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Frequency of Fetomaternal Outcomes Among Pregnant Women Presenting with Thrombocytopenia

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ABSTRACT

Thrombocytopenia is a prevalent hematological disease during pregnancy that may cause fetomaternal adverse outcomes. It is imperative to know its prevalence and the complications associated with it so that it can be identified and dealt with at a very early stage. **Objective:** To determine the frequency of fetomaternal outcomes among pregnant women with thrombocytopenia. **Methods:** A descriptive cross-sectional study was done in the Department of Obstetrics and Gynecology, Mohtarma Benazir Bhutto Shaheed Medical College, Mirpur, AJ and K, among 151 pregnant women diagnosed with thrombocytopenia. Patients were also classified according to the severity. The outcomes of the mothers were measured in terms of preeclampsia, HELLP syndrome, placental abruption, and preterm birth. The low birth weight and preterm birth were among the fetal outcomes. Analysis of data was done through SPSS version 25.0. **Results:** The 151 participants presented the highest number of mild thrombocytopenia, 83(54.9%), moderate 40(26.4%), and severe thrombocytopenia 28(18.5%). Preeclampsia occurred in 54 (35.8%) of cases, HELLP syndrome in 15 (9.9%), and placental abruption in 3(2.0%). Preterm birth was observed in 15(9.9%) and low birth weight in 6(4.0%) of neonates. Maternal and fetal outcomes showed no statistically significant differences across thrombocytopenia severity groups (P-value >0.050). **Conclusions:** Thrombocytopenia in pregnancy was predominantly mild to moderate in severity, with generally favorable maternal and fetal outcomes. No statistically significant differences were observed across severity groups. Early identification and careful monitoring may help optimize maternal and neonatal care.

INTRODUCTION

The most common hematological disorder in pregnant women during the gestational period is known as thrombocytopenia, which is experienced by 6-10 per cent of pregnant women all over the world. It impacts approximately one out of every ten pregnant women worldwide. Pregnant women who have severe cases of thrombocytopenia would be at a greater risk of excessive bleeding throughout and after delivery, which may be associated with an augmented risk of maternal and fetal complications [1]. Approximately 10 per cent of the pregnancies lead to thrombocytopenia or a platelet count below 150×109/L. It may be linked with pathological diseases or physiological changes, some of which are unique to pregnancy and may put the mother and child at risk of severe danger [2]. Thrombocytopenia is the 2nd most prevalent hematological complication in pregnancy, following anemia, and is observed in around 7-10% of pregnancies. Normal pregnancy also results in a

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physiological reduction in platelet count because of hemodilution, further utilization in peripheral tissue, and increased aggregation [3]. Thrombocytopenia may also be frequent in pregnant women, with onset in the first trimester and slowly subsiding during gestation, reaching its highest point on delivery. It is a physiologic hemodilution brought about by the presence of large plasma volume, heightened platelet activation, and clearance [4, 5]. Severe thrombocytopenia develops in pregnancy when the idiopathic thrombocytopenic purpura (ITP) is diagnosed, rather than in a situation when the pregnant lady already has a prior history of chronic ITP [6]. This is most probably due to the delay in diagnosis. Severely thrombocytopenic patients (20, 000 platelets/mm) are vulnerable to placental abruption and postpartum hemorrhage. Pregnant women with ITP are prone compared to other women to develop gestational diabetes (GD), and postpartum hemorrhage is usually a constant source of concern with them [7]. Rare causes of thrombocytopenia include thrombotic thrombocytopenic purpura (TTP), hemolytic uremic syndrome (HUS), and disseminated intravascular coagulopathy (DIC), and all of them might have dangerous clinical outcomes. In other conditions, thrombocytopenia may be associated with serious clinical conditions such as PE, HELLP syndrome, and ITP. It can be associated with severe, even fatal, clinical outcomes in expectant mothers and fetuses as a whole, such as preeclampsia in 22% of women with thrombocytopenia, placental abruption in 21.8%, and HELLP syndrome in 11%, and the neonatal outcome of women with thrombocytopenia disclosed low birth weight in 42.2% and preterm birth in 27.3% [8]. Previous literature indicates that thrombocytopenia is a relatively common hematological complication during pregnancy. It has a heterogeneous pathophysiology that can extend from benign conditions that may only require observation to severe microangiopathic disorders. In the latter, maternal and fetal outcomes can be reliant on timely intervention, such as emergency delivery or provision of specific therapy [9, 10].

