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A PROSPECTIVE OBSERVATIONAL STUDY OF MATERNAL AND FETAL OUTCOMES OF THROMBOCYTOPENIA IN PREGNANCY

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ABSTRACT

Introduction: Thrombocytopenia is commonly observed in pregnant women and can stem from various underlying factors. While it is often benign, in certain cases, it may contribute to negative outcomes for both the mother and fetus.
Objective: To investigate the underlying causes of thrombocytopenia during pregnancy and assess its impact on maternal and fetal health.
Methods: This study included 150 consenting pregnant women beyond 28 weeks of gestation, selected based on their platelet counts. A comprehensive medical history was taken, followed by clinical evaluations and relevant laboratory tests. Maternal and fetal outcomes, along with any treatment-related complications, were documented.
Findings: Thrombocytopenia was identified in 33% of participants. Gestational thrombocytopenia was the most frequently observed type, typically associated with favorable outcomes. However, thrombocytopenia resulting from obstetric conditions such as hypertensive disorders, HELLP syndrome, and certain medical conditions like ITP and viral infections showed a stronger correlation with adverse outcomes.
Conclusion: Although commonly seen in pregnancy, thrombocytopenia should not be overlooked. Proper assessment and close monitoring are essential to initiate early intervention and reduce potential risks for both mother and child.

Key Words: *thrombocytopenia, pregnancy, gestational.*

INTRODUCTION

Thrombocytopenia, often occurring alongside anemia, is frequently diagnosed in pregnant women in India. It is typically defined as a platelet count below 150,000/µl. According to studies, 6.6% to 11.6% of pregnant women may be affected. The condition may be harmless, such as in gestational thrombocytopenia, or severe, with possible implications for both maternal and fetal health.

Thrombocytopenia during pregnancy can be categorized as follows:

- **Severe:** <50,000/µl
- **Moderate:** 50,000–100,000/µl
- **Mild:** 100,000–150,000/µl

Possible causes include:

- Gestational thrombocytopenia
- Obstetric complications like preeclampsia, eclampsia, HELLP syndrome, DIC, and amniotic fluid embolism
- Medical conditions such as ITP, TTP, and HUS
- Congenital platelet disorders

Gestational thrombocytopenia typically arises in the latter stages of pregnancy and resolves after childbirth. Diagnosing thrombocytopenia during pregnancy involves identifying any underlying conditions and evaluating the risks associated with diagnostic and therapeutic interventions.

Preeclampsia is responsible for around 21% of pregnancy-related thrombocytopenia, often presenting in moderate to severe forms. In extreme cases, endothelial injury may cause HELLP syndrome—a condition marked by liver dysfunction, hemolysis, and thrombocytopenia.

Immune thrombocytopenic purpura (ITP) occurs in approximately 3% of pregnant women with thrombocytopenia. It can result in significant bleeding risks for the newborn due to placental transfer of antiplatelet antibodies.

This study aims to analyze the various causes of thrombocytopenia in pregnancy and their associated maternal and fetal effects.

Materials and Methods

This prospective observational study was carried out in the Department of Obstetrics and Gynecology at JNU Medical College, Jaipur, after receiving approval from the institutional ethics committee.

Study Design: Prospective observational

Study Duration: August 1, 2023 – July 30, 2024

Study Population:

The study included all pregnant women visiting the Obstetrics and Gynecology OPD for antenatal care. Blood samples were collected, and platelet counts were determined using both manual and automated hematological methods. A total of 150 women were selected based on their platelet counts at admission, after obtaining written informed consent.

Inclusion Criteria:

- Platelet count below 150,000/µl
- Gestational age beyond 28 weeks
- Voluntary participation

Exclusion Criteria:

- Multiple pregnancies
- Malignancy-related thrombocytopenia
- Thrombocytopenia due to chemotherapy
- Pregnant women with diabetes or thromboembolic conditions

Patient data was collected, including detailed obstetric and medical history, previous complications, and signs such as bruising or petechiae. Each patient underwent general, systemic, and obstetric examinations. Lab investigations included hemoglobin, TLC, DLC, bleeding/clotting times, RFT, LFT, HIV, and HBsAg. Febrile patients were tested for dengue IgM, and those with suspected DIC underwent coagulation testing (PT, APTT, FDP, fibrinogen). Blood was collected under sterile conditions and processed within four hours.

