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To Study Feto-Maternal Outcome in Pregnancy with Thrombocytopenia

Mamta Thapliyal*, Anjali Choudhary, Deepti Choudhary, Vineeta Gupta

Department of Obstetrics and Gynecology, SGRRIM&HS, Dehradun, Uttarakhand, India

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Corresponding Information:
Mamta Thapliyal,
Department of Obstetrics and Gynecology, SGRRIM&HS, Dehradun, Uttarakhand, India

Email: drmthapliyal@gmail.com

ABSTRACT

Background & Objective: Platelets are an important component of the body's hemostatic mechanism and play a vital role at every stage of pregnancy, including, placentation, pregnancy maintenance, and control of bleeding after parturition. Thrombocytopenia, defined as a platelet count lower than 150,000/mcl, is the second most common hematological condition after anemia, which complicates 10% of pregnancies. Gestational thrombocytopenia often found in the third trimester as an incidental finding is a self-limiting condition without any clinical presentation and recovers after delivery. Pathological thrombocytopenia as seen in preeclampsia, HELLP syndrome, acute fatty liver of pregnancy, DIC, drugs, etc. is associated with adverse pregnancy outcomes. This study is aimed to assess feto-maternal complications in pregnancies complicated by thrombocytopenia according to etiology.

Materials & Methods: This study was done prospectively for one year in 100 pregnant women with thrombocytopenia. Clinical course: Mode of delivery along with perinatal and maternal complications were noted.

Results: We found 66% of women with low platelets have gestational thrombocytopenia, 20% with pre-eclampsia and HELLP syndrome, 7 % with chronic hypertension, 5% with dengue and 2% with AFLP. The maternal complications were postpartum hemorrhage, placental abruption, and wound hematoma. Fetal complications were low birth weight, stillbirth and NICU admission. Most complications were seen with preeclamptic women.

Conclusion: The most common cause of low platelet count in pregnancy is gestational thrombocytopenia. Feto-maternal complication rates in Gestational thrombocytopenia are significantly low when compared to the groups where thrombocytopenia is associated with Pre-Eclampsia, Eclampsia, HELLP Syndrome, AFLP, Dengue Fever and Chronic hypertension.

Keywords: Thrombocytopenia, Eclampsia, Pre-eclampsia, HELLP Syndrome

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1. Introduction

As the second most common hematological condition after anemia, thrombocytopenia complicates 10% of all pregnancies **(1)**. Defined as a platelet count lower than 150,000/mcl, the condition is frequently observed in pregnancy, but most women do not suffer any consequences and are having 'Gestational thrombocytopenia (GT)' **(2, 3)**. However, low platelets may also signify a serious underlying condition that may have life-threatening complications. Often the physiological thrombocytopenia (GT) will go unobserved, but pathologically low platelets cause a range of symptoms from epistaxis to severe hemorrhage and eventually affect the mother and the fetus. The gestational cause is the commonest and accounts for 75% of cases with thrombocytopenia **(4)**. Pathological thrombocytopenia is observed in women with preeclampsia, HELLP syndrome, megaloblastic anemia, hemolysis, acute fatty liver of pregnancy (AFLP), and idiopathic thrombocytopenic purpura (ITP) **(5, 6)**. As adopted by the international working group, immune thrombocytopenia is defined as platelets count of 100,000/mcl and is observed in less than 1% of pregnancies **(7)**.

The platelets play a crucial role in the hemostatic mechanisms of the body. The hemostatic capacity of the platelets is conferred by their ability to aggregate, adhere to the injured tissue, and initiate the intrinsic coagulation cascade. These actions finally lead to clot formation and arrest the hemorrhage due to injury. They also initiate vital biological processes that help in wound healing **(8)**. Derived from the megakaryocytes in the bone marrow, the platelets circulate for 7–10 days in the circulation and are destroyed in the spleen. The platelet counts around 150,000/mcl to 450,000/mcl is considered normal, but a level below 150,000/mcl is termed thrombocytopenia.

