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Prevalence of neonatal thrombocytopenia in five cities of India: A cross-sectional descriptive study

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ABSTRACT

Background: Neonatal thrombocytopenia is defined as a platelet count <150,000/μL can be mild, moderate, or severe thrombocytopenia. The platelet production in neonates begins early at 5 weeks of gestation and reaches the adults count by 24–28 weeks. The platelet disorders are due to impaired platelet production or increased platelet destruction and sequestration. The onset of neonatal thrombocytopenia occurs within 72 h and late onset develops the risk of intraventricular hemorrhage. Hence, the knowledge regarding the incidence and occurrence is vital. **Aims and Objectives:** The present study aims to study the prevalence of neonatal thrombocytopenia in India. **Materials and Methods:** A cross-sectional descriptive study was designed, A total of 3250 neonates were assessed for the prevalence of neonatal thrombocytopenia using non-probability convenient sampling technique studies at various cities such as Lucknow, Panipat, Sonipat, Gohana, and Delhi. The data relating to levels of platelets were assessed for all the samples. **Results:** The present study revealed that the prevalence rate of neonatal thrombocytopenia was 3.4% at various cities in India. **Conclusion**: The present study assessed the prevalence of neonatal thrombocytopenia this determines the early intervention and prevention of the complication in relation to neonatal thrombocytopenia.

Key words: Neonate thrombocytopenia; Newborn complication; Platelets

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INTRODUCTION

Platelets are formed in the blood by 5 weeks sooner than within 30 weeks the platelets are fully functional and help in the repair and reformulation of neonate structures, due to immune mediate, alloimmune and maternal antibodies the decrease in platelets occurs within 72 h of birth, this thrombocytopenia can be mild, moderate, or severe if the onset is later 72 h can cause intraventricular hemorrhage. The mild and moderate neonatal thrombocytopenia resolves within 10 days. If severe, the case needs better investigation and management. Hence, the present study aims to assess the prevalence of neonatal thrombocytopenia in India at various cities.

Aims and objectives

The present study is aimed to assess the prevalence of neonatal thrombocytopenia in India.

MATERIALS AND METHODS

A cross-sectional study designed to assess the prevalence of neonatal thrombocytopenia in India for a period of 6 months from December 2022 to June 2022. A total of 3250 samples calculated with alpha 95% confidence interval and beta 80% power, 0.5 prevalence rate and 0.05 of marginal error were selected from different diagnostic centers at various selected cities like Lucknow, Panipat, Sonipat, Gohana, and Delhi. All the neonates with a

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complaint of skin rashes, skin redness, petechiae, purpura, ecchymoses bleeding at the umbilical site, venous puncture site, and blood-tingled secretions were identified. The analysis of the study was computed using SPSS version 22.0 software for differential and inference statistics.

RESULTS

The present study was designed to assess the prevalence of neonatal thrombocytopenia. The following are the findings of the study. Table 1, describes the distribution of neonatal thrombocytopenia cases at various selected cities of India, in Lucknow total of 445 samples were collected 12 samples, in Panipat total of 925 samples were collected among them 39 samples, in Sonipat out of total 692 samples were collected of them 28 samples, in Gohana total 560 samples were collected of them 14 samples and in Delhi, a total 628 samples were collected of them 19 samples were neonatal thrombocytopenia, respectively.

The study also found that the prevalence of gestational thrombocytopenia in total samples of 3250, at Lucknow is 2.6%, Panipat is 4.2%, Sonipat is 4.0%, Gohana is 2.5%, Delhi is 3.0%, respectively, and total prevalence of gestational thrombocytopenia represented in pie diagram.

The study also found that the prevalence of gestational thrombocytopenia is 3.4%.

From Table 2, the study found that out of 112 total neonatal thrombocytopenia cases, 75 (66.69%) were male babies and 37 (33.04%) were female babies, of which Lucknow had 12 neonates, eight (66.67%) of males and four (33.33%) were female, Panipat had 39 neonates of which 28 (71.79%) of males and 11 (28.20%) were female, Sonipat had 28 neonates 15 (53.57%) of males and 13 (46.42%) were female, Gohana had 14 neonates of which nine (64.28%) of males and five (35.71%) were female and Delhi had 19 neonates of which 15 (78.94%) of males and four (21.05%) were female, signifies that the prevalence of neonatal thrombocytopenia more in male compared to female babies.

