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A STUDY ON ROLE OF ETIOLOGICAL FACTORS OF THROMBOCYTOPENIA IN MATERNAL OUTCOME IN PREGNANCY

Dr Arushi Sharma* Medical Officer specialist (OBG), Civil Hospital AMB, Distt. UNA. *Corresponding Author

Dr Poonam Kumari Medical Officer specialist (OBG), Civil Hospital Nadaun, Distt. Hamirpur.

Dr Vaishali Postgraduate student, (OBG) Tanda Medical College, Kangra.

ABSTRACT **Background:** Thrombocytopenia is a prevalent hematological disorder in pregnancy, impacting up to 10% of women, and can vary from benign gestational thrombocytopenia (GT) to severe diseases such as HELLP syndrome or immune thrombocytopenia (ITP). Timely diagnosis of its etiology is essential for enhancing maternal and neonatal outcomes. **Objective:** To analyze maternal outcomes linked to different etiological variables of thrombocytopenia in pregnancy beyond 32 weeks of gestation and to determine the necessity for obstetric interventions and blood component treatment. **Methods:** This prospective observational research involved 140 pregnant women with a platelet count below 150,000/µL after 32 weeks of gestation. Etiologies were found and classified into gestational trophoblastic disease, hypertension illnesses (pre-eclampsia, HELLP syndrome), and autoimmune origins. Maternal outcomes, encompassing birth method, complications, transfusion requirements, and gestational age at delivery, were examined. **Results:** Gestational thrombocytopenia was the predominant cause (60%), succeeded by hypertensive diseases and autoimmune thrombocytopenia. Moderate thrombocytopenia occurred most frequently, at a rate of 61.4%. A majority of women delivered vaginally (77.1%), and the incidence of maternal problems was minimal (3.5%). Blood transfusions were necessary in 7.8% of instances, mostly in patients of HELLP syndrome and autoimmune-related thrombocytopenia. No maternal deaths occurred. **Conclusion:** Gestational thrombocytopenia is generally benign with positive results, although HELLP syndrome and autoimmune etiologies are linked to increased risks. Etiological categorization and prompt therapy are crucial for enhancing maternal outcome.

KEYWORDS : Thrombocytopenia, Maternal outcome, Etiology, Gestational, Pregnancy

INTRODUCTION

Platelets have an essential initial role in the hemostatic mechanism. Platelets clump together at the site of endothelium damage, starting the main hemostatic phase. Initiation of the coagulation pathway on the surface of active platelets begins the secondary hemostatic phase, which involves the formation of a fibrin meshwork that strengthens the platelet plug. Bone marrow is responsible for producing platelets (thrombocytes) by the fragmentation of megakaryocytes. They typically persist in the peripheral circulation for eight to ten days before being removed by the tissue macrophage system. The standard concentration of platelets in the blood ranges from 150,000 to 400,000/µL.[1] Thrombocytopenia is characterized by a platelet count of fewer than 150,000/µL."[2]

The etiology of thrombocytopenia during pregnancy are many and may be classified as gestational thrombocytopenia (GT), hypertensive disorders of pregnancy (including pre-eclampsia and HELLP syndrome), immunological thrombocytopenia (ITP), infections, and autoimmune conditions. GT constitutes 70–80% of all instances and generally manifests in the third trimester with mild to moderate thrombocytopenia, seldom necessitating intervention. However, pathological conditions such as HELLP syndrome and ITP are linked to an elevated risk of maternal and fetal morbidity owing to the possibility of severe thrombocytopenia, hemorrhage, and the necessity for blood component treatment. Precise distinction between benign and pathological thrombocytopenia is crucial for guiding therapeutic therapy and achieving good results. Despite the clinical significance of thrombocytopenia, substantial variability persists in its assessment and treatment due to overlapping clinical manifestations and restricted access to diagnostic resources in several contexts. Moreover, maternal outcomes associated with various causes of thrombocytopenia are not consistently recorded, especially in resource-constrained areas.[3]

Objectives

- To evaluate the severity of thrombocytopenia associated with each etiological factor.
- To assess maternal outcomes in relation to different types of thrombocytopenia, including mode of delivery, gestational age at termination, and maternal complications.
- To analyze the requirement and pattern of blood component transfusion among thrombocytopenic pregnant women.

