ABSTRACT

This study intends to find out various etiological factors, outcome, clinical manifestations, immediate outcome and short term follow up of surviving neonates presented with thrombocytopenia in their neonatal period (<28 days of life). In our study 186 neonates admitted in NICU of RMMCH, Chidambaram with thrombocytopenia were studied. The prevalence of thrombocytopenia in our study is 19.36%. The most common etiology in neonates with thrombocytopenia is septicemia (48.65%). The most common clinical manifestation being respiratory distress (50%) followed by hemorrhagic manifestations (13.4%). In our study mortality rate is high among neonates who have thrombocytopenia associated with congenital malformations (4.8%). Neuro-developmental outcome of thrombocytopenic neonates in our study depends on associated features rather than severity of thrombocytopenia.

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INTRODUCTION

Thrombocytopenia in neonates is defined as a platelet count of less than 1.5 lakh/ μ l^{1,2,3}. It is classified as mild (platelet count - 1 to 1.5 lakh/ μ l), Moderate (platelet count - 0.5 to 1 lakh/ μ l) and severe (platelet count < .5/ μ l). Neonatal thrombocytopenia is a common hematological abnormality encountered in NICU. The etiology and pre disposing factors are many and they interact in a complex manner. Though the overall prevalence of neonatal thrombocytopenia is relatively low (1%-5%) in general population^{3,4}, the incidence among the neonates admitted in NICU is high (22%-5%)^{5,6}.

The influence of various maternal and neonatal factors associated with thrombocytopenia and the outcome on neonate with thrombocytopenia is the subject that has not been studied in detail in the past^{8,9}. The increased prevalence of thrombocytopenia in our NICU made us to find out the true prevalence etiology, clinical profile, immediate outcome and short term neuro-developmental follow up of the neonates admitted in NICU of RMMCH Chidambaram.

MATERIALS AND METHODS

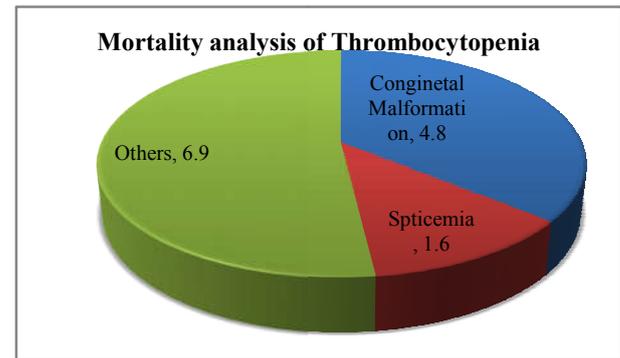
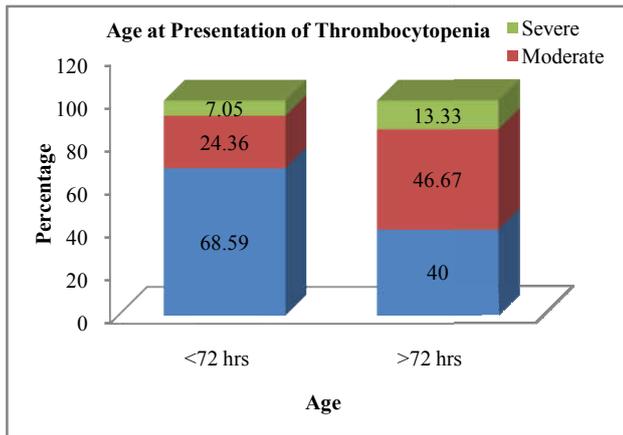
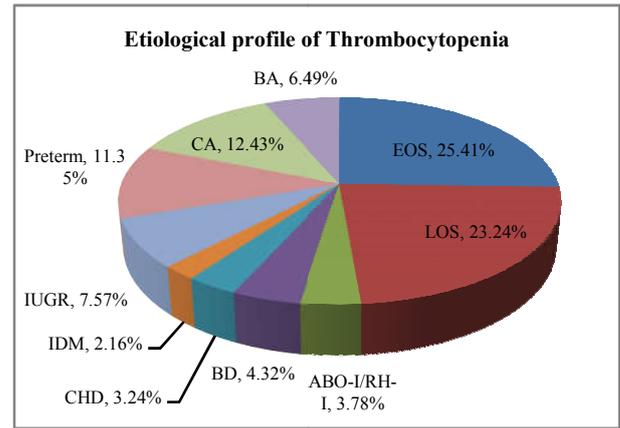
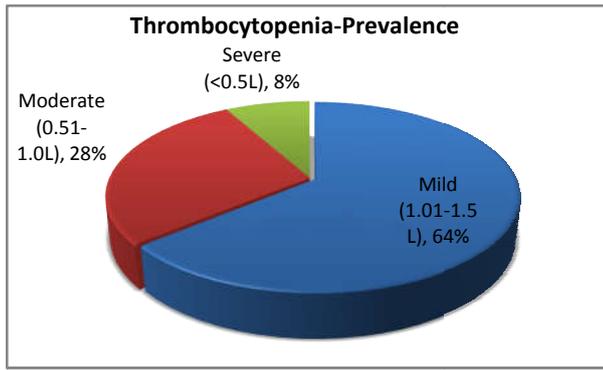
186 of 960 consecutive neonates admitted in NICU RMMCH Chidambaram during the period of October 2014 to September 2015, who had thrombocytopenia irrespective of underlying morbidity, are taken up for this study. A detailed history with the focus of antenatal risk factor including PIH, GDM, PROM,

RHisoimmunization and drug consumption were obtained. History suggestive of time of onset of thrombocytopenia, bleeding and its type were taken. Through clinical examination and blood investigations like complete blood count, peripherals smear study, blood culture, sepsis workups were done. Follow-up of the surviving neonates were done using Trivandrum developmental scale. Relevant data was taken and analysed statistically using Chi-Square test.

