

A study of the prevalence of gestational thrombocytopenia and complications in Virudhunagar locality



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ABSTRACT

Background: Thrombocytopenia, the second most common hematological abnormality in pregnancy after anemia, ranges from benign gestational changes to serious pathological disorders. **Aims and Objectives:** This study aimed to evaluate its prevalence, underlying causes, and associated maternal complications among antenatal women at a tertiary care center. **Materials and Methods:** This prospective observational study was conducted over 6 months at a tertiary care center, enrolling 50 antenatal women with a platelet count $<150,000/\text{mm}^3$ in any trimester. Detailed clinical history, examination, and laboratory investigations were performed to determine the cause of thrombocytopenia and its associated complications. **Results:** Multiparous women were the majority of the patients (70%), followed by primigravida (24%) and grand multiparous (6%) women. Most patients were diagnosed in the third trimester, and mild thrombocytopenia was the most common severity pattern observed. Gestational thrombocytopenia (GT) was the predominant cause (66%), followed by thrombocytopenia associated with hypertension (18%), immune thrombocytopenia (10%), viral infections (4%), and idiopathic causes (2%). Maternal complications were more frequent in hypertensive-related thrombocytopenia and included antepartum hemorrhage, postpartum hemorrhage, hemolysis, elevated liver enzymes, and low platelets syndrome, disseminated intravascular coagulation, shock, and wound infections, with a single patient in each. GT is generally mild, with few complications. **Conclusion:** GT was the leading cause of thrombocytopenia in pregnancy, occurring more frequently in multiparous women and during the third trimester, and was typically associated with minimal adverse outcomes. Pathological causes, particularly hypertensive disorders, are associated with a higher risk of adverse maternal events. Routine platelet count monitoring and early etiological evaluation are essential for timely diagnosis, targeted management, and improved maternal and fetal outcomes.

Key words: Thrombocytopenia; Benign gestational; Pathological disorders; Multiparous; Hypertensive-related thrombocytopenia

INTRODUCTION

Platelets, also known as thrombocytes, are produced in the bone marrow through megakaryocyte fragmentation. They play a key part in processes such as narrowing of blood vessels, formation of a platelet plug, development of a blood clot through coagulation, and the eventual growth

of fibrous tissue within the clot to permanently seal the vessel opening.¹ Thrombocytopenia, described as a platelet count below $150,000/\mu\text{L}$, is the second most frequent blood disorder in pregnancy after anemia, occurring in about 6–15% of all pregnancies. It can develop from a wide range of etiologies, both pregnancy-specific and non-pregnancy-specific.²

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Causes related to pregnancy include gestational thrombocytopenia (GT), preeclampsia, hemolysis, elevated liver enzymes, and low platelets (HELLP) syndrome, and acute fatty liver of pregnancy. Causes not specific to pregnancy include immune thrombocytopenia (ITP), systemic lupus erythematosus, thrombotic thrombocytopenic purpura, hemolytic uremic syndrome, infections, bone marrow disorders, and drug-related thrombocytopenia.^{3,4} Thrombocytopenia is seen in up to 12% of pregnancies, with around 75% of cases caused by benign GT, 20% linked to hypertensive disorders, 3–4% due to immune causes, and 1–2% due to rare conditions.⁵ The condition can be graded as mild (100,000–149,000/ μ L), moderate (50,000–99,000/ μ L), or severe (<50,000/ μ L).^{6,7}

These mild thrombocytopenia that do not require any active management and do not have any maternal or fetal bleeding risk are classified as GT.⁸ The serious thrombocytopenia associated with hypertensive disorders, such as preeclampsia and HELLP syndrome, or with immune-mediated conditions like ITP, can lead to severe maternal and fetal complications.⁹ These complications around the time of birth include premature delivery, low platelet count in the newborn, separation of the placenta from the uterine wall, increased occurrence of low Apgar scores, restricted growth of the fetus in the womb (intrauterine growth restriction), and stillbirths.⁵ Maternal complications such as disseminated intravascular coagulation (DIC), acute kidney injury, postpartum hemorrhage (PPH), jaundice, and steroid-induced diabetes.⁶

A study reports a global prevalence rate of GT ranging from 4.4% to 11.6% among antenatal women.¹⁰ In an Indian study, GT comprised 64.2% of cases, with obstetric causes accounting for 22.1% and medical causes for 13.68%.³ Another study reported GT in 50% of cases, followed by hypertensive disorders (22.4%), ITP (11.1%), dengue (5.5%), and other causes.² The actual mechanism behind GT is still not understood, but in these cases, the platelet counts decrease by an average of 10% during the 3rd trimester and return to normal within 6 weeks postpartum.^{8,11} This drop in the platelet count is the result of hemodilution from plasma volume expansion, increased platelet destruction in the placental circulation, and hormonal changes.^{7,11} However, a rapid or severe decline requires further evaluation to exclude pathological causes. Since thrombocytopenia may be a clinical manifestation of underlying disorders such as preeclampsia, routine platelet count monitoring is recommended in antenatal care to enable early detection and management.¹¹

