



Thrombocytopenia in Pregnancy: Frequency and Outcome

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ABSTRACT

Background: Thrombocytopenia is the second most common hematologic disorder during pregnancy, with significant maternal and neonatal implications if not managed appropriately. **Objective:** To determine the frequency, etiological factors, and maternal-perinatal outcomes of thrombocytopenia in pregnant women at a tertiary care hospital. **Methods:** A prospective observational study was conducted from January to December at the Department of Obstetrics and Gynaecology, Central Park Teaching Hospital. Pregnant women diagnosed with thrombocytopenia (platelet count $<150,000/\mu\text{L}$) were enrolled and monitored until delivery. Investigations were performed to determine the cause and severity. Maternal and neonatal outcomes were recorded and analyzed. **Results:** Among 1,916 deliveries, 41 women (2.14%) had thrombocytopenia. The majority presented in late pregnancy (33–40 weeks). Gestational thrombocytopenia was the most common cause (56.1%), followed by immune thrombocytopenic purpura (17.1%). Mild thrombocytopenia was observed in 58.5%, moderate in 31.7%, and severe in 9.8%. Most women had no maternal morbidity (95.1%), while perinatal outcomes were favorable in 75.6% of cases. Complications included prematurity (14.6%), fetal growth restriction (7.3%), and stillbirth (2.4%). **Conclusion:** Gestational thrombocytopenia is the predominant cause and is generally benign. However, hypertensive and autoimmune disorders can lead to adverse outcomes. Early diagnosis and multidisciplinary management are vital to reducing maternal and neonatal complications.

INTRODUCTION

Thrombocytopenia, defined as a platelet count below $150,000/\mu\text{L}$, is the second most common hematologic disorder during pregnancy, occurring in 7–10% of cases. The physiologic hemodilution of pregnancy, especially in the third trimester, contributes to a reduction in platelet count. Among the etiologies, gestational thrombocytopenia accounts for 70–80% of cases, followed by hypertensive disorders (up to 20%) and immune thrombocytopenic purpura (ITP) in 3–4%. Thrombocytopenia is classified based on severity: mild ($100,000\text{--}150,000/\mu\text{L}$), moderate ($50,000\text{--}100,000/\mu\text{L}$), and severe ($<50,000/\mu\text{L}$).

Gestational thrombocytopenia is usually asymptomatic and identified incidentally during routine antenatal testing. It typically manifests in the second or third trimester and resolves within two months postpartum. On the other hand, HELLP syndrome, a severe form of preeclampsia, and autoimmune conditions such as ITP and systemic lupus erythematosus (SLE) are associated with a higher risk of adverse outcomes including fetal growth restriction (FGR), stillbirth, and neonatal thrombocytopenia.

This study aims to evaluate the frequency, etiological spectrum, and clinical outcomes of thrombocytopenia in pregnancy at a tertiary care facility. Thrombocytopenia, defined as a platelet count below $150,000/\mu\text{L}$, is a common hematological abnormality in pregnancy, second only to anemia. It affects approximately 7–10% of all pregnant women and may result from physiological changes or pathological conditions unique to pregnancy. Mild thrombocytopenia during pregnancy is often physiological, attributed to hemodilution and increased platelet consumption in the placental circulation. However, moderate to severe thrombocytopenia may indicate serious maternal or fetal complications.

Gestational thrombocytopenia accounts for the majority (about 70–80%) of cases and is generally benign, requiring no specific intervention. It typically appears in the late second or third trimester and resolves postpartum. In contrast, immune thrombocytopenic purpura (ITP), a chronic autoimmune disorder, and hypertensive disorders of pregnancy (including preeclampsia and HELLP syndrome) may lead to severe thrombocytopenia, posing risks to both mother and fetus. HELLP syndrome, characterized by hemolysis, elevated

liver enzymes, and low platelet count, is particularly associated with poor perinatal outcomes and warrants immediate medical attention.

Other causes include systemic autoimmune conditions such as systemic lupus erythematosus (SLE), thrombotic thrombocytopenic purpura (TTP), and viral infections (e.g., hepatitis, dengue). Each etiology has a distinct prognosis and management plan. Timely identification of the underlying cause, accurate classification of severity, and appropriate maternal-fetal monitoring are crucial to minimizing adverse outcomes.

Despite its prevalence and clinical significance, thrombocytopenia in pregnancy is often under-recognized, especially in resource-limited settings. Most women present late in gestation, limiting opportunities for early intervention. This study aims to identify the frequency, etiological factors, and outcomes associated with thrombocytopenia in pregnancy in a tertiary care setting, thereby aiding clinicians in decision-making and risk stratification.