On this basis, the current research assumes that etiology and severity of thrombocytopenia in pregnancy are largely linked to maternal and fetal outcomes, and that early diagnosis and proper treatment can positively influence these outcomes. Although clinically significant, data on fetomaternal outcome in thrombocytopenic pregnancy are scarce, especially in populations where possible confounding issues of bleeding disorders, diabetes mellitus, or infectious diseases are likely to confound results, highlighting a clear study gap. Lack of enough region-specific evidence necessitates the generation of descriptive data that can be used to define the trend of maternal and fetal outcomes in women who present with thrombocytopenia, emphasizing the underlying problem. Knowledge of such outcomes could help clinicians put laboratory results into the context of day-to-day antenatal care and enhance clinical awareness. Therefore, the study aimed to outline the fetomaternal outcomes in pregnant women with thrombocytopenia in our population.

METHODS

A descriptive cross-sectional study was conducted at the Department of Obstetrics and Gynecology, Mohtarma Benazir Bhutto Shaheed Medical College / Divisional Headquarters Teaching Hospital, Mirpur, AJ and K, after taking the ethical approval (REF. NO 10/Academic Block Trauma centre/Surgery/2025) from February 2025 to August 2025. The sample size was 151, keeping the frequency of HELLP syndrome in thrombocytopenia patients as 11% based on a previous study, confidence level being 95%, and margin of error 5% under the WHO sample size calculation formula [8]. All the patients were enrolled by using a consecutive sampling technique, all women having age of 18-40 years with singleton pregnancy and women with thrombocytopenia were included in this study and the bleeding disorder other than thrombocytopenia on medical records and history, already taking antihypertensive medication on history, diabetes mellitus, HIV on history and medical records and multiple pregnancies on ultrasound were excluded. All the pregnant women who met the inclusion criteria were invited to take part in the study and were admitted to the ward following OPD inclusion. All the patients were informed about the purpose and benefits of the study and assured that the study is conducted with the sole purpose of research and publication of data, and given a written informed consent in case they agreed. After taking a complete history and baseline investigation, a 5ml blood sample was obtained and sent to the laboratory to confirm thrombocytopenia. The level of thrombocytopenia was defined based on the number of platelets in the body as mild (100150 ×10 09/L), moderate (5099 ×10 09/L), and severe (50 09/L) [11]. After confirmation, women and neonates were followed till delivery to detect preeclampsia, HELLP syndrome, placental abruption, preterm birth, and low birth weight. Preeclampsia had been categorized as new-onset hypertension (140/90mmHg or higher on two occasions after 20 weeks of pregnancy) with proteinuria (300 mg/24h or above) or end-organ dysfunction. The HELLP syndrome was diagnosed on the grounds of hemolysis, increased liver enzymes, and reduced platelet count. Preterm birth entailed a birth that was less than 37 weeks of gestational age. Low birth weight was considered as a birth weight of the neonate that was less than 2500 g, irrespective of gestational age [12]. All the above-mentioned information was recorded on a pre-designed proforma.

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Data analysis was done with the help of SPSS software (version 25.0). All continuous variables like age, BMI, platelet count, and gestational age were shown as mean ± standard deviation (SD), and categorical variables like preeclampsia, placental abruption, HELLP syndrome, preterm birth, and low birth weight were presented as frequency and percentage. Fetomaternal outcome was stratified according to the severity of thrombocytopenia. After stratification, the chi-square test/Fisher Exact test was considered a P value ≤ 0.05 as significant.

RESULTS

The study included 151 pregnant women with a mean age of 28.46 ± 6.59 years. The mean body mass index (BMI) was 26.74 ± 3.54 kg/m^2, indicating that, on average, the participants were in the overweight category. The mean gestational age at presentation was 34.09 ± 3.88 weeks. Regarding thrombocytopenia, mild thrombocytopenia was observed in 54.9% of participants, moderate thrombocytopenia in 26.4%, and severe thrombocytopenia in 18.5%, suggesting that the majority of the study population experienced moderate to severe reductions in platelet count (Table 1).

Table 1: Participant Characteristics and Thrombocytopenia Severity (n=151)

Variables	Mean ± SD/n (%)
Age (Years)	28.46 ± 6.59
BMI (kg/m^2)	26.74 ± 3.54
Gestational Age (Weeks)	34.09 ± 3.88
Thrombocytopenia Severity	
Mild	83 (54.9%)
Moderate	40 (26.4%)
Severe	28 (18.5%)
Total	151 (100.0%)

Regarding maternal outcomes, preeclampsia was observed in 39.8%, 42.5%, and 14.3% of women with mild, moderate, and severe thrombocytopenia, respectively, while HELLP syndrome occurred in 7.2%, 15.0%, and 10.7% of the respective groups. Placental abruption was rare and was noted only in 3.6% of women with mild thrombocytopenia. Similarly, parity, gravidity, and a history of previous miscarriage, preterm birth, or low birth weight did not show statistically significant differences across thrombocytopenia severity groups ($p > 0.05$ for all comparisons) (Table 2).

