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Frequency of Thrombocytopenia in Neonates Presenting with Neonatal Sepsis

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Abstract

Introduction: *Neonatal sepsis (NNS) related mortality is largely preventable if diagnosed early and managed aggressively with rational anti microbial therapy and supportive care. Diagnosis of neonatal sepsis is made by hematological changes induced by culture proven and probable sepsis. Thrombocytopenia is one of the early but non-specific indicator of neonatal sepsis. It can be caused by bacterial, viral, fungal and parasitic infections and other non-infectious causes. The present study aimed to know the incidence of thrombocytopenia in neonatal sepsis and to evaluate the feasibility of NNT as a screening tool*

Objective: *To determine the frequency of neonatal thrombocytopenia among patients presented with neonatalsepsis at tertiary care Hospital.*

Methodology: *This cross-sectional study was conducted at the Department of pediatrics, BICHQ/BMC, Quetta during six months from 24th August 2021 to 24th April. All the diagnosed septic neonates, age < 28 days and either gender were included. The Blood sample was sent to the hospital to diagnose thrombocytopenia. The sample of blood was also sent in blood culture bottles to hospital laboratory to confirm bacterial growth that was diagnosed as neonatal. All collected data were entered and analyzed with the help of SPSS version 22.*

Results: *Male patients were 47.56% and 52.44% female patients were included in this study result. A total of 16.26% patients had their maternal hypertension, 21.95% neonates had gram + and 157 (63.82%) neonates had Gram negative. A total of 63 (25.61%) patients had thrombocytopenia while 183(74.39%) neonates were seen without thrombocytopenia. The frequency of thrombocytopenia was statistically insignificant according to gender and types of culture (p->0.05).*

Conclusion: *It is concluded that frequency of thrombocytopenia in neonatal was found in a quarter of the patients. In neonatal, thrombocytopenia must be ruled out at patient's presentation and must be treated as early as possible as thrombocytopenia is an independent risk factor for neonatal associated mortality.*

Keywords: Incidence, thrombocytopenia, neonatal

INTRODUCTION

Neonatal thrombocytopenia is a common clinical problem. Thrombocytopenia presenting in the first 72 hours of life 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 is usually secondary to sepsis or necrotizing enterocolitis and is usually more severe

and prolonged. Platelet transfusion remains the only treatment. There is a need for trials to define the safe lower limit for platelet count and which neonates will benefit from treatment and in a neonate of any viable gestational age was traditionally defined as a platelet count of less than 150 × 109/L, compromising the clinical course in 22–35 percent of these admissions.[1]Thrombocytopenia and alterations in platelet indices are common in newborns with neonatal. MPV, PDW, and PCT are three significant platelet indices that can be used in therapeutic settings. If carefully evaluated, platelet indices can be useful in the diagnosis and follow-up of neonatal, including measuring the response to antimicrobial treatment.[2]It is a leading cause of the mortality and the morbidity among sickpre term and full-term infants, accounting for 20 to 40% of babies admitted to Neonatal Intensive Care Units.[3] Bacteria and the products of the bacteria can cause of damage of endothelial cells, causing platelet adhesion and aggregation, or they can bind to platelets directly, causing aggregation and rapid clearance by circulation.[3]Thrombocytopenia was more common and lasted longer with Gram-negative and fungal infections. Thrombocytopenic newborns had a higher rate of persistent bacteremia, multi organ failure, and mortality. Neonatal is one of the most common causes of thrombocytopenia among neonates, and thrombocytopenia can progress quickly, with the lower platelet count occurring within 24–48 hours of infection.[4]In newborn neonatal, thrombocytopenia substantially quadruples the chance of death. A total of 460 of 6551 newborns were found to have neonatal. In 20% of septic neonates (92/460), severe thrombocytopenia (platelets 50*109 /L) developed.[5]

The rationale of this study is to find the frequency of thrombocytopenia in neonatal, an association of thrombocytopenia with neonatal would help in early detection of the severity of neonatal and prompt management. Thrombocytopenia is a common complication of neonatal among neonates and is one of the most reliable, independent risk factors for neonatal-related mortality.[5]Few studies are available in our population, so there is a need to investigate for the parameter for prompt treatment. Hence, this study has been done to evaluate the frequency of neonatal thrombocytopenia among patients presented with neonatal at tertiary care Hospital.