The platelets with their α granule facilitate their adhesion to the vascular wall where they release several mediators which are involved in various functions like stem cell formation and migration, host defenses, and vasomotor functions apart from their role in the hemostasis **(9)**. Platelet counts may change in pregnancy to create a hypercoagulable state and play a pivotal role in pathophysiological changes that lead to preeclampsia **(10)**.

There is a special role of platelets in human pregnancy, and they are suggested to be involved in the process of placentation by both hemostatic and non-hemostatic mechanisms **(11)**. Platelets by their non-hemostatic process promote trophoblastic invasion of maternal blood vessels by stimulating chemokine receptors **(12)**. The maternal coagulation system along with platelets is responsible for the generation of the 'fibrinoid matter' present on the surface of placental villi and forms the important fibrinoid layer that separates the chorion from the decidual layer **(13)**. In healthy pregnancy the platelet counts are known to decrease by 4.4 to 11.6% causing gestational thrombocytopenia, which is mostly due to hemodilution of pregnancy, there is also a change in platelet distribution width and platelet volume **(13)**. The platelet count fall is gradual from the first to the third trimester. It is caused by a physiological consumption and sequestration of platelets in the placenta, apart from the dilution due to the plasma volume expansion of pregnancy **(14)**. A large cohort study considers platelet counts of 116,000/mcl as thrombocytopenic as usual criteria for diagnosis of thrombocytopenia at values lower than 150,000/mcl in nonpregnant patients **(15, 16)**.

Gestational thrombocytopenia is found in the third trimester as an incidental finding, is a self-limiting condition without any complication, and recovers after delivery. Diagnosis of Gestational thrombocytopenia is made by exclusion. Thrombocytopenia tends to be mild to moderate, with platelet counts ranging between 130,000 – 150,000/mcl in roughly two-thirds of cases **(17, 18)**. Pathological thrombocytopenia as seen in preeclampsia, HELLP syndrome, acute fatty liver of pregnancy, DIC and drugs, etc. is associated with adverse pregnancy outcomes. The effects on the mother and the fetus depend upon the condition causing thrombocytopenia and the severity of platelet depletion and range from no impact to serious complications of the individual condition. Platelet transfusion is usually not required to achieve a particular goal and is only for bleeding patients **(19)**.

The Present study was done to understand the occurrence and feto-maternal outcomes in pregnant women with thrombocytopenia.

2. Materials and Methods

This was a hospital-based prospective observational study, conducted for one year from March 2023 to February 2024, at Shri Guru Ram Rai Institute of Medical and Health Sciences, Dehradun, Uttarakhand. All pregnant women who attended antenatal clinics after 28 weeks of gestation or were admitted for delivery were screened for thrombocytopenia and the women with low platelets were included in the study, this included women with HELLP syndrome, preeclampsia, placental abruption, febrile illness, and physiological thrombocytopenia. Women diagnosed with ITP who were on steroid therapy were excluded. 120 women pregnant women with low platelets (platelets counts less than 150,000/mcl) were identified for the study, out of these 100 women, whose complete data was available, were observed prospectively for maternal and perinatal outcomes.

Detailed history of presenting complaints, duration of pregnancy, obstetric, menstrual, past, medical, and family history was noted in the recruits. An inquiry was made into the history of bleeding tendencies including epistaxis, easy bruising, gum bleeding, etc. Present pregnancy-induced or pre-existing co-morbid conditions were documented. A history of medical conditions, drug intake, and recent febrile illness was noted. A thorough general systemic and obstetric examination was done with a special note of bruises, petechiae, and ecchymosis on the body.

The complete blood count, peripheral smear, fasting sugar, renal functions, and coagulation profile were investigated. Spot and 24-hour urinary proteins, and liver function tests were done where indicated. Mode of delivery and maternal complications were noted. Neonatal outcomes and complications in terms of Apgar score, birth weight, NICU admission, and other neonatal complications were noted. Observations thus obtained were tabulated and analyzed.