Literature Review

Al Husban et al (2020)[4] conducted a retrospective comparative study. The inclusion criteria were thrombocytopenic symptoms during pregnancy and a gestational age of 24 weeks or more. The prevalence of thrombocytopenia in pregnant women was 7.20%. Benign gestational thrombocytopenia (BGT) accounted for 78.53% of cases, idiopathic (immune) thrombocytopenic purpura (ITP) for 1.93%, pre-eclamptic toxaemia (PET)/HELLP syndrome for 7.31%, drug side effects for 7.23%, systemic lupus erythematosus (SLE) with or without antiphospholipid antibodies (APA) for 0.84%, and other maternal diseases for 4.04%. Group 2 pregnant women with moderate to severe thrombocytopenic conditions had a substantially higher risk of abdominal surgery, antepartum hemorrhage (APH), postpartum hemorrhage (PPH), wound haematoma, intrauterine fetal death (IUFD), premature delivery, and intrauterine growth restriction (IUGR) than group 1 pregnant women with mild thrombocytopenic conditions.

Gaba et al (2020)[5] conducted a prospective observational study on 120 pregnant women with thrombocytopenia and concluded that the etiologies were gestational thrombocytopenia (53.3%), HELLP syndrome (35%), abruption-induced DIC (4.2%), malaria (3.3%), dengue (3.3%) and ITP (0.8%). Overall, 3.2 % of the women had bleeding manifestations before delivery, 15.8 % had primary PPH and 24.5 % had other intrapartum complications such as incision site ooze, wound hematoma, episiotomy haematoma and placental abruption.

Zutshi et al (2019)[6] conducted a prospective observational study to find out the prevalence of gestational thrombocytopenia and its effect on maternal and fetal outcome. This study concluded that the prevalence of Gestational Thrombocytopenia was 12.82 %. Fetomaternal outcome was favourable, a total of 5 patients (2.5%) suffered from abruption. PPH was present in about 7 cases (3.5%), blood transfusion including platelet transfusion needed in around 13 cases (6.5%). There was no maternal mortality. Only 6 (3%) neonates were having thrombocytopenia regardless of degree of maternal thrombocytopenia. There was no neonatal death.

Sumathy et al (2019)[1] conducted a study in which 15721 pregnant women were tested for thrombocytopenia. Out of 15,721 individuals, 1,212 (7.7%) had thrombocytopenia. There were 949 individuals with thrombocytopenia; this accounted for 78.3% of all thrombocytopenic patients. Hypertension, which constituted a risk to the unborn child (15.01%), was another relevant component. The incidence of ITP was 1.60 percent in women with thrombocytopenic symptoms. Fifty women also suffered fevers while pregnant, two had issues with their bone marrow, and nine had jaundice. People whose platelet counts normalized without treatment for pregnant thrombocytopenic anemia

within two weeks following delivery. Mothers whose hypertension deteriorated their health were more likely to suffer from illness or die from it.

Begam A et al (2017)[7] conducted a case control study on etiological factors of thrombocytopenia and discovered that ITP, SLE, AFLP, Dengue infection, HUS, or APLA was the etiology for 10.4% of the individuals, hypertensive disorders of pregnancy for 39.5%, and gestational thrombocytopenia for 49%. Out of the 96 cases that were part of the investigation, 88 were discovered during pregnancy. In pregnant women, gestational hypertension (16.7%), pre-eclampsia (10.4%), and HELLP syndrome (7.3%) were the most frequent hypertensive disorders.

Pandey et al (2017)[8] conducted a study in the tertiary institute over a period of one year, from January 2016 to December 2016. As long as their platelet count was 100,000/mL or lower, 100 pregnant women were eligible to participate in the study. The percentage of patients with thrombocytopenia in this study was 11.68 percent. Moderate thrombocytopenia was reported by around 58% of individuals in this research. The majority of patients began showing up between the 30th and 34th week of gestation. Anemia, which occurs most often during pregnancy, is the most common reason.

Vanaja et al (2017)[9]Thrombocytopenia is most commonly caused by gestational diabetes, according to a prospective observational study of 75 pregnant people conducted at Gandhi Hospital's Department of Obstetrics and Gynaecology. By taking a thorough medical history and doing a thorough physical examination, most issues may be ruled out. With no history of thrombocytopenia and a platelet count more than 70,000/mcL, GT is more likely to be the illness. If you have a history of thrombocytopenia or a platelet count below 50,000/mcL, you are more likely to develop ITP.