MATERIAL AND METHODS

This cross-sectional study was conducted at the Department of paediatrics Balochistan Institute of Child Health Services/BMC, Quetta Study was conducted during six months from September. Non-probability consecutive sampling was used. A total of 246 patients were taken; the sample is calculated using 20% frequency of thrombocytopenia in neonatal,5 with 95% confidence level and 5%margin of error. All the diagnosed septic neonates, age < 28 days and either gender were included. All neonates with other causes of thrombocytopenia, like fetal/neonatal all immune thrombocytopenia (FNAITP) or maternal immune thrombocytopenic purpura (ITP), congenital anomalies, hyaline membrane disease, hypoxic-ischemic encephalopathy and probable blood culture contamination (CRP >10mg/L during a neonatal episode) were excluded. All data were taken after taking informed consent. Their basic demographic data like age and gender, along with their contact details were taken. The samples of blood were sent to Hospital laboratory in blood culture bottle, to the assessment of bacterial growth that was diagnosed neonatal as per operational definition. Blood sample was sent to the Hospital also to diagnose thrombocytopenia. Reports were consulted by the pathologist. All the data was collected by a structured study questionnaire. All data were entered and analyzed with the help of SPSS version 22.

RESULTS

A total of 246 septic neonates were studies, their mean age was8.92±5.40days with minimum and maximum age as 1 and 27 days. There were 117(47.56%) males and 129(52.44%) female patients. Out of all 54(21.95%) neonates, gram + and 157(63.82%) neonates had Gram-negative culture. Table.1

A total of 63 (25.61%) patients had thrombocytopenia while 183 (74.39%) neonates were found with normal levels of platelets. Fig-1

Among patients that were <14 days old, 45(23.2%) had thrombocytopenia and among patients that were 14-28 days, 18(34.6%) had thrombocytopenia. The frequency of thrombocytopenia was statistically in significant according to gender and type of culture, p-values were insignificant. Table.2

Table 2. Descriptive statistics of demographic characteristicsn=246

Variables		Statistics
Age(days)		8.92+5.40
Gender	Males	117(47.56%)
	Females	129(52.44%)
Gram positive	Yes	54(21.95%)
	No	192(78.05%)
Gram negative	Yes	157(63.82%)
	No	89(36.18%)

Fig. 1: Frequency of thrombocytopenia among septic neonates n=246

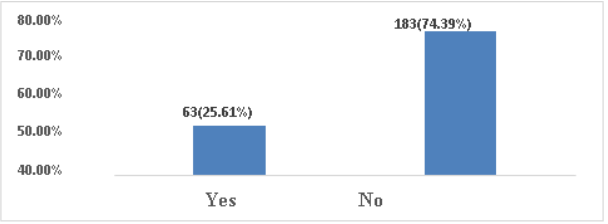

Table 2: Frequency of thrombocytopenia according to gender and type of culture n=246

Variables		Thrombocytopenia		p-value
		Yes	No	
Gender	Males	30	87	0.991
	Females	33	96	
Grampositive Culture	Yes	18	36	0.141
	No	45	147	
Gramnegative Culture	Yes	35	122	0.113
	No	28	61	

DISCUSSION

In newborns, thrombocytopenia is a common issue. Thrombocytopenia has recently attracted a lot of attention, particularly the link between clinically severe bleeding and platelet count. Neonatal is one of the commonest causes of thrombocytopenia among neonates, and thrombocytopenia can progress quickly, with the lower platelet count occurring within 24–48 hours of infection.6The importance of the relationship between neonatal the thrombocytopenia was emphasized by identifying thrombocytopenia as a commonest predictive, independent risk factors for neonatal linked mortality among

severely low-birth weight neonates.7in this study thrombocytopenia was found 25.61% out 246 septic neonates. Consistently demonstrated that the frequency of thrombocytopenia was 116 (24.7%)8 in neonates of neonatal. Although found higher frequency of thrombocytopenia among neonates with neonatal as 68.9%9, while found a lower frequency of severe thrombocytopenia in neonates with neonatal as 20%5. Observed very high incidence of thrombocytopenia among neonates of neonatal, the above variation in the frequency may because of a valuable difference in sample size of the studies and may be because of environmental variation or care of the neonates after delivery. The clinical and the pathogenic variations between the many causative bacteria, clinical syndromes, and manifestations of newborn neonatal should not be overlooked when considering neonatal as a single entity. Previous research has either identified no discernible difference in the prevalence and duration of thrombocytopenia in neonatal may because of Gram negative or gram positive organisms, or has found a higher frequency of thrombocytopenia in Gram negative neonatal.5 Consistently in this study, out of all 54(21.95%)10 neonates had gram positive and 157(63.82%) neonates had Gram negative culture. Similarly, reported that the gram-negative neonatal was most common among 90% of the neonates of neonatal in contrast to gram-negative neonatal as 10%5. Consistently that thrombocytopenia was in 35 patient's of Gram negative and in 15 patients of gram-positive neonatal11. In the study of Bhat MAet al,12 also reported that the Gram-negative neonatal was 71%, and Gram positive neonatal was only 20%. In newborn neonatal, thrombocytopenia substantially quadruples the chance of death. Thrombocytopenia and Gram negative (as opposed to Gram positive) neonatal were independently linked with newborn death in a multivariate study. In newborn neonatal, thrombocytopenia raises the chance of death by roughly fourfold, with additional six-fold increase in mortality in Gram-negative neonatal.11 In this study, mean age was 8.92±5.40 days and male neonates were 117(47.56%) and 129(52.44%) were females. While inconsistently Addil F et al10reported that the mean age of the neonates was 9.87 ± 7.68 days and males were in majority as 59.7% and females were 40.3%. On other hand Bhat Y R et al13also found that males in majority 64.1% and females were 35.9%. Thrombocytopenia is a common hematological abnormality, often culminating in severe complications if not detected and managed properly.14 Neonates are particularly vulnerable to infection because of weak immune barrier. Additionally, various risk factors have been discovered in both newborns and mothers that make them vulnerable to infections. For a better outcome, neonatal septicemia requires prompt, correct diagnosis and treatment.15Although this investigation was limited to a single bacterial isolate, there maybe other causes, such as those indicated above, that are linked to thrombocytopenia and do not demonstrate bacterial growth.