METHODOLOGY

This prospective observational study was carried out at the Department of Obstetrics and Gynaecology, Central Park Teaching Hospital, Lahore from April 2023 to April 2024. Pregnant women attending antenatal clinics and diagnosed with thrombocytopenia were included and followed until delivery. Platelet counts were routinely monitored, and those with levels $<150,000/\mu\text{L}$ were included. Investigations were conducted to rule out secondary causes such as viral infections (Hepatitis B, C, dengue), autoimmune disorders, and preeclampsia.

Clinical and demographic data were recorded using a structured proforma. Severity of thrombocytopenia, maternal complications, neonatal outcomes (including prematurity, NICU admission, and birth weight), and interventions (e.g., steroid therapy, transfusion) were documented.

RESULTS

Out of 1,916 deliveries during the study period, 41 cases (2.14%) were diagnosed with thrombocytopenia. The majority (78%) presented in late pregnancy (33–40 weeks). Mild thrombocytopenia was observed in 58.5% of cases, moderate in 31.7%, and severe in 9.8%.

Most cases were multiparous (61%), and 26.8% were primigravidae. Gestational thrombocytopenia was the leading cause (56.1%), followed by ITP (17.1%) and SLE (9.8%). Hypertensive disorders, including HELLP syndrome, preeclampsia, and eclampsia, accounted for a smaller proportion.

Maternal outcomes were favorable in 95.1% of cases. One case each of puerperal sepsis and acute renal failure was noted.

Perinatal outcomes included prematurity in 14.6%, fetal growth restriction in 7.3%, and stillbirth in 2.4%. The majority of neonates (75.6%) were healthy, and no neonatal thrombocytopenia or bleeding complications were reported.

Table 1

Demographic and Clinical Characteristics of Study Participants

Parameters	No. of cases	%
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Gestational Age (Weeks)	29-32	9	22.0
	33-37	16	39.0
Of patients with thrombocytopenia	37-40	16	39.0
Severity of Thrombocytopenia	Mild	24	58.5
	Moderate	13	31.7
	Severe	4	9.8
Parity of Patients	Primigravidae	11	26.8
	2 nd – 4 th gravid	25	61.0
	> 4 th gravid	5	12.2

The table 1 presents the demographic and clinical characteristics of the study participants. In terms of gestational age, the majority of cases (78%) were between 33-40 weeks, with an equal distribution (39%) in the 33-37 and 37-40 week categories, while 22% were between 29-32 weeks. Regarding the severity of thrombocytopenia, mild cases were the most prevalent (58.5%), followed by moderate cases (31.7%), and severe cases were the least common (9.8%). Parity distribution indicates that the majority of patients (61%) were in their second to fourth pregnancy, while 26.8% were primigravidae, and 12.2% had more than four pregnancies. These findings highlight that thrombocytopenia was more frequent in women with advanced gestational age and multiparity.

Figure 1

Causes of Thrombocytopenia During Pregnancy

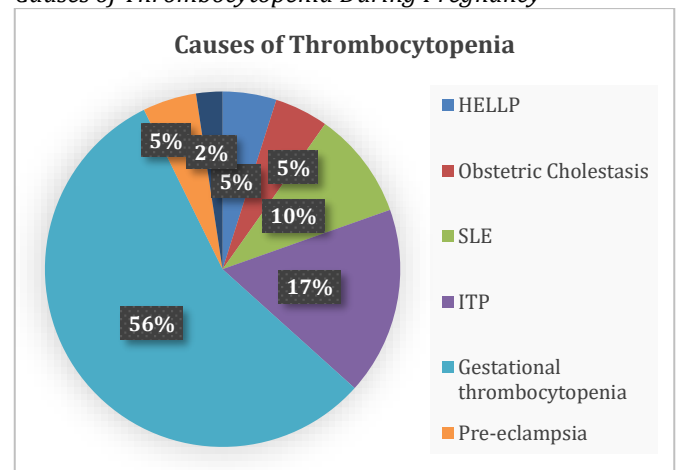


Figure 1 presents the distribution of thrombocytopenia causes among pregnant women. Gestational thrombocytopenia was the most common cause, accounting for 56.1% of cases. Immune thrombocytopenic purpura (ITP) was the second most prevalent cause, observed in 17.1% of cases. Systemic lupus erythematosus (SLE) contributed to 9.8% of cases, while HELLP syndrome, obstetric cholestasis, and preeclampsia each accounted for 4.9%. Eclampsia was the least frequent cause, reported in 2.4% of cases. These findings highlight that most cases of thrombocytopenia in pregnancy were attributed to gestational factors, with immune and autoimmune conditions also playing a significant role.

