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Original Research Article

Fetal and maternal outcomes of gestational thrombocytopenia: an observational study

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ABSTRACT

Background: The most common cause of pregnancy-related thrombocytopenia is gestational thrombocytopenia. There is a paucity of studies showing the effect of GT in mothers and neonates in the Indian population. So the present study was done to find out maternal and fetal outcomes of gestational thrombocytopenia in a tertiary care centre.
Methods: 92 pregnant women diagnosed with gestational thrombocytopenia with platelet count of less than 150000 were enrolled. Women with hypertensive disorders, autoimmune diseases, acute and chronic kidney disease, infections like dengue fever were excluded. The participants were evaluated by taking detailed history, clinical examination and routine investigations like complete blood count. Demographic variables like age, parity and clinical details like when she was diagnosed with gestational thrombocytopenia and what was the platelet count were noted. Complete blood count-platelets were measured at the time of diagnosis. Patients were followed through the pregnancy until delivery, various maternal factors were observed like oligohydramnios, IUGR, Antepartum hemorrhage, mode of delivery, post-delivery complications like PPH, incision site hematoma. Neonatal outcomes studied were APGAR, birth weight, neonatal thrombocytopenia and NICU admission.
Results: There was no positive correlation between mothers with gestational thrombocytopenia and adverse maternal, neonatal outcomes (age, liquor abnormalities, IUGR, mode of delivery, APH, PPH, incision hematoma, neonatal thrombocytopenia, APGAR, birth weight, NICU admissions).
Conclusions: It's concluded that women with gestational thrombocytopenia do not have any adverse antenatal, perinatal, intrapartum, postnatal and neonatal complications.

Keywords: Gestational thrombocytopenia, Maternal and fetal outcomes, Neonatal complications

INTRODUCTION

Platelets are involved in primary haemostasis, along with von Willebrand factor (vWF), by occluding sites of endothelial damage. They also provide a base for secondary hemostasis in the coagulation pathway.[1] Normal platelet count in pregnancy is 150,000-400,000/L. Thrombocytopenia is categorized based on the severity of the reduction in platelet count: mild (100,000-150,000/L), moderate (50,000-100,000/L), and severe (<50,000/L).[2]

Low platelet count can be due to increased lysis, hemodilution, or decreased production. Patients do not have any clinical signs or symptoms when the thrombocyte count is above 50,000/l unless platelets are dysfunctional. Common signs of thrombocytopenia are purpura, petechiae, epistaxis, and rarely severe forms like hematuria, hematemesis, and melena.[3] In pregnancy, there is a general falling trend in platelet count, commonly during the third trimester. At the end of the third trimester, there is approximately 10% lower than the pre-pregnancy level. Thrombocytopenia is thought to be a combination of

hemodilution and increased platelet destruction across the placenta.[4]

Gestational thrombocytopenia is defined as platelet count <150 x 10^9/l of blood. It is a common hematologic abnormality during pregnancy with an incidence of about 7-12%. The most common cause of pregnancy-related thrombocytopenia is gestational thrombocytopenia. Other causes can be related to severe conditions (HELLP syndrome, preeclampsia) that can lead to fetal and maternal morbidity.[2] The exact cause of gestational thrombocytopenia is unknown, but it is thought to be a combination effect of acceleration of platelet consumption via an exaggeration of the physiological process across the placenta, or due to a mild immune process. Gestational thrombocytopenia resolves after delivery, but it usually recurs in subsequent pregnancies.[5]

Gestational thrombocytopenia is the most common bleeding disorder in pregnancy after anaemia. The incidence of thrombocytopenia (<150 x 10^ 9) in the first trimester is only 1.8% in uncomplicated pregnancies, it increases to 4.8% and 7.5% in the second and third trimesters respectively. Gestational thrombocytopenia is most commonly observed in the second and third trimesters.[6] The differential diagnosis for thrombocytopenia in the first trimester includes immune thrombocytopenia (ITP-most common), thrombotic microangiopathy, hereditary thrombocytopenia, and, more rarely, type IIB von Willebrand disease. Gestational thrombocytopenia is a diagnosis of exclusion. The hypertensive disorders of pregnancy (e.g. HELLP) present after 20 weeks (mid to late second trimester), with most occurring after 34 weeks (third trimester).[7]

Gestational thrombocytopenia does not increase the risk of pregnancy complications or neonatal complications in women with GT. There is a paucity of studies showing the effect of GT in mothers and neonates in the Indian population so the present study is done to find out maternal and fetal outcomes of gestational thrombocytopenia in pregnancy in tertiary care centre.

METHODS

This study was an observational cohort study, conducted in the department of Obstetrics and Gynecology, Mahatma Gandhi Medical College and Research Institute after obtaining approval of Institutional Human Ethics committee. 92 pregnant women with gestational thrombocytopenia were enrolled in the study between January 2022 and April 2024.