A complete understanding of the causes of thrombocytopenia will help clinicians make accurate and timely diagnoses, thereby aiding in the preparation of

management strategies. Thus, this study aimed to evaluate the prevalence of thrombocytopenia in pregnancy, identify its underlying causes among antenatal patients attending the outpatient department of a tertiary care center, and assess its effects and complications on pregnancy outcomes.

Aim

To study the prevalence, causes, and impact of thrombocytopenia on pregnancy outcomes in antenatal patients.

Objectives

The objectives of this study are to estimate the prevalence of thrombocytopenia in pregnancy, identify its underlying causes, and assess its impact on pregnancy outcomes.

MATERIALS AND METHODS

This prospective observational study was conducted on 50 antenatal women with thrombocytopenia who attended the outpatient department of a tertiary care center for 6 months. Before initiating the study, it was approved by the Institutional Ethics Committee. Written informed consent was obtained from the patients before their enrolment.

Inclusion and exclusion criteria

All patients attending the outpatient department of a tertiary care center with a total platelet count <1,50,000 cells/mm³ in any trimester were included, while those who did not provide consent were excluded.

Methods

Pregnant women who met the eligibility criteria were enrolled and underwent a thorough history-taking and physical examination. Information recorded included age, gravida, parity, last menstrual period, gestational age, and any complications in the current pregnancy, such as antepartum hemorrhage (APH) or hypertension, as well as history of APH, PPH, and outcomes of previous pregnancies. Blood samples were taken for complete blood count, peripheral smear examination, liver function tests (LFT), prothrombin time, activated partial thromboplastin time, malaria testing, and immunoglobulin G and immunoglobulin M antibodies for dengue. The underlying cause of thrombocytopenia was identified, and the related complications were assessed in relation to the severity of the condition. The effects of thrombocytopenia on the mother during the antepartum period and the first 24 h after delivery were evaluated. Data were presented as frequencies, percentages, and bar diagrams.

RESULTS

Regarding gravida status, 35 patients were multiparous (70%), followed by 12 primi patients (12%), and 3 grandmulti patients (6%). The majority of thrombocytopenia patients were diagnosed in the third trimester, predominantly mild (21 patients), followed by moderate (eight patients) and severe (three patients) cases. In the second trimester, there were nine mild and four moderate patients (Figure 1).

GT was the most common cause (66%), followed by thrombocytopenia associated with hypertension (18%), ITP (10%), viral infections (4%), and idiopathic causes (2%) (Table 1).

Maternal complications were most frequent in patients with hypertension, including APH, PPH, HELLP syndrome,

Table 1: Etiologies of thrombocytopenia

Causes of thrombocytopenia	Count (%)
Gestational	33 (66)
Associated with hypertension	9 (18)
ITP	5 (10)
Viral	2 (4)
Idiopathic	1 (2)

ITP: Immune thrombocytopenia



Figure 1: Distribution of severity of thrombocytopenia in various gestational ages

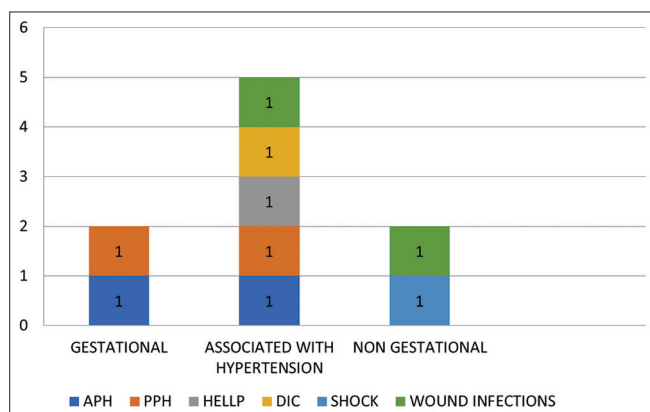


Figure 2: Distribution of various maternal complications

DIC, shock, and wound infections, with 1 each. Gestational patients showed APH and PPH, while non-gestational patients reported shock and wound infections, with one patient each (Figure 2).