Statistical Analysis

Microsoft Excel and SPSs were used to analyze the data. Numerical values were presented as percentage, frequency, and STDV. The correlation between etiology of thrombocytopenia and feto-maternal outcome was determined.

3. Results

We prospectively followed 100 women with thrombocytopenia for pregnancy and feto-maternal complications. Most women belonged to the age group of 26-30(41%), with 57% multigravida and 43% primigravida, of which 88% were booked and 12 % were unbooked. Most of the women in the study were between the gestational ages of 34–38 weeks when diagnosed with thrombocytopenia.

Table 1. Profile of participants

Age (years)	No. of cases	Percentage
< 25	27	27.0%
26-30	41	41.0%
> 30	32	32.0%
Parity		
Primigravida	43	43.0%
Multigravida	57	57.0%
GA (weeks)		
< 34	6	6.0%
34-38.0	68	68.0%
> 38	26	26.0%
ANC visit		
No	12	12.0%
Yes (booked)	88	88.0%

Out of 100 pregnant women with low platelets, 66% had gestational thrombocytopenia, 20% with preeclampsia, eclampsia, and HELLP syndrome, 5% had Chronic hypertension, 2% of women were diagnosed with acute fatty liver of pregnancy (AFLP) and there were 7 cases of dengue hemorrhagic fever. Minimum Platelet counts were 90,000/mcl and the maximum was 145,000/mcl, mean WBC counts were 10120/mm (6500-21,000/cmm), and the mean INR was 0.84.

Table 2. Laboratory parameters

Laboratory Parameters	N	Minimum	Maximum	Mean	SD
RBS (mg/dl)	100	70.00	204.00	110.87	32.89
Hb(gm%)	100	8.90	16.00	11.71	1.36
WBC(/cumm)	100	6500.00	21000.00	10120.80	2975.16
Platelet Count (10^3/mcL)	100	0.90	1.45	1.24	0.14
SGOT(U/L)	100	15.00	177.00	54.45	38.08
SGPT(U/L)	100	11.00	762.00	81.99	134.28
Alk.Ph(U/L)	100	64.00	614.00	306.24	182.09
Coagulation Profile(PT)	100	9.60	12.40	10.57	0.62
INR	100	0.80	0.90	0.84	0.05

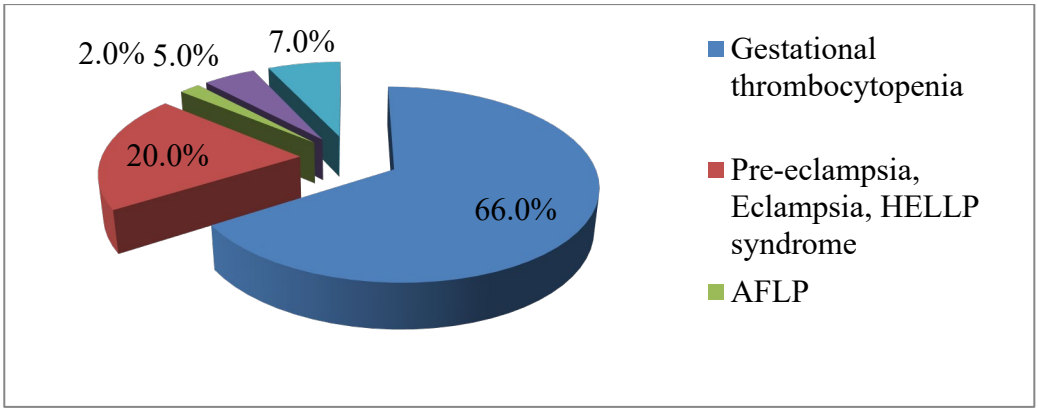


Figure 1. Etiology of Thrombocytopenia

Out of the 100 Cases, 53 % of women had a normal vaginal delivery, 7% and 5% had vacuum and Forceps assisted delivery respectively. 28% of women were delivered by cesarean section and 7% had a vaginal birth after c-section (VBAC).