Table 2: Maternal Outcomes by Thrombocytopenia Severity

Maternal Outcomes	Mild (n=83)	Moderate (n=40)	Severe (n=28)	Total (n=151)	p-value
Preeclampsia	33 (39.8%)	17 (42.5%)	4 (14.3%)	54 (35.8%)	0.474
HELLP Syndrome	6 (7.2%)	6 (15.0%)	3 (10.7%)	15 (9.9%)	0.397
Placental Abruption	3 (3.6%)	0 (0.0%)	0 (0.0%)	3 (2.0%)	0.285
Parity	15 (18.1%)	5 (12.5%)	6 (21.4%)	26 (17.2%)	0.422
Gravidity	6 (7.2%)	3 (7.5%)	4 (14.3%)	13 (8.6%)	0.229
Previous Miscarriage	11 (13.3%)	4 (10.0%)	4 (14.3%)	19 (12.6%)	0.695
Previous Preterm	6 (7.2%)	4 (10.0%)	5 (17.9%)	15 (9.9%)	0.615
Previous LBW	3 (3.6%)	1 (2.5%)	2 (7.1%)	6 (4.0%)	0.665

In case of fetal results, preterm birth was found in 9.6%, 10.0%, and 10.7% of infants born to mothers with mild, moderate, and severe thrombocytopenia, respectively, and low birth weight was found in 3.6%, 5.0%, 3.6% of the corresponding groups, respectively. However, these differences were not statistically significant ($p > 0.05$). Overall, these findings suggest that while thrombocytopenia is common in pregnancy, its severity alone may not predict the occurrence of maternal or fetal complications in this cohort (Table 3).

Table 3: Fetal Outcomes by Thrombocytopenia Severity

Fetal Outcomes	Mild	Moderate	Severe	Total	p-value
Preterm Birth	8 (9.6%)	4 (10.0%)	3 (10.7%)	15 (9.9%)	0.990
Low Birth Weight	3 (3.6%)	2 (5.0%)	1 (3.6%)	6 (4.0%)	0.940

DISCUSSION

In the current research, thrombocytopenia during pregnancy was more likely to remain mild to moderate in severity, whereas severe thrombocytopenia was not as common. Examining overall maternal and fetal outcomes showed that the overall results were quite positive, and no statistically significant differences were found (depending on the severity of thrombocytopenia) in any case. These results were in line with the previous research that has found that gestational thrombocytopenia is usually mild and it may not correlate with significant adverse pregnancy outcomes in the majority of cases [13, 14]. Even though the maternal complication that was most prevalent in this group was preeclampsia, there was no statistically significant association with the level of severity. This is why the current findings are to be viewed with some caution and do not support the existence of a causal or predictive relationship between the severity of platelet count and the hypertensive disorders of pregnancy. Other previous literature sources have stated similar observations, in which thrombocytopenia was detailed as a clinical observation in relation to some conditions occurring in obstetrics as opposed to a determining factor of risk [15, 16]. HELLP syndrome and placental abruption were quite rare, which is consistent with the previous findings that report severe maternal complications are actually uncommon, especially in groups with mild thrombocytopenia as the prevalent type [17]. In terms of fetal outcomes, preterm delivery and low birth weight were seen in a small percentage, and there was no statistically significant difference between the severity groups.

These results indicate that it is not possible that the severity of thrombocytopenia alone can reliably distinguish

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between fetal and maternal risk among this descriptive cohort, which is comparable to the findings of other observational studies that report heterogeneous or non-significant associations [18]. Also, obstetric history factors such as parity, gravidity, and previous adverse pregnancy outcomes did not differ in terms of severity. This can be used to point out that the baseline demographic or obstetric variables were more or less the same among the participants and can be taken as descriptive and not predictive observations [19, 20]. In general, the outcomes point to the fact that thrombocytopenia in pregnancy was frequent in this cohort, but severe complications were rather rare. As the results are descriptive in nature and the associations are not statistically significant, these findings should be interpreted with caution and should primarily serve to characterize fetomaternal outcomes in thrombocytopenic pregnancy rather than to establish any risk associations. Future studies with larger sample sizes, analytical study designs, and statistically powered analyses are recommended to explore causal relationships and validate these findings across diverse populations.

CONCLUSIONS

In conclusion, there were no statistically significant differences when the severity of thrombocytopenia was compared. Even though the most common maternal problem was preeclampsia, there were no major negative outcomes like HELLP syndrome and placental abruption. Low birth weight was more frequently observed than preterm birth as outcomes of fetuses, but these results did not prove significant relationships with the severity of thrombocytopenia.

Authors' Contribution

Conceptualization: FN
Methodology: FS, AA, SP
Formal analysis: FS, MK
Writing and Drafting: FN, AA, SP, M
Review and Editing: FN, FS, AA, SP, MK, M

All authors approved the final manuscript and take responsibility for the integrity of the work

Conflicts of Interest

All the authors declare no conflict of interest.

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