CONCLUSION

It was concluded that frequency of thrombocytopenia in neonatal neonatal was found in a quarter of the patients. In neonatal neonatal, thrombocytopenia must be ruled out at patient's presentation and must be treated as early as possible as thrombocytopenia is an independent risk factor for neonatal associated mortality.

REFERENCES

1 Christensen R, Henry E, Wiedmeier S, Stoddard R, Sola-Visner M, Lambert D, et al. Thrombocytopenia among extremely low birth weight neonates: data from a multihospitalhealthcaresystem.JPerinatol.2006;26(6):348-53.

2 Akarsu S, Taskin E, Kilic M, Ozdiller S, Gurgoze MK, Yilmaz E, et al. The effects of different infectious organisms on platelet counts and platelet indices in neonates with neonatal:is there an organism-specific response? J Trop Pediatr. 2005;51(6):388-91.

3 Arif SH, Ahmad I, Ali SM, Khan HM. Thrombocytopenia and bacterial neonatal in neonates. Indian Journal of Hematology and Blood Transfusion. 2012 Sep;28(3):147-51.

4 Murray N, Howarth L, McCloy M, Letsky E, Roberts I.Platelet transfusion in the management of severe thrombocytopenia in neonatal intensive care unit patients. Trans Med. 2002;12(1):35-41.

5 Ree IM, Fustolo-Gunnink SF, Bekker V, Fijnvandraat KJ, Steggerda SJ, Lopriore E. Thrombocytopenia in neonatal neonatal: Incidence, severity and risk factors. PloS One. 2017;12(10):1-10.

6 Murray N, Howarth L, McCloy M, Letsky E, Roberts IJTm. Platelet transfusion in the management of severe thrombocytopenia in neonatal intensive care unit patients. 2002;12(1):35-41.

7 Levit O, Bhandari V, Li F-Y, Shabanova V, Gallagher PG, Bizzarro MJJTPidj. Clinical and laboratory factors thatpredict death in very low birth weight infants presenting with late-onset neonatal. 2014;33(2):143.

8 Ahmad MS, Waheed A. Platelet counts, MPV and PDW in cultureprovenandprobableneonatalneonatalandassociation of platelet counts with mortality rate. J Coll Physicians Surg Pak. 2014 May 1;24(5):340-4.

9 Addil F, Rehman A, Najeeb S, Imtiaz H, Khan S. Neonatal Neonatal: The Frequency of Thrombocytopenia. Systematic Reviews in Pharmacy. 2021 Jun 21;12(6):442-4.

10 Sindhura YS, Reddy KR. A study of neonatal thrombocytopenia in Neonatal Neonatal. Int J Contemp Med Res. 2017;4(11):2250-2.

11 Bhat S, Naik S, Rafiq W, Tariq A S. Incidence of thrombocytopenia and changes in various platelet parameters, in blood culture positive neonatal neonatal. IJP. 2015;3(4.1):757-66.

12 Bhat MA, Bhat JI, Kawoosa MS, Ahmad SM, Ali SW. Organism-specific platelet response and factors affecting survival in thrombocytopenic very low birth weight babieswith neonatal. J Perinatol. 2009;**29**(10):702-8.

13 Bhat Y R, Kousika P, Lewis L, Purkayastha J. Prevalence and severity of thrombocytopenia in blood culture proven neonatal neonatal: a prospective study. Archives of Pediatric Infectious Diseases. 2018 Apr 30;6(2).

14 Arif H, Ikram N, Riaz S, Nafisa A. Risk factors and outcome of neonatal thrombocytopenia. Journal of RawalpindiMedical College. 2020 Sep 30;24(3):229-34.

15 Arif SH, Ahmad I, Ali SM, Khan HM. Thrombocytopenia and bacterial neonatal in neonates. Indian Journal of Hematology and Blood Transfusion. 2012 Sep;28(3):147-51.