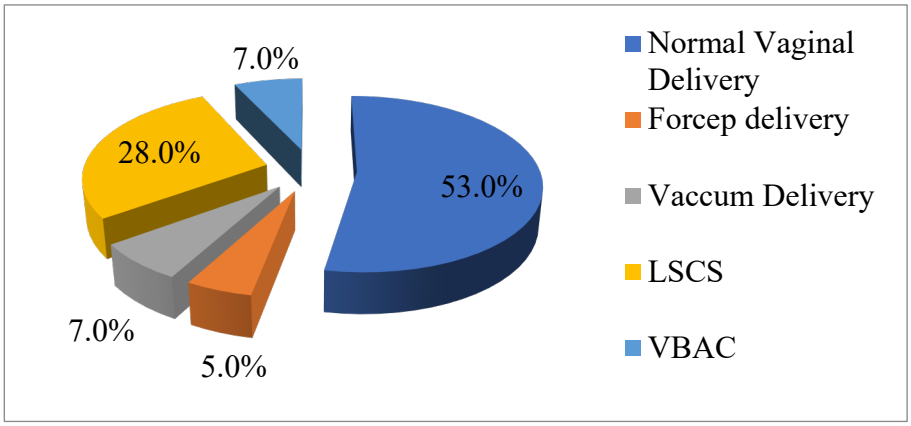


Figure 2. **Modes of delivery**

Among the maternal complications, there was postpartum hemorrhage in 8 women, placental abruption in 3 women and 7 women required blood transfusion. Out of the 8 cases with PPH, 3 women were with gestational thrombocytopenia and 4 women had preeclampsia and HELLP syndrome. Most babies were born with good Apgar scores and average weight, 19 babies were born with very low birth weight and 27 babies required NICU admissions for various reasons, including FGR, LBW sepsis, and Jaundice, and there were 6 stillbirths among 100 women.

Table 3. **Feto-maternal complications in thrombocytopenia**

Complications	No. of cases	Percentage
PPH	8	8.0%
Blood transfusion	7	7.0%
Abruptio placenta	3	3.0%
Incision site hematoma, oozing, gapping	7	7.0%
Stillbirth/IUD	6	6.0%
NICU admission	27	27.0%
Other neonatal complications	9	9.0%

Table 4. **Maternal complications according to type of thrombocytopenia**

Maternal complications	Gestational Thrombocytopenia (n=66)	Pre-eclampsia, eclampsia, HELLP syndrome (n=20)	AFLP (n=2)	Chronic hypertension (n=5)	Dengue (n=7)
PPH (n=8)	3 (4.5%)	4 (20%)	0	1 (20%)	0
Blood Transfusion (n=7)	3 (4.5%)	4 (20%)	0	0	0
Abruptio Placenta (n=3)	0	3 (15%)	0	0	0
Incision site hematoma, oozing, gapping (n=7)	2 (3%)	3 (15%)	1 (50%)	0	1 (14.1%)

Table 5. Fetal complications according to type of thrombocytopenia

Fetal complications	Gestational Thrombocytopenia (n=66)	Pre-eclampsia, eclampsia, HELLP syndrome (n=20)	AFLP (n=2)	Chronic hypertension (n=5)	Dengue (n=7)
Low birth weight (<1.5Kg)	12 (18.2%)	5 (25%)	1 (50%)	1 (20%)	0
(1.5-2.5Kg)	15 (22.7%)	8 (40%)	0	2 (40%)	0
Apgar Score (6,7)	6 (9.1%)	9 (45%)	1 (50%)	2 (40%)	0
(7,10)	58 (87.9%)	9 (45%)	0	3 (60%)	6 (85.7%)
Stillbirth/IUD	2 (3%)	2 (10%)	1 (50%)	0	1 (14.3%)
NICU admission	20 (30.3%)	5 (25%)	1 (50%)	1 (20%)	0
Other Neonatal Complications	4 (6.1%)	3 (15%)	1 (50%)	0	1 (14.3%)