Inclusion criteria

Inclusion criteria was all pregnant women from 28 weeks to 40 weeks of gestation with platelet count less than 150x10*9/l of blood.

Exclusion criteria

Exclusion criteria were chronic hypertension, gestational hypertension, HELLP syndrome, autoimmune diseases, chronic kidney disease, acute kidney disease and dengue fever.

Sample size was calculated based on the proportion of neonates who developed thrombocytopenia (3%) born to pregnant mother with gestational thrombocytopenia from a study by Richard et al. Considering precision -5%, confidence level (alpha -0.05) and beta -0.2, sample size was calculated as 92. Demographic variables like age, parity and clinical details like when she was diagnosed with gestational thrombocytopenia and what was the platelet count were noted. Complete blood count-platelets were measured at the time of diagnosis using fully automated machine - Horiba H 1553. Patients were followed through the pregnancy until delivery, various maternal factors were observed like oligohydramnios, IUGR, antepartum hemorrhage, mode of delivery, postdelivery complications like PPH, incision site hematoma. Neonatal outcomes studied were-APGAR, birth weight, neonatal thrombocytopenia and NICU admission. Patients were followed until their discharge from the hospital.

RESULTS

The mean and standard deviation of age were28.19 years and 4.49, respectively. Majority (48.35%) were in the 26-30 years age group. Platelet count below 100,000 were observed in 16 individuals, representing 17.4% of the sample. Counts between 100,000 to 150,000 are seen in 76 individuals, making upto 82% of the sample (Table 1).

Table 1: Distribution of platelet count.

Platelet count	n=92	Percent
<100000	16	17.4
1-1.5 lakh	76	82.6
Total	92	100.00

Regarding maternal complications, 14 patients (15.22%) had oligohydramnios, one (1.09%) had polyhydramnios, and two (2.17%) had severe oligohydramnios (AFI-4 cm). (Table 2). 16 patients (17.39%) were diagnosed with intrauterine growth restriction including small for gestational age and foetal growth restriction (Table 3). 42 women representing 45.6% underwent caesarean section, 48 representing 52.17% had underwent spontaneous vaginal delivery and 2 underwent vaccum assisted vaginal delivery constituting 2.17%. Several indications were recorded for lower segment caesarean section for 42 individuals out of which 26 representing 61.9% were due to previous LSCS in labour, 6 representing 14.28% underwent LSCS due to meconium-stained liquor, 4 representing 9.52% due to failed induction, 4 representing 9.52% due to fetal distress, 1 representing 2.38% due to cephalopelvic disproportion and 1 representing 2.38% due

to maternal request. Only one case of postpartum haemorrhage was noted and none of the 92 study subjects developed any incision site hematoma of the LSCS or episiotomy wound.

Table 2: Distribution of liqour abnormalities.

Liqour abnormalities	N	Percent
No	75	81.52
Oligohydramnios	14	15.22
Polyhydramnios	1	1.09
Severe oligohydramnios	2	2.17
Total	92	100.00

Table 3: Distribution of low birth weight neonates in USG.

Low birth weight	N	Percent
No	76	82.61
Yes (SGA+FGR)	16	17.39
Total	92	100.00

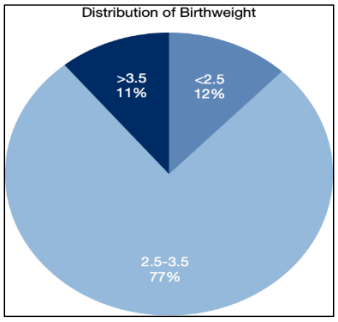

Figure 1: Distribution of birth weight.

Table 4: Reasons for NICU admission.

Reasons for NICU admission	N=8	Percent
Meconium aspiration syndrome	3	35
Hypoglycemia	1	15
Respiratory distress	4	50
Total	8	100.00

Regarding neonatal parameters, 11 newborns (12.09%) weighed less than 2.5 kg, seventy (76.92%) weighed between 2.5 and 3.5 kg, and ten (10.99%) weighed more than 3.5 kg. The summary statistics for birthweight show a mean of 2.96 kg with a standard deviation of 0.422 kg. (Figure 1). A total of 8 neonates showed poor APGAR scores and required NICU admission for reasons like meconium aspiration, respiratory distress and hypoglycaemia (Table 4). No case of neonatal thrombocytopenia was observed in our study.