Intrapartum complications and both maternal and fetal outcomes were monitored. Delivery methods, need for postpartum transfusion, neonatal birth weights, NICU admissions, and neonatal outcomes were recorded.

Results

We screened 500 cases for the study. Out of 500, 150 women were found to have thrombocytopenia. It shows the incidence of thrombocytopenia was 33%

Table 1: Distribution according to demographic profile

SNO.	DEMOGRAPHIC PROFILE	NO. OF CASES	PERCENTAGE %
1	Parity of patients		
(a)	Primigravida	78	52
(b)	2^{nd}-3^{rd} gravida	53	35.33
(c)	>3^{rd} gravida	19	12.66
2	Gestational age		
(a)	29-32.6	35	23.33
(b)	33-36.6	83	55.33
(c)	37-40	32	21.33

3	Severity of thrombocytopenia		
(a)	Mild	46	30.66
(b)	Moderate	84	56
(c)	Severe	20	13.33
	TOTAL	150	

Table 1 shows the demographic and obstetrical profile of pregnant women. This table shows that 78 women (52%) were Primigravida. 53 (35.33%) patients were 2nd and 3rd gravida and 19 (12.66%) patients belonged to >3rd gravida According to gestational age, most of the women belong to gestational age 33-36.6 weeks, which was 83(55.33%). 32 patients (21.33%) belong to gestational age 37-40 weeks, 35 patients (23.33%) belong to 29-32.6 weeks gestational age. According to the severity of thrombocytopenia, 20 patients (13.33%) had severe thrombocytopenia, 84 (56%) had moderate thrombocytopenia, and 46 (30.66%) had mild thrombocytopenia.

Table 2: CAUSE OF THROBOCYTOPENIA IN PREGNANCY
DISTRIBUTION OF STUDY GROUP A/C TO CAUSATIVE FACTOR

SNO.	**CAUSATIVE FACTOR**	**NO. OF CASES**	**PERCENTAGE %**
1	Gestational Thrombocytopenia	72	48
2	Obstetrics	38	25.33
(a)	Hypertensive disorders	35	23.33
I	Preclampsia	30	20
Ii	Eclampsia	4	2.66
Iii	HELLP	1	0.66
(b)	DIC	3	2
3	Medical	40	26.66
(a)	TTP/HUS	2	1.33
(b)	ITP	14	9.33
(c)	Dengue	12	8
(d)	Hepatic disease	5	3.33
(e)	Bone marrow disorder	4	2.66
(f)	Splenic sequestration	1	0.66
(g)	Megaloblastic anemia	2	1.33
	TOTAL	150	

Table 2 shows that most of the patients belong to gestational thrombocytopenia, which was 72 patients (48%), followed by 40 (26.66%) who belong to medical disorders. It was further followed by obstetrics cause, which was 38 patients (25.33%).

The obstetric causes, hypertensive disorders were most common that was 35 (23.33%) of the total obstetric causes, followed by DIC. It was further followed by HELLP syndrome.
In medical causes, ITP was the most common cause that affected 14 pregnant women (9.33%), followed by Dengue (8%).

Other causes were TTP/HUS (1.35%), hepatic disease (3.33%), bone marrow disorders (2.66%), splenic sequestration (0.66%), and megaloblastic anaemia (1.33%).

Table 3: Maternal outcomes in the study population

SNO.	**OUTCOME**	**NO. OF CASES**	**PERCENTAGE%**
1	No Complication	102	68
2	Complication	48	32
(a)	Massive hemorrhage	18	12
i	APH	3	2
ii	PPH	15	10
(b)	ARF	5	3.33
(c)	DIC	3	2
(d)	Pulmonary edema	5	3.33
(e)	Obstetric Hysterectomy	1	0.66

(f)	Puerperal sepsis	1	0.66
(g)	Transfusion in the mother	15	10
	TOTAL	150	

Table 3 shows maternal outcomes, in which most of the patients had no complications, that is, 102 women (68%) out of 150. While complications occurred in 48 patients, most of the complications that occurred were seen in the form of massive haemorrhage in 18 patients (12%). Other complications that were seen were Acute renal failure (3.33%), DIC (2%), and Pulmonary oedema (3.33%). One of the patients underwent an obstetric hysterectomy due to severe PPH, and 15 patients (10%) required blood transfusion.