Table 2

Maternal and Perinatal Outcomes in Thrombocytopenic Pregnancies

Outcome	Causes	No. of cases	%
Maternal	No Morbidity	39	95.1
	Puerperal Sepsis	1	2.4
	ARF (Renal Failure)	1	2.4
Perinatal	No Morbidity	31	75.6
	FGR	3	7.3

Pre maturity	6	14.6
Still Birth	1	2.4

The table 3 presents maternal and perinatal outcomes in thrombocytopenic pregnancies. Most mothers (95.1%) experienced no morbidity, while a small proportion developed complications such as puerperal sepsis (2.4%) and acute renal failure (2.4%). Similarly, the majority of newborns (75.6%) had no morbidity, but some experienced complications, including prematurity (14.6%) and fetal growth restriction (7.3%). Stillbirth was reported in 2.4% of cases. These findings indicate that while most thrombocytopenic pregnancies had favorable outcomes, a subset of cases resulted in maternal and neonatal complications, emphasizing the need for close monitoring and timely intervention.

DISCUSSION

Our findings corroborate earlier studies that gestational thrombocytopenia is the most prevalent cause of thrombocytopenia in pregnancy, typically presenting as a mild and benign condition. The frequency of 2.14% is slightly lower than global averages, possibly due to late antenatal registration and underdiagnosis in earlier gestation.

The distribution of thrombocytopenia severity in our cohort aligns with studies from India and Pakistan, which also report a predominance of mild cases. Importantly, hypertensive and autoimmune conditions were associated with more severe forms and higher rates of complications such as prematurity and fetal growth restriction. These observations reinforce the need for close monitoring and early intervention in women with non-gestational thrombocytopenia.

Our results align with those of Chauhan et al. (2016), who also reported gestational thrombocytopenia as the leading cause, and Kapadiya et al. (2018), who found hypertensive disorders to be the second most common etiology. Similar outcomes were observed in a Karachi-based study by Borhany et al. (2022), emphasizing the benign nature of gestational thrombocytopenia and the higher risks posed by HELLP and preeclampsia.

Current guidelines, such as those from ACOG, recommend delivery as the definitive management for thrombocytopenia associated with HELLP syndrome. Platelet transfusion is reserved for bleeding episodes or in preparation for surgical delivery when platelet counts are $<50,000/\mu\text{L}$. The present study confirms that thrombocytopenia, though relatively uncommon (2.14% incidence in our study), is a clinically significant condition in pregnancy. Gestational thrombocytopenia emerged as the most prevalent etiology, consistent with other studies conducted in India and Pakistan. It typically presents in the third trimester, with no significant maternal or neonatal morbidity, underscoring its benign nature.

Our findings regarding the distribution of severity show that the majority of cases were mild (58.5%), a

pattern that aligns with existing regional data. Moderate and severe forms were less frequent but were more commonly associated with hypertensive disorders and autoimmune conditions. These findings highlight the importance of distinguishing between benign and pathological causes, as the latter may require pharmacologic treatment (e.g., corticosteroids for ITP) or urgent delivery in cases like HELLP syndrome.

Maternal outcomes were favorable overall, with only two patients developing complications (sepsis and acute renal failure). Perinatal outcomes were also largely positive, with 75.6% of neonates having no morbidity. However, complications such as prematurity (14.6%) and fetal growth restriction (7.3%) reinforce the need for close monitoring, especially in pregnancies complicated by hypertension or autoimmune diseases.

The absence of neonatal thrombocytopenia in our cohort is reassuring, though it is important to recognize that newborns of mothers with ITP or SLE are at risk for transient thrombocytopenia and rare but serious complications like intracranial hemorrhage. Routine neonatal platelet screening should be considered in such cases.

ACOG and international guidelines recommend individualized management based on the severity and etiology of thrombocytopenia. In cases of HELLP or ITP requiring delivery, platelet transfusion may be indicated when counts fall below $50,000/\mu\text{L}$ or active bleeding is present. Our findings support these recommendations and emphasize the role of comprehensive antenatal care in reducing both maternal and neonatal morbidity.

Future research should focus on developing predictive models based on platelet trends and integrating biomarkers to differentiate benign from pathologic thrombocytopenia. Additionally, a longer postnatal follow-up of neonates and inclusion of APGAR scores, NICU admissions, and long-term neurodevelopmental outcomes would enrich the understanding of the full clinical spectrum.

CONCLUSION

Thrombocytopenia in pregnancy is a multifactorial condition with varying maternal and perinatal outcomes. While gestational thrombocytopenia is generally benign, hypertensive and autoimmune etiologies require vigilant monitoring and multidisciplinary care. Early diagnosis and tailored management strategies can significantly improve both maternal and neonatal outcomes.

Limitations

This study was limited by its single-center design and lack of long-term neonatal follow-up. Future research should include multicenter data and correlate neonatal outcomes such as APGAR scores, NICU admissions, and neonatal platelet trends with the severity of maternal thrombocytopenia.

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