

STUDY OF THROMBOCYTOPENIA IN PREGNANCY: CLINICAL PRESENTATION AND OUTCOME AT A TERTIARY CARE HOSPITAL IN KARACHI PAKISTAN

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Abstract

Objective:

To evaluate the clinical presentation, etiological pattern, and maternal-fetal outcomes of thrombocytopenia in pregnancy at a tertiary care hospital in Karachi Pakistan.

Study Design: Descriptive cross-sectional study.

Place and Duration of Study: Civil hospital Karachi, department of obstetrics and gynecology, from May to December 2024.

Methodology:

All pregnant woman of any gestational age who received a diagnosis of thrombocytopenia (platelet count below 150, 000/uL) during the time of study was included. The demographic characteristics, gravidity, clinical presentation, degree of thrombocytopenia and its etiology, management, delivery mode, maternal and fetal outcomes were also collected with the help of a structured questionnaire and processed with SPSS version 26.

Results:

A total of 138 pregnant women were included. The mean age was 29.8 $\pm$ 4.6 years, with majority of patients being within the 26-35 years' age. Most of them were multigravida (69.6%) and majority of the patients were asymptomatic (66.7%). Mild thrombocytopenia was noted in 55.1%, moderate in 29.0%, and severe in 15.9%. The most frequent etiology was gestational thrombocytopenia (59.4%), and hypertensive disorders of pregnancy (27.5%). In 17.4% patients, platelet transfusion was needed. Delivery took place vaginally in 60.9% and 39.1% of the cases through cesarean section. Maternal complications were postpartum hemorrhage (13.0%). Fetal complications included preterm birth (24.6%), low birth weight (21.7%), and stillbirth (4.3%).

Conclusion:

The causes of thrombocytopenia in pregnancy are usually of gestational origin; pathological thrombocytopenia is linked to higher maternal morbidity and poor birth outcomes. Close observation and early diagnosis are necessary in order to minimize morbidity.

Introduction

Thrombocytopenia is a hematological abnormality that is considered common in pregnancy (defined as the number of platelets less than $150 \times 10^3/\mu\text{L}$) and which occurs in about 7-10% of pregnancies globally.¹ Thrombocytopenia is most often identified during routine antenatal screening, but it may have a benign gestational thrombocytopenia form or a severe pathological form related to maternal and fetal morbidity.² It is a worthy phenomenon, but the distinction between physiological Gestational thrombocytopenia is contributing to nearly three-quarters of all cases and is generally mildly associated with no adverse pregnancy prognosis.^{3,4} Hypertensive disorders of pregnancy, such as preeclampsia and HELLP syndrome, are important pathologic causes and are associated with risks of hemorrhage, preterm birth, and fetal growth retardation.⁵ Immune thrombocytopenic purpura, although less common, may require specialized obstetric and hematologic management, particularly in cases of severe thrombocytopenia.⁶ The literature has highlighted the severity and etiology of thrombocytopenia in pregnancy as having a direct effect on the maternal outcomes (postpartum hemorrhage, transfusion requirement, intensive care admission) and fetal outcomes (low birth weight, preterm birth, stillbirth),⁷⁻⁸ yet there is limited data in the literature on the topic in low- and middle-income countries, and regional differences in etiology and outcomes have been reported.⁹⁻¹⁰

This study was therefore conducted to assess the clinical presentation, etiological spectrum, and maternal-fetal outcomes of thrombocytopenia in pregnancy at a tertiary care hospital in Karachi Pakistan.

Methods

This cross-sectional research was descriptive and took place in the Department of Obstetrics and Gynecology of a tertiary care hospital in Karachi between May to Dec 2024 . The study included pregnant women of any gestational age diagnosed with thrombocytopenia.

Sampling was done by non-probability consecutive sampling, where all the eligible patients who came

in the course of the study period were enrolled to reach the necessary sample size. The sample size was estimated using WHO formula on descriptive studies with the assumption of 10 percent prevalence of thrombocytopenia in pregnancy, 95% confidence level and 5% margin of error as a result of which the minimum sample size was 138 and this was reached.