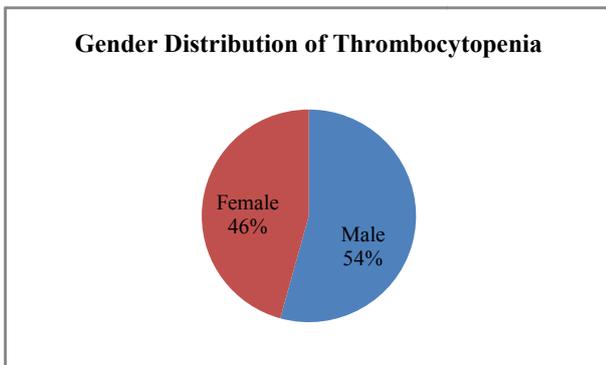
RESULTS

Among 960 neonates admitted in NICU of RMMCH Chidambaram from October 2014 – September 2015, the prevalence of thrombocytopenia is 19.37%. These subjects were divided into three groups based on their platelet count. The prevalence of mild thrombocytopenia is 64%, moderate thrombocytopenia is 28% and severe thrombocytopenia is 8%. The mean platelet count with all age group neonates with thrombocytopenia is 1.15 lakhs/ μ l.

According to the time of presentation the prevalence of early onset thrombocytopenia (less than 72 hrs of life) among moderate and severe thrombocytopenic group is 24.36% and 7.05% respectively, were as late onset of thrombocytopenia (more than 72 hrs of life) is 46% and 13.3% respectively.



The incidence of neonatal thrombocytopenia is slightly more in males (Male: Female - 1.2: 1).



The prevalence of neuro developmental delay is variable among three groups of thrombocytopenia.

DISCUSSION

The prevalence of thrombocytopenia in our study is 19.37%. This prevalence is slightly higher than reported in other studies

Studies on neonatal thrombocytopenia in NICUs	Prevalence of thrombocytopenia
Castle et al ¹⁰	22%
Hale Oren et al ¹¹	5.40%
Beiner et al ¹²	31%
Our study	19.36%

The higher prevalence of thrombocytopenia in our NICU admission is probably due to higher proportion of septic neonates in our admissions (48.36%), while it is lower in other studies like Castle *et al* study (7.5%)

Studies on neonatal thrombocytopenia in NICUs	Prevalence of septicaemia
Castle et al ¹⁰	10%
Hale Oren et al ¹¹	5.40%
Our study	48.65%

Septicemia is significantly associated with thrombocytopenia in neonates and the prevalence being 48.65%. Various other predisposing factor associated with thrombocytopenia were congenital anomalies 12.43%, prematurity 11.35%, IUGR 7.57%, birth asphyxia 6.49%, ABO/RH incompatibility 3.78%, CHD – 3.24%, Bleeding disorder – 4.32%, IDM – 2.16%. PROM, PIH, maternal drugs are various other factors that predisposed to thrombocytopenia in neonates.

It is observed that 46.6% of moderate thrombocytopenia and 13.3% of severe thrombocytopenia present before 72 hours of life. This is similar to other studies that majority of moderate to severe thrombocytopenic infants present as late onset thrombocytopenia. The common etiology being septicemia.

The most common clinical examination finding seen in neonates with thrombocytopenia in our study is respiratory distress (50%) followed by hemorrhagic manifestations (13.4%). The common etiology for bleeding neonate with thrombocytopenia is sepsis and the common site being upper gastro intestinal tract secondary to NEC. The mortality rate is high in neonates with thrombocytopenia associated with congenital malformations (4.8%) followed by septicemia (1.6%).

Studies on neonatal thrombocytopenia in NICUs	<72 hours		>72 hours	
	Moderate	Severe	Moderate	Severe
Castle et al ¹⁰	66.11%	47.01%	39.24%	52.23%
Rajeev mehta ¹³	13.00%	20.00%	36.20%	51.00%
Our study	24.36%	7.05%	46.67%	13.33%

The etiological profile of neonatal thrombocytopenia on the whole is similar to other studies from India, septicemia being the major factor leading to neonatal thrombocytopenia.

The most common clinical manifestation being respiratory distress (50%). Bleeding contributes only to 13.6% of neonates with thrombocytopenia, where as in other studies bleeding is the major clinical feature.

Studies on neonatal thrombocytopenia in NICUs	Prevalence on mucosal bleeding
Beiner et al ¹⁰	82.33%
Mehtha et al ¹³	68.23%
Castle et al ¹⁰	70.11%
Our study	13.60%

Mortality rate is high among neonates with thrombocytopenia presenting along with congenital malformations. Though there is no direct correlate with neurodevelopment and severity of thrombocytopenia, neonates with sever thrombocytopenia have poor morbidity compared to other groups.

CONCLUSION

Thrombocytopenia is one of the most common laboratory finding seen in neonates admitted in NICU. Major etiology being septicemia and the most common clinical presentation is respiratory distress. Mortality is high among neonates with thrombocytopenia associated with congenital malformations. Neurodevelopment outcome does not depend on the severity of thrombocytopenia, but poor morbidity is seen in severely thrombocytopenic neonates.

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