4. Discussion

Platelets are an important component of the body's hemostatic mechanism and play a vital role at every stage of pregnancy, including, the placentation, pregnancy maintenance, and control of bleeding after parturition. Low platelet counts are frequently observed in pregnant women, but whether they have any adverse impact on the pregnancy depends upon the condition that caused the platelet counts to fall. In our study of 100 pregnant women with low platelets, the mean age of women was 27.5± 3.2 and the maximum number of women were multigravida. Similarly, in the study by Gebreweld et al., the mean age was 27.3 ± 4.48 years and most of the patients belonged to age group of 26–30 years (41.5%).**(19)** The mean platelets count was 124,000/mcl with a range of 90,000/mcl to 145,000/mcl.

In our study, most cases were of gestational thrombocytopenia (66%), followed by hypertensive disorders of pregnancy. Similar results were found in a study by Nisha S et al. where gestational thrombocytopenia was 64.2% **(20)**. A low level of serious complications was noticed in our study, as most literature suggests, gestational thrombocytopenia is the most common cause of low platelets in pregnancy finding without many complications **(4)**. Thrombocytopenia in pregnancy may be harmless, but it also can be a sign of a more serious condition in pregnancy with adverse outcomes. We observed that 20 % of women with low platelets had Preeclampsia and HELLP syndrome. In a large study of 4,382 pregnant women, Scridon **(9)** found that out of 137 women with platelet counts of less than 150 x 10 (9)/l, 81%, had gestational thrombocytopenia **(15)**. They found 16% of cases with preeclampsia, an observation similar to our study, but in this study, there were 3% of cases with idiopathic thrombocytopenic purpura. In another similar study of pregnancies complicated with thrombocytopenia by Atul Padmawat, the most common cause of low platelets was Gestational Thrombocytopenia (70%) followed by preeclampsia (22%) dengue and 2% each **(21)**.

Thrombocytopenia associated with maternal risk factors like preeclampsia, HELLP syndrome, placental abruption, and AFLP tend to be severe and have serious consequences, we observed that 8% of cases with low platelets had a postpartum hemorrhage, and 7% of them needed a blood transfusion. Similarly, in study by Roy M et al. blood transfusion & platelet transfusion was needed in 6.5% **(22)**. In a study done by Chauhan et al **(23)** 4.6% of subjects required blood transfusion **(23)**. However, if we compare the distribution of these maternal outcomes amongst the thrombocytopenia groups, the Pre-eclampsia, Eclampsia and HELLP group had 20% of these complications as compared to 4.5% in the Gestational thrombocytopenia group. We also observed that 3% of total women with thrombocytopenia developed wound hematoma. Mushahary et al **(24)** studied the maternal complications in pregnancy thrombocytopenia, in three different groups, mild, moderate, and severe, and they observed that the complications were more in the severe group **(24)**. This study observed that women with severe thrombocytopenia had more patients with anemia and required blood and platelet transfusions

We found that the placental abruption occurred in 3 women with preeclampsia who had very low platelet counts. Incision site hematoma in the cesarean wound was also one of the complications that was seen in women with thrombocytopenia who had preeclampsia, AFLP, and dengue fever. In a study by Harde et al **(25)** on 150 women with pregnancy thrombocytopenia, the condition was seen most in women with preeclampsia (33.3%), HELLP syndrome (20.7%), and 28 % of their cases were due to gestational thrombocytopenia **(25)**.

A large three-year single-center study found 7351 women with low platelets during pregnancy out of which, 4568 pregnancies were uncomplicated, 2586 were cases with pregnancy complications and 197 women had pre-pregnancy conditions with low platelets. The study compares the mean platelet counts in pregnancy with the mean platelet count in non-

pregnant women, and a statistically significant difference was found (P-value- 0.001) **(26)**. Low platelets as a complication of maternal co-morbidities can affect perinatal outcomes.