DISCUSSION

During pregnancy, it is common for platelet levels to decrease, possibly because of factors such as increased destruction, reduced production, or dilution. This physiological decline, known as gestational thrombocytopenia, is often seen in the later stages of pregnancy, with platelet counts usually remaining above 70×103/mm3. While gestational thrombocytopenia is the most frequent cause of low platelet counts in pregnancy, it typically leads to milder outcomes for both the mother and the baby. Diagnosis involves ruling out other conditions that could cause low platelet levels; in most cases, additional treatment is not necessary.[8-10]

However, it is important to distinguish gestational thrombocytopenia from other conditions, such as gestational hypertensive diseases and ITP, as these carry a higher risk of complications for both the mother and foetus. This comprehensive evaluation helps to reduce false-positive diagnoses. Particularly in cases of moderate to severe thrombocytopenia during pregnancy, it is crucial to rule out other potential causes due to the increased risk of additional complications. Our study aimed to investigate foetal and maternal outcomes of gestational thrombocytopenia, which may complicate pregnancy outcomes.[8]

The age distribution of the study participants revealed that 4.40% were under 20 years old, 18.68% were in the 20-25 years age group, 48.35% were in the 26-30 years age group, 23.1% in 30-35 years and 5.5% were over 35 years old. The mean age was 28.19 years with a standard deviation of 4.49. In the study conducted by Borhany et al., among 150 pregnant women a mean age of 27.3±4.64 years was reported and the mean gestational follow-up was 29.91±7.94 weeks. Another study conducted by Chauhan et al. reported similar observations where patients' age was less than 30 years and the mean age was 25.45±3.87 years.[11]

In terms of platelet counts, 17.39% of individuals had counts below 100,000, whereas 82.61% had counts between 100,000 and 150,000. The mean platelet count was 125±239.1 with a standard deviation of 23±520.56. In a similar study conducted by Borhany et al, low platelet count has been reported in half of the population. The study reported GT in 72 patients (48%), fatty liver in 3.3%, preeclampsia in 11 patients (7.3%), and eclampsia in 7 patients (4.6%). A mean platelet count of 48.0±24 was reported.[12] Another study conducted by Chauhan et al reported the mean platelet count was 106907± 30136 u/l which was similar to our study findings.[11]

Of the participants, 81.52% had no liquor abnormalities, 15.22% had oligohydramnios,1.09% had polyhydramnios, and 2.17% had severe oligohydramnios.

Regarding intrauterine growth, 82.61% showed no signs of growth issues, 17.39% had intrauterine growth issues (SGA+FGR). Elveđi-Gašparović and colleagues conducted a retrospective analysis comparing gestational thrombocytopenia with a control group and observed higher rates of foetal growth restriction in the

thrombocytopenic group than in the control group. (13) The study conducted by Tas and Gunenc et al also reported similar outcomes, where GT resulted in FGR among most of the population.[14]

The mode of delivery distribution showed that 45.7% underwent Caesarean section (CS), 52.17% had spontaneous vaginal delivery (SVD) and 2.17% had vacuum-assisted vaginal delivery (VAVD). The indications for LSCS in present study were Previous lscs in labour -61.9%, failed induction-9.52%, Meconium stained liquor -14.28%, foetal distress -9.52%, CPD and maternal request constituting for 6.68%. The incidence of CS was also high in the study conducted by Borhany et al, where 34.6% and 40.6% of patients underwent CS and normal delivery, respectively. In addition, abortions were reported in 2% of the population.[12] However; study by Kashyap et al reported that among 27 patients with GT, 20 patients (69.0%) had normal deliveries and 9 patients (31.0%) had CS.[15] Elveđi-Gašparović and colleagues conducted a retrospective analysis comparing gestational thrombocytopenia with a control group. Their findings revealed that thrombocytopenia did not significantly influence the mode of delivery or likelihood of preterm delivery.[13]

In the present study postpartum haemorrhage (PPH) occurred only in 1 case and incision site haematoma was not noted in any case. However, in the study by Borna et al, PPH was prevalent in six patients (20%), with a reduction in Hb levels of up to 7 g/dl.[14] Kashyap et al reported the absence of PPH or ICH in 27 patients.[15] Wang X and colleagues conducted a study examining thrombocytopenia during pregnancy, where patients were categorized based on the cause, and these groups were then compared. They found that the rates of PPH and APGAR scores for newborns were comparable across the three groups. Furthermore, there were no observed negative outcomes for either mothers or newborns in the group specifically diagnosed with gestational thrombocytopenia.[16]

None of the neonates exhibited thrombocytopenia, and NICU admission was required in 8.70% of the newborns. The distribution of APGAR scores at 1 min showed that 98.91% scored between 8 and 10, while 1.09% scored between 8 and 9. At 2 min post-birth, 97.83% scored between 9 and 10, 1.09% scored 9, and 1.09% scored 8. Among newborns, 12.09% weighed less than 2.5 kg, 76.92% weighed between 2.5 and 3.5 kg, and 10.99% weighed more than 3.5 kg. The mean birthweight was 2.96 kg with a standard deviation of 0.422 kg.