Chauhan et al (2016)[10]found that 8.4% of moms developed thrombocytopenia after completing a one-year prospective study. Thrombocytopenia was found in 63% of the women questioned, with 35.4 % having moderate thrombocytopenia and 1.5 % having severe thrombocytopenia. Their research revealed that 3.1% of the time, fetal thrombocytopenia occurred. Out of 65 women who tested positive for thrombocytopenia, 68.2% had the condition during their pregnancy, 26.3% developed PIH, and 1.5% developed HELLP syndrome. While 27.7 percent of births occurred by LSCS, 72.3% occurred naturally. About 30% of women required labor induction due to various obstetrical causes. The average weight at birth was 2.84 kg, according to the study. Of the 65 infants, 6.15 percent required admission to the neonatal critical care unit. Unfortunately, a baby died from RDS on the very first day following surgery. Between the first and fifth minutes of life, 61.5% of babies had an APGAR score below 7. Only eight percent of the babies were delivered with unusually low foetal growth.

Research Methodology

The institution protocol review and ethics committee gave its clearance for this prospective observational study to begin in September 2021 and continue through September 2022 at Dr. Rajendra Prasad Government Medical College, Kangra in Tanda, Himachal Pradesh. All pregnant women admitted to the wards of our hospital's Department of Obstetrics and Gynaecology who met the inclusion criteria and were willing to participate in the study were enrolled after obtaining informed consent. The women's platelet counts were confirmed to be less than 1,50,000/μL after the annual platelet count. The gestation period was greater than 32 weeks.

Sample Size: Considering the incidence of Thrombocytopenia in Pregnancy to be 7-8%, the sample of 140 pregnant women was required at 80% study power and at 5% level of significance.

Inclusion Criteria

1. "Age-18to45years."
2. "Pregnant women who are at POG>32 weeks."
3. "Pregnant women with confirmed platelet count less than 1,50,000/μL by manual platelet count."

Exclusion Criteria

1. Refusal for consent.
2. Pregnant women with CMF fetus.
3. "Women with known history of"

• "Diabetesmellitus"
• "Tuberculosis"
• "Epilepsy"

Method

Pregnant women presenting after 32 weeks of gestation with a platelet count below 150,000/μL were incorporated into the research. Patients were enrolled sequentially according to their eligibility and consent to participate. The exclusion criteria included those with chronic systemic diseases or pre-existing hematological problems before pregnancy.

Every participant had a comprehensive clinical assessment, encompassing medical history, obstetric history, and laboratory investigations, including complete blood count, peripheral smear, liver function tests, and coagulation profile. Thrombocytopenia was classified into etiological groupings, including gestational thrombocytopenia, pre-eclampsia, HELLP syndrome, and autoimmune origins, based on clinical and laboratory results.

Patients were monitored during labor and delivery to evaluate maternal outcomes, including delivery method, hemorrhagic problems, transfusion requirements, and any adverse events. The data were subjected to statistical analysis employing descriptive and inferential techniques to ascertain correlations between the etiologies of thrombocytopenia and maternal outcomes.

Statistical Analysis

Data were entered into SPSS-19. Statistical analysis was done on the basis of intention to treat. It was performed using parametric and nonparametric tests, whenever considered appropriate. P value less than 0.05 was considered statistically significant.

RESULTS

This prospective observational study offers a thorough examination of the clinical characteristics, etiological distribution, and maternal outcomes related to thrombocytopenia in pregnancies over 32 weeks of gestation. A total of 140 pregnant women with platelet counts < 150,000/μL were recruited. The research investigated the intensity of thrombocytopenia concerning its etiological factors, including gestational thrombocytopenia, hypertensive illnesses (gestational hypertension, pre-eclampsia, HELLP syndrome), and autoimmune diseases.

Table 1: Age Distribution of Patients

Maternalageinyears	No.ofpatients	Percentage
<20years	02	01.42
20-25years	47	33.57
26-30years	73	52.14
31-35years	17	12.14
>35years	01	00.71
Mean age	26.86	100.00%

In the present study, the mean age of the patients with thrombocytopenia in pregnancy was 26.86±3.36 years. Majority of the patients i.e., 120 were in the group 20-30 years comprising of 85.71% cases. Out of these 47 (33.57%) patients were in the age group between 20-25 years and 73 (52.14%) patients were between 26-30 years of age. A totalof 17 (12.14%) patients were in the age group of 31-35 years. Only 2 (1.42%) patients were <20 years of age and only1 (0.71%) patient was >35 years of age.