We observed that perinatal complications like small for dates, NICU admission, and IUD were more common in thrombocytopenia associated with preeclampsia HELLP syndrome as would be a part of consequences of preeclampsia and not due to low platelets. Among the neonatal complications, 44% of babies were born growth-restricted, and 27 % of babies required NICU admission for low birth weight, jaundice, and sepsis. The growth restriction was mainly due to maternal hypertension and preeclampsia and were also thrombocytopenic, as a part of the disease process. There were six stillbirths one each in the cases with acute fatty liver of pregnancy, and dengue hemorrhagic fever, two each in cases with Pre-eclampsia and Gestational thrombocytopenia. Neonatal sepsis is a serious condition associated with a four-fold increase in morbidity and mortality and a six-fold increase in neonates with gram-negative sepsis and thrombocytopenia. Thrombocytopenia in neonates could be induced by sepsis or associated with maternal hypertension, thrombocytopenia, intravascular thrombosis, and neonatal gram-negative sepsis **(27)**. In our study, out of 27 babies admitted to NICU, 10% of babies were admitted with sepsis, but there were no neonatal deaths.

Babies born to mothers with low platelet counts may reflect maternal platelet counts and be more prone to bleeding diatheses. Many researchers have suggested caution for using forceps or vacuum-assisted deliveries. Patrizia Noris and co-workers in a multicentric retrospective study of 339 pregnancies complicated with 13 types of inherited thrombocytopenia, noted that the degree and severity of bleeding tendencies worsened during pregnancy when compared and the course of pregnancy was similar to with healthy subjects **(28)**. Another relevant observation in this study was that the degree of neonatal thrombocytopenia was the same as that of the mother, 7 newborns out of 156 were affected by complications in the neonatal period like delivery-related bleeding and two of them died in the early neonatal period due to cerebral hemorrhage. The incidence of maternal bleeding was found to be 6.8% to 14.2%. In the present, however, we had 7% and 5% of the babies delivered by vacuum and forceps-assisted deliveries, but there were no bleeding-related complications in the neonatal period.

A healthy pregnancy is associated with a mild and usually unappreciated reduction in circulating platelet counts **(10, 14)**. Most literature states that gestational thrombocytopenia has minimal or no feto-maternal implications and that low platelets are a part of the physiological process of pregnancy changes, however, in our study, we found that women with gestational thrombocytopenia also had mild PPH and there were two cases of incision site hematoma.

Our results were concurrent with other authors who mentioned outcome was good in most cases of gestational thrombocytopenia, while maximum percentage of adverse pregnancy outcome was associated with other etiologies such as preeclampsia and HELLP syndrome **(29-33)**.

5. Conclusion

Although physiological in most instances, low platelets and subtle changes in the platelet indices in pregnancy, may reflect a pathological condition that may have adverse pregnancy outcomes. Sometimes, even smaller depletion in platelet count can cause pregnancy complications. Hence, early detection of maternal thrombocytopenia is essential to prevent adverse Feto-Maternal outcomes.

6. Declarations

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Ethical Considerations

The study was approved by the Institutional Ethics Committee.

Authors' Contributions

Mamta Thapliyal.: Study conception, data gathering, article writing. Anjali Choudhary.: Data analysis, article writing. Deepti Choudhary: data gathering, article writing. Vineeta Gupta: Study design, article writing, article editing.

Conflict of Interest

The authors declare no conflict of interest.