DISCUSSION

Thrombocytopenia is a common hematological finding during pregnancy, with etiologies ranging from benign gestational changes to hypertensive syndromes and immune-mediated diseases. This study aimed to evaluate the incidence, causes, and accompanying maternal complications of thrombocytopenia in pregnant women. Regarding gravida status, 35 patients were multiparous (70%), followed by 12 primi patients (12%), and 3 grandmulti patients (6%). Supporting our findings, Kumari et al., reported that multigravida patients were predominant among the patients (43%), followed by primi (35%) and secondary (22%).¹² Similarly, Shah and Anand reported that 63% of the patients were multiparous, followed by 24% who were primi, and 5% who were grand multiparous.¹³ This indicates that thrombocytopenia is prevalent in multiparous women.

The majority of patients with thrombocytopenia in our study were diagnosed in the third trimester, predominantly mild (21 patients), followed by moderate (eight patients), and severe (three patients). Similarly, Padmawar et al., reported that most thrombocytopenic patients were diagnosed in the third trimester, predominantly mild (50%), followed by moderate (36%) and severe (14%).¹⁴ Misra and Faruqi reported mild thrombocytopenia in 70.7% of patients, followed by moderate in 27.15% and severe in 2.14% of patients.¹⁵ Further strengthening our findings, Mathesan and Ethirajan reported that most thrombocytopenic patients are diagnosed during the 3rd trimester.⁴ Singh et al., found that thrombocytopenia and the 3rd trimester are significantly associated with each other ($P < 0.05$).¹⁶ Thus, suggesting that pregnant women in the 3rd trimester are more prone to thrombocytopenia, and most commonly, it will be mild-to-moderate in severity.

In our study, GT was the most common cause (66%), followed by thrombocytopenia associated with hypertension (18%), ITP (10%), viral infections (4%), and idiopathic causes (2%). Similarly, Borhany et al., reported that GT was the cause in 48% of patients, followed by ITP (20%), preeclampsia (7.3%), eclampsia (4.6%), and dengue (2.6%).¹⁷ Jagdale et al., reported that GT was responsible for 48.8% of cases, preeclampsia 18.18%, and eclampsia 12.12%.¹⁸ Further strengthening our study, Padmawar et al., reported that 70% of patients had GT, 22% had preeclampsia, ITP, and dengue (2% each), and HELLP syndrome affected 4% of patients.¹⁴ Singh et al., stated

that GT was the most common etiology (34.3%), followed by pregnancy-induced hypertension (12.7%), dimorphic anemia (11.9%), deranged LFT 8/134 (6%), and viral infections (5.2%).¹⁶ Thus, emphasizing that GT is the most frequent cause of thrombocytopenia.

In our study, maternal complications were most frequent in patients with hypertension, which included one patient each with APH, PPH, HELLP, DIC, and wound infections. In the GT group, APH and PPH were observed, whereas in the non-gestational group, one patient each presented with shock and wound infections. Supporting our findings, Mundkur et al., reported that patients with preeclampsia and HELLP syndrome experience several complications. Eight patients with preeclampsia had abruption, and three patients with HELLP syndrome had APH.¹⁹ Mathesan and Ethirajan noted that hypertensive disorders, including severe pre-eclampsia and HELLP syndrome, were observed in 20% of patients with thrombocytopenia.⁴ Misra and Faruqi reported that pregnancies with GT had adverse outcomes such as PPH (27.14%) and placental abruption (5.0%).¹⁵ Thus, indicating that pregnancy associated with conditions other than GT results in more severe maternal complications.

GT was the most common cause and was associated with minimal adverse outcomes, whereas causes linked to hypertensive disorders had a higher incidence of maternal complications, such as APH, PPH, and HELLP syndrome. Routine platelet monitoring and early etiological evaluation are important for timely management and improved maternal and fetal outcomes.

Limitations of the study

The study was carried out at a single tertiary care center with a small sample size, which may limit the extent to which the findings can be applied to a wider population. In addition, long-term neonatal outcomes were not assessed.

CONCLUSION

GT was the most common cause, occurring predominantly in the third trimester and with a high prevalence among multiparous women. It was mostly mild and associated with minimal maternal outcomes, whereas thrombocytopenia due to hypertensive and other pathological causes was associated with higher risks of APH, PPH, and HELLP syndrome. Larger multicenter studies are necessary to confirm these patterns and guide targeted monitoring and management strategies.