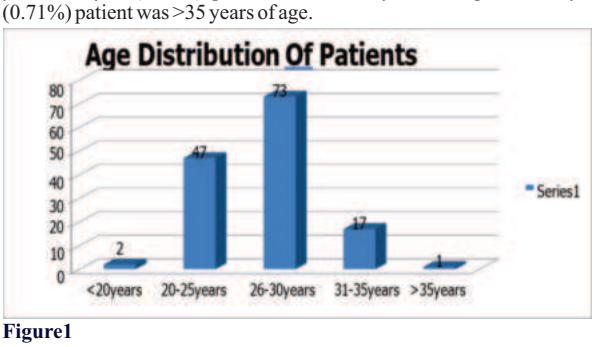

Figure1

Maternal Outcome

Maternal outcome of patients with different etiological factors was noted separately in the form of maternal grading of thrombocytopenia, Period of gestation of termination, mode of termination, route of

delivery, maternal complications etc. for their co-relation as follows.

Table2: Etiological Factor V/s Maternal Grading Of Thrombocytopenia N=140

Maternal grading of Thrombocytopenia	Mild	Moderate	Severe	Total
Gestationalthrombocytopenia**(N=84)**	30 (35.71%)	52 (61.90%)	02 (02.38%)	84
Gestationalhypertension **(N=18)**	09 (50.00%)	09 (50.00%)	00 (00.00%)	18
Non-severePre-eclampsia**(N=09)**	03 (33.33%)	06 (66.66%)	00 (00.00%)	09
Severepre-eclampsia**(N=04)**	00 (00.00%)	03(75%)	01(25%)	04
HELLP**(N=06)**	01(16.66 %)	04(66.66 %)	01(16.66 %)	06
PartialHELLP**(N=16)**	02 (12.50%)	12(75.00 %)	02(12.50 %)	16
Auto-immune**(N=03)**	00 (00.00%)	00(00.00 %)	03(100%)	03
TOTAL	**45 (32.14%)**	**86 (61.42%)**	**09 (06.42%)**	**140**

In our study, majority i.e, 61.90% of the patients with gestational thrombocytopenia had moderate thrombocytopenia, while 35.71% patients had mild thrombocytopenia and only 2.38% patients had severe thrombocytopenia. Patients with gestational hypertension had equal number of patients with mild and moderate thrombocytopenia. None of the patients with gestational hypertension had severe thrombocytopenia. Out of the total 9 patients with non-severe pre-eclampsia as the cause of thrombocytopenia, three (33.3%) patients had mild thrombocytopenia and six (66.6%) patients had moderate thrombocytopenia. Severe pre-eclampsia had led to moderate in three (75%) and severe thrombocytopenia in one (25%) patient. Out of six patients diagnosed with HELLP syndrome, four (66.6%) patients had moderate thrombocytopenia, while only one (16.6%) patient had severe and one (16.6%) patient had mild thrombocytopenia. Majority of the patients i.e., (75%) with Partial HELLP had moderate thrombocytopenia, only 2 (12.5%) patients had mild and 2 (12.5%) patients had severe thrombocytopenia. Autoimmune causes led to severe thrombocytopenia with platelet count less than 50,000.

Table3: Etiologicalfactorv/ Speriodofge Stationat Termination N=140

POGatTermination(weeks)	32-33+6	34-36+6	=>37	Total
Gestational thrombocytopenia**(N=84)**	00 (00.00%)	13 (15.47%)	71 (84.52%)	84
Gestationalhypertension **(N=18)**	00 (00.00%)	01 (05.55%)	17 (94.44%)	18
Non-severePre-eclampsia**(N=09)**	00 (00.00%)	02 (22.22%)	07 (77.77%)	09
Severepre-eclampsia**(N=04)**	00 (00.00%)	04 (100%)	00 (00.00%)	04
HELLP**(N=06)**	00 (00.00%)	03 (50%)	03 (50%)	06
PartialHELLP**(N=16)**	01 (06.25%)	05 (31.25%)	10 (62.50%)	16
Auto-immune**(N=03)**	01 (33.33%)	02 (66.66%)	00 (00.00%)	03
TOTAL	**02(01.42 %)**	**30 (21.42%)**	**108(77.14 %)**	**140**

