FREQUENCY OF THROMBOCYTOPENIA AMONG NEONATES WITH SEPSIS PRESENTING TO TERTIARY CARE HOSPITAL PESHAWAR

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ABSTRACT

Objective: The study aims to determine the frequency of thrombocytopenia among neonates with sepsis in the Northwest General Hospital & Research Centre, Peshawar.

Methods and material: This cross-sectional study was conducted in the Department of Pediatrics of Northwest General Hospital Peshawar from 6th September 2019 to 6th March 2020. For the sampling technique, we chose a non-probability consecutive sampling technique. The sample size was calculated using the WHO sample size after that we included 119 neonates who presented to the neonatal ICU. Inclusion and exclusion criteria were strictly followed. After that data was analyzed using SPSS version 23.0.

Results: This study collected data from 119 neonates who presented with sepsis in our tertiary care hospital of Peshawar, among thrombocytopenia was observed in 46% of this study the 18±7.87 days mean age was observed, the mean gestational age was 35±6.818 weeks and the mean weight of neonates was 2±1.91 Kgs. Thrombocytopenia was associated with neonatal age (p=0.001) gestational age (p=0.03) and maternal diabetes militias (p=0.03).

Conclusion: In our study we concluded that thrombocytopenia was found among 46% of neonates presented to the neonatal ICU, it was associated with the age of the neonate, gestational age, and maternal Diabetes militias.

Keywords: thrombocytopenia, sepsis, neonates, gestational age.

INTRODUCTION

The diverse group of illnesses such as meningitis, pneumonia, urinary tract infection, and septicemia come under the heading of neonatal sepsis in neonatal age group patients. One of the major causes of neonatal mortality is all these illnesses, and according to reports of 2019 in Pakistan, more than 50% of general deaths are because of sepsis[1, 2, 3].

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In 5th week of gestational age, the fetus starts producing platelets and it hits the normal range by the end of 2nd trimester of pregnancy which is 150 to 450 $\times$ 10^9/L but when the count is below 150 $\times$ 10^9/L that is known as Neonatal Thrombocytopenia[4, 5]. It is reported more in premature neonates with a prevalence rate of 18-35% as compared to a full term in which the prevalence rate is 2%[6]. Different causes have been reported in different populations as some studies suggest low birth weight, maternal poor health, and sepsis can cause thrombocytopenia but the most common cause that has been reported is pre-mature birth[7]. Around 9.2 to 36% of neonatal thrombocytopenia have been reported in mothers with gestational hypertension[8]. Early detection of thrombocytopenia and proper management have very good outcomes in terms of decreasing mortality and morbidity[9].

The study aims to determine the frequency of thrombocytopenia among neonates with sepsis in Northwest General Hospital & Research Centre, Peshawar. This study will enhance our literature and it will help future researcher aim their study goals

METHODOLOGY

This descriptive cross-sectional study was conducted in the Department of Pediatrics of Northwest General Hospital & Research Centre, Peshawar. Data was collected from 6th September 2019 to 6th March 2020. For the sampling technique, we chose a non-probability consecutive sampling technique. The sample size was 119 using 49%[10] frequency of thrombocytopenia among neonates with sepsis, 95% confidence level, and 9% absolute precision using the WHO sample size calculator.

- Inclusion criteria were based on
  1) All septic patients admitted to neonatal ICU
  2) Either gender.

- Exclusion criteria were based on
  1) Neonates with hyperbilirubinemia of more than 5mg/dl.
  2) Neonates who have received antibiotics of any type after birth.
  3) Neonates with a history of blood transfusion after birth
  4) Neonates with a history of birth asphyxia after birth.
  5) Those parents of neonates who were not given consent to be involved in our study.

The study was carried out after getting approval from the ethical committee of the hospital.

Before starting a detailed history and clinical examination the study aimed to explain to the patients whose neonates presented to the neonatal ICU with sepsis, that they were taken into confidence that everything would be kept confidential after that written informed consent was taken from parents. For the collection of our data, a detailed history with detailed clinical examination was done. For investigation, 3cc blood was obtained to run some laboratory tests, especially for thrombocytopenia. For the reporting investigation, an experienced hematologist with a minimum of 5 years of experience was selected. The questionnaire contains questions regarding demographics, gestational age, and any maternal illness during pregnancy. For analysis, we use SPSS version 23. Numerical values such as gestational age, weight of neonate, and platelet count were calculated as mean ± SD. For categorical data, we calculated frequency and percentages. With a p-value of <0.05 taken as significant, thrombocytopenia was stratified with age, gender of the neonate, gestational age, weight of neonate, eclampsia, maternal DM, and pre-eclampsia.

RESULTS

A total of 119 neonates presenting with sepsis were included in our study. This study showed that the mean age of the neonates was 18±7.87 days. The mean gestational age was 35±6.818 weeks and the mean weight of neonates was 2±1.91 Kgs.