Chauhan reported that 6.15% of neonates had an APGAR score of less than 7 at 5 min, which is similar to the findings of Parnas et al, where only 2.4% of neonates had a lower APGAR score.[17] Tas and Gunenc et al reported no significant association between NICU admissions and GT.[14] On the contrary in a study led by Artunç Ülkümen et al, thrombocytopenic pregnant individuals showed a notably higher occurrence of LBW (<2500 g) and ELBW infants (<1500 g) compared to the control group. Analysis of newborn outcomes revealed a reduction in the APGAR score among those with thrombocytopenia, along with significantly elevated rates of stillbirths and intrauterine growth retardation.[18] In Parnas et al.'s study, a comparison between newborns with thrombocytopenia and the healthy control group revealed lower 5th-minute APGAR scores among those with thrombocytopenia. Additionally, significantly higher rates of stillbirth and intrauterine growth restriction were observed in the thrombocytopenia group.[17] Elveđi-Gašparović and colleagues conducted a retrospective analysis comparing gestational thrombocytopenia with a control group and observed notable increase in need for NICU admission, lower 1st minute APGAR scores than control group.[13]

Burrows et al found that infants with mothers who had alloimmune antiplatelet antibodies had severe thrombocytopenia. Infants born to mother with gestational thrombocytopenia did not have severe neonatal thrombocytopenia.[19]

CONCLUSION

In the present study, we obtained 16 cases (17.2%) of oligohydramnios in the mother of 17 cases of low birth weight babies (including SGA and FGR) out of 92 subjects having gestational thrombocytopenia. Thereby we come to conclusion that gestational thrombocytopenia does not have any significant effect on maternal and feotal outcomes.

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Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Cortes GA, Moore MJ, El-Nakeep S. Physiology, Von Willebrand Factor. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2024.
2. Ciobanu AM, Colibaba S, Cimpoca B, Peltecu G, Panaitescu AM. Thrombocytopenia in Pregnancy. Mædica. 2016;11(1):55-60.
3. Jinna S, Khandhar PB. Thrombocytopenia. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2024.
4. Reese JA, Peck JD, Deschamps DR, McIntosh JJ, Knudtson EJ, Terrell DR, et al. Platelet Counts during Pregnancy. N Engl J Med. 2018;379(1):32-43.
5. Habas E, Rayani A, Alfitori G, Eldin Ahmed G, Elzouki ANY. Gestational Thrombocytopenia: A Review on Recent Updates. Cureus. 2022;14(3):e23204.
6. Pishko AM, Marshall AL. Thrombocytopenia in pregnancy. Hematol Am Soc Hematol Educ Program. 2022;2022(1):303-11.

7. Bergmann F, Rath W. The differential diagnosis of thrombocytopenia in pregnancy. Dtsch Ärztebl Int. 2015;112(47):795-802.
8. Boehlen F, Hohlfeld P, Extermann P, Perneger TV, de Moerloose P. Platelet count at term pregnancy: a reappraisal of the threshold. Obstet Gynecol. 2000;95(1):29-33.
9. Myers B. Diagnosis and management of maternal thrombocytopenia in pregnancy. Br J Haematol. 2012;158(1):3-15.
10. 10. McCrae KR, Samuels P, Schreiber AD. Pregnancy-associated thrombocytopenia: pathogenesis and management. Blood. 1992;80(11):2697-714.
11. 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;2736-43.
12. Borhany M, Abid M, Zafar S, Zaidi U, Munzir S, Shamsi T. Thrombocytopenia in pregnancy: identification and management at a reference center in Pakistan. Cureus. 2022;14(3):e23490.
13. Elveđi-Gašparović V, Beljan P, Gverić-Ahmetašević S, Schuster S, Škrablin S. Fetal-maternal complications and their association with gestational thrombocytopenia. Ginekol Pol. 2016;87(6):454-9.
14. Taş B, Günenc O. Maternal and fetal outcomes of gestational thrombocytopenia. Duzce Med J. 2022;24(3):282-6.
15. Kashyap R, Garg A, Pradhan M. Maternal and fetal outcomes of pregnancy in patients with immune thrombocytopenia. J Obstet Gynaecol India. 2021;71(2):124-30.
16. Wang X, Xu Y, Luo W, Feng H, Luo Y, Wang Y, et al. Thrombocytopenia in pregnancy with different diagnoses: Differential clinical features, treatments, and outcomes. Medicine (Baltimore). 2017;96(29):e7561.
17. 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.
18. Artunç Ülkümen B, Aktenk F, Baytur Y. Fetomaternal outcomes of cases with thrombocytopenia during pregnancy. J Kartal Tra Res Hospi. 2014;25(2).
19. Burrows RF, Kelton JG. Fetal thrombocytopenia and its relation to maternal thrombocytopenia. N Engl J Med. 1993;329(20):1463-6.

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