In the present study, out of total 140 patients, 108 were delivered at POG > 37 weeks, 30 patients were delivered at 34-36+6 weeks and only 2 patients were delivered at 32-33+6 weeks of gestation. Amongst 84 patients with gestational thrombocytopenia, 71 (84.52%) patients were delivered at gestation > 37 weeks and 13 (15.47%) patients were delivered at gestation 34-36+6 weeks. Majority of the patients with Gestational hypertension i.e.,17 (94.4%) was delivered at gestation > 37 weeks and only one (5.55%) patient was delivered pre-term. A total of 7 (77.7%) non-severe pre-eclamptic patients had their delivery at gestation > 37 weeks and only 2 (22.2%) had their delivery at 34-36+6 weeks. All the 4 severe pre-eclamptic patients had their pre-term delivery between gestation 34-36+6 weeks. Patients with HELLP syndrome had equal proportion of term and pre-term delivery, while in Partial HELLP syndrome, majority had term delivery. All patients with Auto-immune causes of thrombocytopenia were delivered before 37 weeks.

Table 4: Etiologicalfactor V/s Mode Of Termination N=140

Modeoftermination	Spontaneous	Induced	Elective LSCS	Total
Gestational thrombocytopenia**(N=84)**	30 (35.71%)	45 (53.57%)	09 (10.71%)	84
Gestational hypertension**(N=18)**	06 (33.33%)	11 (61.11%)	01(05.55 %)	18
Non-severePre-eclampsia **(N=09)**	00 (00.00%)	08 (88.88%)	01 (11.11%)	09
Severepre-eclampsia**(N=04)**	00 (00.00%)	04 (100%)	00 (00.00%)	04
HELLP**(N=06)**	04 (66.66%)	02 (33.33%)	00 (00.00%)	06
PartialHELLP**(N=16)**	00 (00.00%)	16 (100%)	00 (00.00%)	16
Auto-immune**(N=03)**	03 (100%)	00 (00.00%)	00 (00.00%)	03
TOTAL	**43 (30.71%)**	**86 (61.42%)**	**11 (07.85%)**	**140**

In present study, it was noted that induction of labor was the most common mode of termination of pregnancy. Out of total 84 patients with gestational thrombocytopenia, 30 (35.71%) patients went into spontaneous labor, while 45 (53.57%) patients were planned for induction of labor and 9 (10.71%) patients had elective c- section. Amongst patients with gestational hypertension, maximum patients i.e, 11 (61.11%) were induced and 6 (33.3%) patients went into spontaneous labor and only one (5.5%) patient for elective c-section.A total of 8 (88.8%) patients diagnosed with non-severe pre-eclampsia were induced, while one (11.1%) patient had elective c-section. Only 2 (33.33%) HELLP patients were induced while 4 (66.6%) patients went into spontaneous labor. All the 16 patients diagnosed with Partial HELLP were induced. All the three patients with autoimmune cause of thrombocytopenia went into spontaneous labor at POG < 37 weeks.

Table 5: Etiologicalfactor v/s Routeofdelivery N=140

Routeofdelivery	NVD	LSCS	INSTRUMENTAL	Total
Gestational thrombocytopenia**(N=84)**	65 (77.38%)	17 (20.23%)	02 (02.38%)	84
Gestationalhypertension **(N=18)**	16 (88.88%)	02 (11.11%)	00 (00.00%)	18
Non-severe Pre-eclampsia**(N=09)**	08 (88.88%)	01 (11.11%)	00 (00.00%)	09
Severepre-eclampsia **(N=04)**	02 (50.00%)	02 (50.00%)	00 (00.00%)	04
HELLP**(N=06)**	02 (33.33%)	04 (66.66%)	00 (00.00%)	06
PartialHELLP**(N=16)**	12 (75.00%)	04 (25.00%)	00 (00.00%)	16
Auto-immune**(N=03)**	03 (100%)	00 (00.00%)	00 (00.00%)	03
Total	**108 (77.14%)**	**30 (21.42%)**	**02 (01.42%)**	**140**

In present study, out of 140 patients, 108 (77.14%) patients had normal vaginal delivery; 30 patients (21.42%) had undergone c-section and only 2 (1.42%) patients had instrumental vaginal delivery. Amongst patients diagnosed with gestational thrombocytopenia, normal vaginal delivery was conducted in 65 (77.38%) patients while 17 (20.23%) patients had undergone c-section and only2 (2.38%) patients had instrumental vaginal delivery. A total of 16 (88.88%) patients with gestational hypertension had normal vaginal delivery while only 2 (11.11%) patients had undergone c-section. Majority i.e.,8 (88.88%) of the non-severe pre- eclamptic patients had normal vaginal deliverywhile onlyone (11.11%) patient had c-section done. There was equal proportion of normal delivered and c-section patients in patients with HELLP syndrome. Twelve (75%) patients with PARTIAL HELLP syndrome had normal vaginal delivery while only 4 (25%) patients had c-section. All the patients with autoimmune cause of thrombocytopenia delivered via normal vaginal route.