Table 4: Neonatal outcomes

SNO.	**OUTCOME**	**NO. OF CASES**	**PERCENTAGE %**
1	No Complication	112	74.66
2	Complication	38	25.33
(a)	FGR	13	8.66
(b)	Birth asphyxia	7	4.66
(c)	Neonatal thrombocytopenia	3	2
(d)	ICH	2	1.33
(e)	IUD	3	2
(f)	Still birth	2	1.33
(g)	Low Apgar score	8	5.33
	TOTAL	150	

Table 4 shows perinatal outcomes. While 112 patients (74.66%) had no complications, complications were seen in 38 women (25.33%). The most common complication seen was FGR, seen in 13 patients (8.66%). Other complications seen were birth asphyxia (4.66%), severe thrombocytopenia (2%), intracranial haemorrhage (1.33%), and low APGAR score (5.33%). 3 (2%) and 2 (1.33%) patients suffered IUD and stillbirth birth respectively.

In our study, 32% patients were delivered by Caesarean section which were done for obstetric complication while the rest (68%) were delivered vaginally.

Discussion

In the present study, the incidence of thrombocytopenia in pregnancy was 18.75%. Sainio et al[8] reported the incidence of thrombocytopenia was 7.3% in population-based surveillance. Nisha et al[9] mentioned that the overall incidence of thrombocytopenia was 8.8%. Minal Harde et al[10] reported the incidence was 8%. According to Singh et al, [11] incidence was 34%. Burrows RF and Kelton JG[12] reported the incidence to be 7.6%. Our study results showed an incidence of thrombocytopenia higher than in comparison to most of the other studies because our hospital is a tertiary care centre, and referral cases of thrombocytopenia are more common in other centres.

Incidence of maternal thrombocytopenia

Study	**Incidence**
Sainio et al[8]	7.3%
Nisha et al[9]	8.8%
Minal Harde et al[10]	8%
Singh J et al[11]	34%
Burrows RF & Kelton JG[12]	7.6%
Rinku et al[15]	6.67%
Present study	18.75%

In our study, the incidence of mild thrombocytopenia was 30.66%, moderate thrombocytopenia was 56%, and severe thrombocytopenia was 13.33%.

As summarised in the table below, Nisha et al[9] reported the incidence of mild, moderate, and severe thrombocytopenia as 74.7%, 17.9%, and 7.5%, respectively. In the study conducted by Chauhan V et al, [13] Incidence of mild thrombocytopenia was 63.1%, moderate and severe thrombocytopenia were 35.4% and 1.5%. Minal Harde et al[10] in their study, reported incidence of mild thrombocytopenia was 29.3%, moderate thrombocytopenia was 66%, and severe thrombocytopenia was 4.7%. The study done by Singh J et al[11] came to the conclusion that the incidence of mild thrombocytopenia was 35.55%

and that of moderate and severe thrombocytopenia were 24.44% and 40%. Sahiwal et al[14] reported the incidence of mild, moderate, and severe thrombocytopenia to be 23%, 59%, and 18%, respectively.

In our study, the incidence of moderate thrombocytopenia is higher than compared of mild and severe thrombocytopenia. The results of our study are similar to the study conducted by Sahiwal et al[14].