Table no 1: showing frequencies and percentages of all variables

Variable		Frequency	Percentage
Age	7-15 days	68	57%
	16-28 days	51	43%
Gender	Male	62	52%
	Female	57	48%
Weight	≤ 2.5 Kg	84	71%
	> 2.5 Kg	35	29%
Gestational age	≤ 37 weeks	87	73%
	> 37 weeks	32	27%
Maternal DM	Yes	21	18%
	No	98	82%
Pre-eclampsia	Yes	17	14%
	No	102	86%
Eclampsia	Yes	4	3%
	No	115	97%
Thrombocytopenia	Yes	55	46%
	No	64	54%
Status of thrombocytopenia	Mild	10	8%
	Moderate	32	27%
	Severe	13	11%

Table no 2: shows the correlation of thrombocytopenia with other variables.

Variables		Thrombocytopenia (N, %)		P value
		Yes	No	
Age	7-15 days	47	21	0.001
	16-28 days	8	43	
Gender	Male	21	41	0.11
	Female	34	23	
Weight	≤ 2.5 Kg	40	44	0.66
	> 2.5 Kg	15	20	
Gestational age	≤ 37 weeks	45	42	0.03
	> 37 weeks	10	22	
Maternal DM	Yes	16	5	0.01
	No	39	59	
Pre-eclampsia	Yes	12	5	0.08
	No	43	59	
Eclampsia	Yes	3	1	0.17
	No	52	63	

DISCUSSION

The main aim of our study was to find out the frequency of thrombocytopenia among neonates presented with sepsis in the neonatal ICU in the tertiary care hospital of Peshawar. This study collected data from 119 neonates who presented with sepsis in our tertiary care hospital of Peshawar, in this study the 18±7.87 days mean age was observed, the mean gestational age was 35±6.818 weeks and the mean weight of neonates was 2±1.91 Kgs. Thrombocytopenia among patients has shown a strong relation with neonatal age with a P value of 0.001, gestational age with a P value of 0.03, and maternal diabetes militias with a p-value of 0.03.

A study was conducted by Arif H in Rawalpindi Pakistan from July 2018 to January 2019, in this study they analyzed the data of 160 neonates with thrombocytopenia their study of thrombocytopenia shows a significant relation with pre-eclampsia and non-significant relation with gender

A study was conducted by Arif H in Rawalpindi Pakistan from July 2018 to January 2019, in their study thrombocytopenia shows an association with pre-eclampsia and not with gender which supports our results[11]. Another study was conducted in Nepal in which they analyzed that only 8% of neonates presented with thrombocytopenia had maternal risk factors such as pre-eclampsia and gestational DM while in our study the frequency was much more than their finding[12]. Another study suggests that thrombocytopenia has an association with gestational DM which is consistent with our results they also suggest that there is no such relation between thrombocytopenia and gender[13].

Another study was conducted in Addis Ababa public hospitals according to their findings thrombocytopenia has no association with eclampsia which is in line with our findings [14]. Another study suggests that thrombocytopenia among neonates has a significant relation with the gestational age of neonates these results also concordance with our results[15].

According to Saber AM study conducted in 2021their results show no association with the age and gender of a neonate while in our study thrombocytopenia shows association with age and no association with gender mentioned in table no 2[16].

According to a Saber AM study conducted in 2021, thrombocytopenia has no association with gender and age of the neonate, this study shows partial concordance with our study because it has an association with age and no association with gender mentioned in Table no 2[16]. Another study by Abebe Gebreselassie H also suggests that thrombocytopenia has no association with gestational age which is the opposite of our study but in their study, it also shows no association with gender which is in concordance with our results[17]. Another local study was conducted in Abbottabad Pakistan according to their results they found no such association between thrombocytopenia with age, weight, and gender of neonate which shows the same results as our study in terms of

weight and gender while in terms of age, our study shows an association between thrombocytopenia and age of a neonate [18].

This study has several limitations, one is that it is only one hospital-based data the other is the sample size. To overcome these limitations a multiple-setting study should be required.

CONCLUSION

In our study we concluded that thrombocytopenia was found among 46% of neonates presented to neonatal ICU, it showed association with the age of neonate, gestational age, and maternal Diabetes militias.

AUTHORS CONTRIBUTIONS

Sahar Iqbal[1], Concept & Design; Data Acquisition; Drafting Manuscript; Critical Revision; Final Approval
Muhammad Mujtaba[2], Data Acquisition; Data Analysis/Interpretation; Drafting Manuscript; Critical Revision;
Sohail Akhtar[3], Concept & Design; Drafting Manuscript; Critical Revision;
Farida Sherazi[2], Critical Revision; Supervision; Final Approval
Muhammad Waqar[4], Drafting Manuscript; Critical Revision; Supervision; Final Approval
Irum Naz[2], Concept & Design; Critical Revision

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