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REFERENCES

1. Sumathy V, Devi C and Padmanaban S. Prospective study of thrombocytopenia in pregnancy. *Int J Clin Obstet Gynecol.* 2019;3(1):17-21.
<https://doi.org/10.33545/gynae.2019.v3.i1a.05>
2. Singh J, Kumari K and Verma V. Study of thrombocytopenia in pregnancy: Clinical presentation and outcome at tertiary care rural institute. *Int J Reprod Contracept Obstet Gynecol.* 2020;9(4):1622-1626.
<https://doi.org/10.18203/2320-1770.ijrcog20201234>
3. Nisha S, Amita D, Uma S, Tripathi AK and Pushplata S. Prevalence and characterization of thrombocytopenia in pregnancy in Indian women. *Indian J Hematol Blood Transfus.* 2011;28(2):77-81.
<https://doi.org/10.1007/s12288-011-0107-x>
4. Mathesan M and Ethirajan S. Exploring the patterns of thrombocytopenia in pregnancy: Unravelling implications and outcomes. *Indian J Obstet Gynecol Res.* 2024;11(4):534-539.
<https://doi.org/10.18231/j.ijogr.2024.096>
5. Al-Husban N, Al-Kuran O, Khadra M and Fram K. Thrombocytopenia in pregnancy; prevalence, causes and fetomaternal outcome. *Clin Exp Obstet Gynecol.* 2020;47(1):21-26.
<https://doi.org/10.31083/j.ceog.2020.01.4945>
6. Levy JA and Murphy LD. Thrombocytopenia in pregnancy. *J Am Board Fam Pract.* 2002;15(4):290-297.
7. Prajapati S and Nandan Kumar PS. A study on thrombocytopenia in pregnancy and feto-maternal outcome conducted at tertiary care center Rajkot, Gujarat. *Int J Reprod Contracept Obstet Gynecol.* 2023;12(5):1350-1355.
<https://doi.org/10.18203/2320-1770.ijrcog20231222>
8. Fogerty AE. Thrombocytopenia in pregnancy: Mechanisms and management. *Transfus Med Rev.* 2018;32(4):225-229.
<https://doi.org/10.1016/j.tmr.2018.08.004>
9. Asif N and Hassan K. Thrombocytopenia in pregnancy. *Hematol Transfus Int J.* 2017;5(5):307-309.
<https://doi.org/10.15406/htij.2017.05.00133>
10. Cines DB and Levine LD. Thrombocytopenia in pregnancy. *Blood.* 2017;130(21):2271-2277.
<https://doi.org/10.1182/blood-2017-05-781971>
11. Bai P, Memon I, Ashfaq S, Sultan S and Irfan SM. Prevalence and etiology of thrombocytopenia in pregnant women in southern Pakistan. *J Soc Obstet Gynaecol Pak.* 2018;8(1):15-19.
12. Kumari K, Bakhtawar F, Ismail S, Butt TS, Dhomeja NL and Ghani U. Frequency of gestational thrombocytopenia in pregnant OPD patients: Study in a tertiary care hospital. *J Pharm Res Int.* 2022;34(46B):52-58.

- <https://doi.org/10.9734/jpri/2022/v34i46b36390>
13. Shah JM and Anand R. Thrombocytopenia in pregnancy. *Int J Reprod Contracept Obstet Gynecol.* 2021;10(3):1050-1052.
<https://doi.org/10.18203/2320-1770.ijrcog20210733>
 14. Padmawar A, Verma PG, Khadse G and Dhishana SR. Maternal and fetal outcome of pregnancies complicated with thrombocytopenia. *Indian J Obstet Gynecol Res.* 2020;7(4):540-543.
<https://doi.org/10.18231/j.ijogr.2020.115>
 15. Misra D and Faruqi M. Fetomaternal outcome in pregnancy with gestational thrombocytopenia: A cross sectional study. *Int J Reprod Contracept Obstet Gynecol.* 2020;9(7):2751-2758.
<https://doi.org/10.18203/2320-1770.ijrcog20202582>
 16. Singh S, Balhara K and Oberoi M. Prevalence and etiology of thrombocytopenia in pregnant women in a tertiary care hospital in Delhi. *J Med Sci.* 2021;7(3):239-243.
https://doi.org/10.4103/mamcjms.mamcjms_52_21
 17. Borhany M, Abid M, Zafar S, Zaidi U, Munzir S and Shamsi T. Thrombocytopenia in pregnancy: Identification and management at a reference center in Pakistan. *Cureus.* 2022;14(3):e23490.
<https://doi.org/10.7759/cureus.23490>
 18. Jagdale S, Datar M, Jacqwin J and Sharma P. Understanding thrombocytopenia in the obstetric population: A study from a tertiary care center. *Int J Stat Med Res.* 2025;14:66-75.
<https://doi.org/10.6000/1929-6029.2025.14.07>
 19. Mundkur A, Nambiar KP, Rai L. Low platelet counts in pregnancy: An alarm signal for abruption. *Int J Reprod Contracept Obstet Gynecol.* 2018;7(3):1191-1195.
<https://doi.org/10.18203/2320-1770.ijrcog20180916>

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