Amongst 17 patients of LSCS with gestational thrombocytopenia, most common indication was meconium stained liqor with fetal distress followed byprevious 2 LSCS. In patients with gestational hypertension, most common indication was Previous LSCS with

PROM followed by Prolonged PROM. Only one patient with non-severe pre-eclampsia had c-section with indication of previous LSCS with pre-eclampsia. In patients with severe pre-eclampsia, indication was MSL with fetal distress. HELLP and Partial HELLP too hadMeconium stained liqor with fetal distress as the most common indication.

Table6: Etiologicalfactor v/s Indication of LSCS N=30

Indicationof LSCS	Gestational thrombocytopenia	Gestational hypertension	Non-severe Pre-eclampsia	Severe pre-eclampsia	HELLP	Partial HELLP	Auto-immune	Total
MSLwithfetaldistress	04	00	00	02	04	04	00	14
Breechinlabor	01	00	00	00	00	00	00	01
Previous LSCS withimpending scardehiscence	01	00	00	00	00	00	00	01
PreviousLSCS with Pre-eclampsia	00	00	01	00	00	00	00	01
Previous LSCS withPROM	02	01	00	00	00	00	00	03
Previous LSCS with refusal of TOLAC	02	00	00	00	00	00	00	02
Previous2 LSCS	04	00	00	00	00	00	00	04
IUGR with oligohydroamnios	01	00	00	00	00	00	00	01
ProlongedPROM	02	01	00	00	00	00	00	03
TOTAL	**17**	**02**	**01**	**02**	**04**	**04**	**00**	**30**

Table 7: Etiologicalfactor v/s Maternalcomplications N=05

Maternal complication	Gestational thrombocytopenia (N=84)	Gestational hypertension (N=18)	Non-severe Pre-eclampsia (N=09)	Severe pre-eclampsia (N=04)	HELLP (N=06)	Partial HELLP (N=16)	Auto-immune (N=03)	Total
Incisionsite ooze in c-section	00	01 (5.5%)	00	00	00	00	00	01 (0.7%)
PPH	03 (03.57%)	00	00	00	00	00	00	03 (2.14%)
episiotomy hematoma	00	00	00	01 (25%)	00	00	00	01 (0.7%)
Csection hematoma	00	00	00	00	00	00	00	00
ICU admission	00	00	00	00	00	00	00	00
Mortality	00	00	00	00	00	00	00	00
Total	**03 (03.57%)**	**01 (5.5%)**	**00**	**01 (25%)**	**00**	**00**	**00**	**05 (3.5%)**

In the present study, it was seen that maternal complications were seen in 3.5% of the thrombocytopenic patients. Most common complication was PPH seen in 3 (3.57%) patients of gestational thrombocytopenia. Other complications which were seen were incisionsite ooze in c-section (gestational hypertension) and episiotomy wound haematoma (severe pre- eclampsia). None of the patients was admitted in ICU and there was no maternal mortality.

Table 8: Etiologicalfactor v/s blood component transfusion N=11

Blood component transfusion	Gestational thrombocytopenia (N=84)	Gestational hypertension (N=18)	Non-severe Pre-eclampsia (N=09)	Severe pre-eclampsia(N=04)	HELLP (N=06)	Partial HELLP (N=16)	Auto-immune (N=03)	Total
WB/PRBC transfusion	00	00	00	00	00	02 (12.5%)	00	02 (1.42%)
Platelet transfusion	02 (2.38%)	00	00	00	02 (33.33%)	00	03 (100%)	07 (5%)
FFP transfusion	01 (1.19%)	00	00	01 (25%)	00	00	00	02 (1.42%)
TOTAL	**03 (3.57%)**	**00**	**00**	**01 (25%)**	**02 (33.33%)**	**02 (12.5%)**	**03 (100%)**	**11 (7.85%)**

In all the patients requiring blood component transfusion in the present study, platelet transfusion was the most common followed byPRBC transfusion and FFP transfusion. It was seen that 100 % patients with autoimmune cause of thrombocytopenia and 33.33 % patients with HELLP syndrome had platelet transfusion. Only 2.38% patients with gestational thrombocytopenia required platelet transfusion.