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References

1. Pishko AM, Marshall AL. Thrombocytopenia in pregnancy. Hematology Am Soc Hematol Educ Program. 2022;2022(1):303-11. [PMCID] [DOI:10.1182/hematology.2022000375] [PMID]
2. Gernsheimer T, James AH, Stasi R. How I treat thrombocytopenia in pregnancy. Blood. 2013; 121(1):38-47. [PMID] [DOI:10.1182/blood-2012-08-448944]
3. Stasi R. How to approach thrombocytopenia. Hematol Am Soc Hematol Educ Program. 2012;2012:191-7. [DOI:10.1182/asheducation.V2012.1.191.3798260]
4. Fogerty AE. Thrombocytopenia in Pregnancy: Mechanisms and Management. Transfus Med Rev. 2018;32(4):225-9. [DOI:10.1016/j.tmrv.2018.08.004] [PMID]
5. Cines DB, Levine LD. Thrombocytopenia in pregnancy. Blood. 2017;130(21):2271-7. [PMID] [DOI:10.1182/blood-2017-05-781971] [PMCID]
6. Myers B. Diagnosis and management of maternal thrombocytopenia in pregnancy. Br J Haematol. 2012;158(1):3-15. [PMID] [DOI:10.1111/j.1365-2141.2012.09135.x]
7. Rodeghiero F, Stasi R, Gernsheimer T, Michel M, Provan D, Arnold DM, et al. Standardization of terminology, definitions and outcome criteria in immune thrombocytopenic purpura of adults and children: report from an international working group. Blood. 2009;113(11):2386-93. [DOI:10.1182/blood-2008-07-162503] [PMID]
8. Periayah MH, Halim AS, Mat Saad AZ. Mechanism Action of Platelets and Crucial Blood Coagulation Pathways in Hemostasis. Int J Hematol Oncol Stem Cell Res. 2017;11(4):319-27.
9. Scridon A. Platelets and Their Role in Hemostasis and Thrombosis-From Physiology to Pathophysiology and Therapeutic Implications. Int J Mol Sci. 2022;23(21):12772. [PMID] [DOI:10. 3390/ijms232112772] [PMCID]
10. Maconi M, Cardaropoli S, Cenci AM. Platelet parameters in healthy and pathological pregnancy. J Clin Lab Anal. 2012;26(1):41-4. [DOI:10.1002/jcla.20502] [PMID] [PMCID]
11. Sato Y, Fujiwara H, Zeng BX, Higuchi T, Yoshioka S, Fujii S. Platelet-derived soluble factors induce human extravillous trophoblast migration and differentiation: platelets are a possible regulator of trophoblast infiltration into maternal spiral arteries. Blood. 2005;106(2):428-35. [DOI:10.1182/blood-2005-02-0491] [PMID]
12. Kaufmann P, Huppertz B, Frank HG. The fibrinoids of the human placenta: origin, composition and functional relevance. Ann Anat. 1996;178(6):485-501. [PMID] [DOI:10.1016/S0940-9602(96)80102-6]
13. Forstner D, Guettler J, Gauster M. Changes in Maternal Platelet Physiology during Gestation and Their Interaction with Trophoblasts. Int J Mol Sci. 2021;22(19):10732. [PMID] [PMCID] [DOI:10. 3390/ijms221910732]
14. Reese JA, Peck JD, Yu Z, Scordino TA, Deschamps DR, McIntosh JJ, et al. Platelet sequestration and consumption in the placental intervillous space contribute to lower platelet counts during pregnancy. Am J Hematol. 2019; 94(1):E8-e11.[DOI:10.1002/ajh.25321][PMCID]
15. 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. [PMID] [DOI:10.1034/j.1600-0412.2000.079009744.x] [DOI:10.3109/00016340009169188]
16. Habas E, Sr., Rayani A, Alfitori G, Eldin Ahmed G, Elzouki AY. Gestational Thrombocytopenia: A Review on Recent Updates. Cureus. 2022;14(3):e23204. [DOI:10.7759/cureus.23204]
17. Burrows RF, Kelton JG. Thrombocytopenia at delivery: a prospective survey of 6715 deliveries. Am J Obstet Gynecol. 1990;162(3):731-4. [DOI:10.1016/0002-9378(90)90996-K] [PMID]
18. Win N, Rowley M, Pollard C, Beard J, Hambley H, Booker M. Severe gestational (incidental) thrombocytopenia: to treat or not to treat. Hematology. 2005;10(1):69-72. [DOI:10.1080/10245330400020421] [PMID]
19. Gebreweld A, Bekele D, Tsegaye A. Hematological profile of pregnant women at St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia. BMC Hematol. 2018;18: 15. [DOI:10.1186/s12878-018-0111-6] [PMID] [PMCID]
20. 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. [DOI:10.1007/s12288-011-0107-x] [PMID] [PMCID]
21. Padmawar A, Verma PG, Khadse G, Dhishana SR. Maternal and fetal outcome of pregnancies complicated with thrombocytopenia. Indian J Obstet Gynecol Res. 2020;7(4):540-3. [DOI:10.18231/j.ijogr.2020.115]
22. Roy M, Kyal A, Donga P, Das I. Thrombocytopenia in pregnancy and its correlation with fetomaternal outcome in a tertiary care hospital. Nepal J Obstet Gynecol. 2022;17(1):23-7.