Severity of maternal thrombocytopenia

Study	Mild	Moderate	Severe
Nisha et al[9]	74.7%	17.9%	7.5%
Chauhan V et al[13]	63.1%	35.4%	1.5%
Minal Harde et al[10]	29.3%	66%	4.7%
Singh J et al[11]	35.55%	24.44%	40%
Sahiwal et al[14]	23%	59%	18%
Present study	30.66%	56%	13.33%

In our study, gestational thrombocytopenia (48%) was the most common cause of low platelet count, followed by medical (26.66%) and obstetric (25.33%) causes, respectively. However, in the study conducted by Nisha et al, [9], the most common cause of thrombocytopenia was gestational thrombocytopenia (64.21%), which was followed by obstetric causes (22.11%). In their study, hypertensive disorder (21.05%) was the most common obstetric cause. Medical causes constituted about 13.68% of the total cases. In the study by Minal Harde et al, [10], Preeclampsia (33.3%) was the most common cause of thrombocytopenia, while gestational thrombocytopenia (28%) was the second most common cause, followed by ITP (3.3%).

Gestational thrombocytopenia was also reported as the most common cause, according and Rinku et al[15] (56%). In the study by Sahiwal et al, [14], the most common medical cause of thrombocytopenia was nutritional anaemia (23%).

Causes of thrombocytopenia in various studies

`Causes	Current study	Nisha et al[9]	Minal Harde et al[10]	Singh J et al[11]	Sahiwal H et al[14]	Rinku et al[15]
Gestational thrombocytopenia	48%	64.21%	28%	50%	33%	56%
obstetric causes	25.33%	22.11%	54%	25.56%		
Preeclampsia/ eclampsia/ HELLP	23.44%	21.05%	54%	22.44%	24%	35%
DIC	2%	1.05%		3.3%		
Medical causes	26.66%	13.68%	18%	24.44%		9%
ITP	9.33%	5.26%	3.3%	11.11%		
Megaloblastic anaemia	1.33%	1.05%		2.22%	23%	

In our present study, 102 patients out of 150 had no complications. While 48 patients (32%) had complications in the form of massive haemorrhage. PPH (10%) was the most common form of massive haemorrhage seen in patients with obstetrical or medical causes of thrombocytopenia. Out of 15 patients in which PPH occurred, 11 patients had severe thrombocytopenia. 1 patient underwent an obstetrical hysterectomy because of PPH. Other complications occurred in the form of pulmonary edema (3.33%), DIC (2%), and puerperal sepsis (0.66%). 15 patients (10%) needed blood transfusion, out of which 13 had severe thrombocytopenia.

According to Rinku et al[15], in their study, 14% of patients had PPH, while DIC was seen in 2% and ARF in 3% of patients. In the study conducted by Singh J et al[11], maternal complications were seen in 42.23%, which included maternal haemorrhage (8.88%), pulmonary oedema (10%), puerperal sepsis (6.6%), ARF (5.55%), DIC (7.78%) and obstetrical hysterectomy (2.2%). The incidence of maternal complications in a study by Amita et al[16] was 9.89%. In their study, PPH was seen mostly in patients with medical causes (30%) of thrombocytopenia. Sahwal et al, in their study, reported maternal complications in 12% of patients, which was very low as compared to the present study. Whereas the rate of maternal complications was higher in the study conducted by Minal Harde et al, [10] (50%).

In the current study, 112 patients (74.66%) had no complications. However, complications were seen in 38 patients (25.33%), of which the most common complication was Fetal Growth Retardation seen in 13 patients (8.66%). Other complications included birth asphyxia (4.66%), severe thrombocytopenia (2%), intracranial haemorrhage (1.33%), and low APGAR score (5.33%). 3 (2%) patients suffered IUD, and 2 stillbirths (1.33%) were also seen in the present study. Neonatal

complications were seen more frequently in patients with obstetric causes of thrombocytopenia as compared to gestational thrombocytopenia and medical causes of thrombocytopenia. According to the study by Minal Harde et al[10], 10% of neonates required NICU admission. In their study, most of the neonatal complications were seen in patients with preeclampsia, preeclampsia with HELLP syndrome (82%), and infectious causes, mainly malaria and dengue. In the study by Sahiwal et al, [14], the most common fetal complication was a low APGAR score in 13% of patients. Singh J et al[11] reported that 54.4% of patients had no perinatal morbidity. In their study, fetal growth retardation (11.11%) was the most common cause of perinatal morbidity followed by birth asphyxia (10%) and intra-cranial bleed (4.4%).