Table 3 describes the distribution of the neonates as per their age days, in Lucknow out of 12 neonate thrombocytopenia babies aged between 01 and 07 days were four (33.34%), 08–14 days age babies were six (50.00%) and 15–28 days babies were two (16.67%), Panipat out of 39 neonate thrombocytopenia babies aged between 01 and 07 days were 12 (30.76%), 08–14 days age babies were 15 (38.46%), and 15–28 days babies were 12 (30.76%), Sonipat out of 28 neonate thrombocytopenia babies aged between 01 and 07 days were 10 (35.71%), 08–14 days age babies were eight (28.57%) and 15–28 days babies were 10 (35.71%), Gohana out of 14 neonate thrombocytopenia babies aged between 01 and 07 days were four (28.57%), 08–14 days age babies were six (42.85%) and 15–28 days babies were four (28.57%), Delhi out of 19 neonate thrombocytopenia babies aged between 01 and 07 days were five (26.31%), 08–14 days age babies were 12 (63.15%) and 15–28 days babies were nine (47.36%) signifies that the neonatal thrombocytopenia can cause within 72 h and in later stage after 72 h. The study found that both gender babies developed thrombocytopenia within 72 h and the majority of them were cured and discharged.

DISCUSSION

The present study aimed to study the prevalence of neonatal thrombocytopenia cases in India. The study

Table 1: Describes the distribution of neonatal thrombocytopenia at various cities under study in India

S. No.	City	Number of samples	Number of neonatal thrombocytopenia	Percentage
1	Lucknow	445	12	2.6
2	Panipat	925	39	4.2
3	Sonipat	692	28	4.0
4	Gohana	560	14	2.5
5	Delhi	628	19	3.0
Total		3250	112	3.4

Table 2: Describes the distribution based on the gender of the neonates having neonatal thrombocytopenia

S. No.	City	Number of neonatal thrombocytopenia	Male	Percentage	Female	Percentage
1	Lucknow	12	8	66.67	4	33.33
2	Panipat	39	28	71.79	11	28.20
3	Sonipat	28	15	53.57	13	46.42
4	Gohana	14	9	64.28	5	35.71
5	Delhi	19	15	78.94	4	21.05
	Total	112	75	66.96	37	33.04

Table 3: Describes the distribution of the neonates according to their days after birth

S. No.	City	Number of neonatal thrombocytopenia	Age (days)	Number of neonates	Percentage
1	Lucknow	12	1–7	4	33.34
			8–14	6	50.00
			15–28	2	16.66
2	Panipat	39	1–7	12	30.76
			8–14	15	38.46
			15–28	12	30.76
3	Sonipat	28	1–7	10	35.71
			8–14	8	28.57
			15–28	10	35.71
4	Gohana	14	1–7	4	28.57
			8–14	6	42.85
			15–28	4	28.57
5	Delhi	19	1–7	5	26.31
			8–14	12	63.15
			15–28	9	47.36

conducted for a period of 6 month from December 2021 to June 2022 collected information from babies of which out of 3250 samples a total of 112 babies had neonatal thrombocytopenia. The prevalence of neonatal thrombocytopenia was found to be 3.4% in India and these findings were similar to the studies of Ulusoy et al.,[6] Cremera et al.,[9] and Ferrer-Marin et al.,[3] these studies concluded that the prevalence of neonatal thrombocytopenia ranges from 2.8% to 4.8%.[1,3,8,9,10] The gender distribution in the current study showed that out of 112, 75 (66.97%) were males and 37 (33.33%) were female babies, these findings were similar to the study by Sola-Visner, Roberts, and Murray[2,4] study conducted by Gebreselassie et al., showed that 20% of thrombocytopenic episodes in neonates are severe and are at increased risk of hemorrhage our study showed it is more common in preterm babies these findings are in concordance with the findings of the study Fernandez, Ulusoy et al., and Wong and Glader.[5-7]

Limitations of the study

The present study is conducted in selected district of North India.

CONCLUSION

Neonatal thrombocytopenia is a condition where platelets are reduced and the disorder can occur within 72 h and can cause intraventricular hemorrhage. The condition of decreased platelet count will resolve within 10 days, so the present study demonstrates the prevalence of neonatal thrombocytopenia among various cities and gives relevant information for the control and prevention of platelet-related complications in neonates.

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PM- Contributed by developing the concept and design of the study, preparation planning, and manuscript drafting; **AK, JK-** Contributed by reviewing of literature, reframing the manuscript, reviewing the manuscript, preparation of draft; **LS-** Contributed by data collection and arranging as required and **VVG-** Contributed by statistical analysis and interpretation final drafting of the manuscript

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