23. 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(8):2736-43. [DOI:10.18203/2320-1770.ijrcog20162658]
24. Mushahary D, Marwah S, Saran A, Gupta C, Kumari K, Malik S. Feto-Maternal Outcome in Pregnancy With Thrombocytopenia and Abnormal Platelet Indices. Cureus. 2024;16(4): e59156. [DOI:10.7759/cureus.59156] [PMID] [PMCID]
25. Harde M, Bhadade R, deSouza R, Jhingan M. Thrombocytopenia in Pregnancy Nearing Term: A Clinical Analysis. Indian J Crit Care Med. 2019;23(11):503-8. [PMID] [PMCID] [DOI:10.5005/jp-journals-10071-23277]
26. Jessica A, Reese JD, Peck DR, Deschamps JJ, McIntosh DO, Eric J, Et al. Platelet Counts during Pregnancy. N Engl J Med. 2018;379(1):32-43. [DOI:10.1056/NEJMoa1802897] [PMID] [PMCID]
27. Ree IMC, Fustolo-Gunnink SF, Bekker V, Fijnvandraat KJ, Steggerda SJ, Lopriore E. Thrombocytopenia in neonatal sepsis: Incidence, severity and risk factors. PLoS One. 2017;12(10): e0185581. [DOI:10. 1371/journal.pone.0185581] [PMID] [PMCID]
28. Noris P, Schlegel N, Klersy C, Heller PG, Civaschi E, Pujol-Moix N, et al. Analysis of 339 pregnancies in 181 women with 13 different forms of inherited thrombocytopenia. Haematologica. 2014;99(8):1387-94. [PMCID] [DOI:10.3324/haematol.2014.105924] [PMID]
29. Parnas M, Sheiner E, Shoham-Vardi I, Burstein E, Yermiahu T, Levi I, et al. Moderate to severe thrombocytopenia during pregnancy. Eur J Obstet Gynecol Reprod Biol. 2006;128(1-2):163-8. [DOI:10.1016/j.ejogrb.2005.12.031] [PMID]
30. Levy JA, Murphy LD. Thrombocytopenia in pregnancy. J Am Board Fam Pract. 2002;15(4): 290-7.
31. Varghese S, Kour G, Dhar T. Thrombocytopenia in pregnancy in a tertiary care hospital: a retrospective study. Int J Reprod Contracept Obstet Gynecol. 2016;5(5):1532-6. [DOI:10.18203/2320-1770.ijrcog20161318]
32. Kasai J, Aoki S, Kamiya N, Hasegawa Y, Kurasawa K, Takahashi T, et al. Clinical features of gestational thrombocytopenia difficult to differentiate from immune thrombocytopenia diagnosed during pregnancy. J Obstet Gynaecol Res. 2015;41(1):44-9. [DOI:10.1111/jog.12496] [PMID]
33. Özdemir S, Görkemli H, Acar A, Çelik Ç, Kayıkçıoğlu E. A comparison of maternal and fetal outcomes of pregnancies complicated by moderate to severe thrombocytopenia caused by gestational thrombocytopenia preeclampsia/ HELLP syndrome and immune thrombocytopenic purpura. Gynaecol Obstet Reprod Med. 2008;14(3):154-8.

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