CONCLUSIONS

In nonpregnant women, platelet counts typically range between 150,000 and 400,000/µl, but this level tends to decrease during pregnancy. The decline is mainly due to factors like hemodilution and increased platelet aggregation driven by thromboxane A2.

In our study, thrombocytopenia was found in 33% of participants. While gestational thrombocytopenia was the leading cause, it's critical to thoroughly investigate and exclude other underlying conditions. Comprehensive clinical evaluation and laboratory investigations are key.

Thrombocytopenia during pregnancy can lead to significant complications for both the mother and fetus. Therefore, regular platelet monitoring is essential for early diagnosis and timely intervention, enabling better maternal and neonatal outcomes.

REFERENCES

1. Kadir RA, McLintock C. Thrombocytopenia and disorders of platelet function in pregnancy. Semin Thromb Hemost. 2011; 37(6): 640-52.
2. McCarae KR. Thrombocytopenia in pregnancy. Hematology Am Soc Hematol Educ Program. 2010;397-402.
3. Gernsheimer T, James AH, Stasi R. How I treat thrombocytopenia in pregnancy. Blood. 2013;121(1):38–47. doi:10.1182/blood-2012-08- 448944.
4. Shehata N, Burrows RF, Kelton JG. Gestational Thrombocytopenia. Clin Obstet Gynecol. 1999;42:327-34.
5. Wei J, Liu GL, Liang MY, Wang SM. Effect of general anesthesia used in cesarean section on maternal-neonatal outcome of pregnancy complicated with severe thrombocytopenia. Zhonghua Fu Chan KeZazhi. 2009;44(9):665-8.
6. Burrows RF, Kelton JG. Thrombocytopenia at delivery: a prospective survey of 6715 deliveries. Am J Obstet Gynecol. 1990;162(3):731-4.
7. Sullivan CA, Martin JN. Management of the obstetric patient with thrombocytopenia. Clin Obstet Gynecol. 1995;38:521-34.
8. Sainio S, Kekomäki R, Riikonen S, Teramo K. Maternal thrombocytopenia at term: a population-based study. Acta Obstet Gynecol Scand. 2000;79(9):744–9.
9. Nisha S, Amita D, Uma S, Tripathi AK, Pushplata S. Prevalence and Characterization of Thrombocytopenia in Pregnancy in Indian Women. Indian J Hematol Blood Transfus. 2012;28(2):77–81.
10. Harde M, Bhadade R, deSouza R, Jhingan M. Thrombocytopenia in pregnancy nearing term: a clinical analysis. IJCCM 2019; 23(11):503-508.
11. Singh J, Kumari K, Verma V. Study of thrombocytopenia in pregnancy: a clinical presentation and outcome at a tertiary care rural institute. Int J Reprod Contracept Obstet Gynecol. 2020 Apr; 9(4): 1622-1626.
12. Burrows RF, Kelton JG. Thrombocytopenia at delivery: a prospective survey of 6715 deliveries. Am J Obstet Gynecol. 1990;162(3):731-4.
13. Chauhan V, Gupta A, Mahajan N, Vij A, Kumar R, Chadda A. Maternal and fetal outcome among pregnant women presenting with thrombocytopenia. Int J Reprod Contracept Obstet Gynecol. 2016;5:2736-43.
14. Sahiwal H, Kaur P, Garg R, Kaur M. Thrombocytopenia during pregnancy and its outcome – a prospective study. Indian Journal of Obstetrics and Gynecology Research 2021; 8(2): 212-216.
15. Dr. Rinku Kumari, Dr. Mamta Sharma, Dr Rajkumar. Maternal and fetal outcomes among pregnant women presenting with thrombocytopenia. Int J Clin Obstet Gynaecol 2022;6(5):16-19.
16. Nisha S, Amita D, Uma S, Tripathi AK, Pushplata S. Prevalence and Characterization of Thrombocytopenia in Pregnancy in Indian Women. Indian J Hematol Blood Transfus. 2012;28(2):77–81.