DISCUSSION

This study supports the established findings that gestational thrombocytopenia (GT) is the predominant cause of thrombocytopenia during pregnancy, representing 60% of cases. This aligns with other extensive studies, including those by Gernsheimer et al. (2013) [11] indicated a GT prevalence of 70-80%, often linked to positive maternal and fetal outcomes and necessitating minimal intervention unless platelet counts decreased substantially.

The present investigation revealed that moderate thrombocytopenia was prevalent in 61.9% of GT patients, followed by mild thrombocytopenia at 35.7%, with severe cases constituting just 2.3%. This conclusion aligns with the prospective study by Boehlen et al. (2000) [12], observed that the majority of GT cases remained within the mild to moderate range (>70,000/μL) and seldom advanced to levels necessitating intervention.

HELLP syndrome and autoimmune thrombocytopenia were notably correlated with severe thrombocytopenia and the necessity for transfusion, corroborating the findings of Sibai (2003)[13] highlighted that HELLP syndrome not only leads to hemolysis and increased liver enzymes but also presents a considerable risk for bleeding due to

extensive platelet consumption, frequently necessitating platelet or plasma transfusions.

The current study found that 77.14% of deliveries were typical vaginal births, whereas only 21.4% were performed using LSCS. Research conducted by Mayama et al. (2021)[14] corroborated this distribution, indicating that thrombocytopenia in isolation, particularly GT or moderate ITP, does not warrant a cesarean delivery unless there are obstetric indications. Significantly, LSCS primarily resulted from fetal distress, meconium-stained amniotic fluid, or a history of prior cesarean sections, rather than thrombocytopenia itself.

Preterm births occurred more frequently in instances associated with autoimmune disorders and HELLP syndrome. This aligns with the findings of Merz et al. (2022)[15], who reported that maternal autoimmune and hypertensive illnesses were substantially linked to medically recommended premature births resulting from deteriorating maternal or fetal conditions. absence of maternal death in this research indicates efficient prenatal monitoring and timely intervention, especially in instances of HELLP syndrome and autoimmune thrombocytopenia. This positive result aligns with modern methodologies outlined by Provan et al. (2019) [16], wherein interdisciplinary obstetric treatment has markedly enhanced the prognosis of high-risk pregnancies.

Furthermore, only three percent of patients need platelet transfusion in GT, supporting the conclusions of George et al. (1996)[17], who highlighted that GT is predominantly a benign illness, with only a minor group requiring transfusion, usually during birth or in the presence of concomitant problems.

CONCLUSION

This prospective observational research thoroughly examined the maternal outcomes linked to several etiological variables of thrombocytopenia in pregnancy. The results confirm that gestational thrombocytopenia (GT) is the predominant and predominantly benign type of thrombocytopenia, representing 60% of cases. The majority of GT patients experienced mild thrombocytopenia and delivered at term without notable problems, supporting the idea that GT generally does not negatively impact pregnancy outcomes. However, hypertensive disorders of pregnancy, comprising pre-eclampsia, severe pre-eclampsia, and HELLP syndrome, correlated with heightened severity of thrombocytopenia and an elevated risk of preterm delivery, cesarean section, and maternal complications, including postpartum hemorrhage and transfusion requirements. Autoimmune thrombocytopenia, albeit less prevalent, exhibited the most severe thrombocytopenia and required transfusion in every instance. Although the occurrence of thrombocytopenia, the overall maternal outcomes were positive, characterized by a high rate of vaginal births (77.1%), a low incidence of maternal complications (3.5%), absence of ICU hospitalizations, and no maternal mortality. This underscores the significance of precise etiological diagnosis, diligent prenatal monitoring, and tailored therapy strategies.

The study emphasizes the importance of distinguishing between benign and malignant causes of thrombocytopenia in pregnancy, as this directly influences clinical management and prognosis. Timely detection and adequate care can lead to favorable results in pregnancies affected with moderate to severe thrombocytopenia. Subsequent investigations ought to concentrate on prolonged neonatal outcomes and the efficacy of risk classification techniques in informing obstetric decision-making.

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