The inclusion criterion was a platelet count of less than $150 \times 10^3/\mu\text{L}$ in pregnant women whereas the exclusion criterion was hematologic malignancies or chronic liver disease as well as thrombocytopenia caused by drugs.

A structured questionnaire was used to collect data after an informed consent was obtained and included demographic variables, gravidity, gestational age, clinical presentation, laboratory results, severity and etiology of thrombocytopenia, management history, mode of delivery, and maternal and fetal outcomes. Thrombocytopenia was categorized as mild ($100-150 \times 10^3/\mu\text{L}$), moderate ($50-99 \times 10^3/\mu\text{L}$), and severe ($<50 \times 10^3/\mu\text{L}$).

Outcomes assessed by maternal outcomes were; postpartum bleeding, platelet transfusion, admission to the intensive care unit and maternal mortality whereas the fetal and neonatal outcomes were; preterm birth, low birth weight, stillbirth, neonatal thrombocytopenia and admission to the neonatal intensive care unit.

The SPSS version 26 was used to enter and analyze the data. Continuous variables were represented by mean $\pm$ standard deviation and the categorical variables were represented by frequencies and percentages. The institutional ethical review committee granted ethical approval of the study and the patient information was kept confidential during the study.

Results

The study involved 138 pregnant women diagnosed with thrombocytopenia. The mean age of the patients was 29.8 ± 4.6 years and most of the patients were those aged between 26-35 years (63.8%). The majority of the patients were multigravida (69.6%). The demographic and obstetric characteristics of the study participants are shown in Table 1.

Table 1: Demographic and Obstetric Characteristics of Study Participants (n = 138)

Variable	n (%)
Age group (years)	
≤25	32 (23.2)
26–35	88 (63.8)
>35	18 (13.0)
Gravidity	
Primigravida	42 (30.4)
Multigravida	96 (69.6)

A majority of patients (66.7%) were asymptomatic, and only 33.3% had bleeding manifestations. Mild thrombocytopenia was seen in 55.1% of patients, moderate in 29.0% and severe thrombocytopenia in 15.9% patients, based on platelet counts. The most frequent etiology was

gestational thrombocytopenia (59.4%), hypertensive disorders of pregnancy (27.5%) and immune thrombocytopenic purpura (8.7%). The clinical presentation, severity, and etiological distribution of thrombocytopenia are summarized in Table 2.

Table 2: Clinical Presentation, Severity, and Etiology of Thrombocytopenia (n = 138)

Variable	n (%)
Clinical presentation	
Asymptomatic	92 (66.7)
Bleeding manifestations	46 (33.3)
Severity of thrombocytopenia	
Mild ($100-150 \times 10^3/\mu\text{L}$)	76 (55.1)
Moderate ($50-99 \times 10^3/\mu\text{L}$)	40 (29.0)
Severe ($<50 \times 10^3/\mu\text{L}$)	22 (15.9)
Etiology	
Gestational thrombocytopenia	82 (59.4)
Hypertensive disorders / HELLP syndrome	38 (27.5)
Immune thrombocytopenic purpura	12 (8.7)
Other causes	6 (4.3)

In terms of maternal management and outcome, 17.4% patients needed platelet transfusion, and 13.0% experienced postpartum hemorrhage. No maternal death was recorded. In 60.9% of

patients, vaginal delivery was obtained, and 39.1% experienced cesarean section. Maternal management, mode of delivery, and outcomes are presented in Table 3.

Table 3: Maternal Management, Mode of Delivery, and Outcomes (n = 138)

Variable	n (%)
Platelet transfusion	24 (17.4)
Postpartum hemorrhage	18 (13.0)
ICU admission	10 (7.2)
Maternal mortality	0 (0.0)
Mode of delivery	
Vaginal delivery	84 (60.9)
Cesarean section	54 (39.1)

The negative fetal and neonatal morbidity and mortality were low birth weight (21.7%), preterm birth (24.6%), and stillbirth (4.3%). Neonatal thrombocytopenia was noted in 10.1% of the

newly born, and 14.5% of the newborns had to be admitted to the neonatal intensive care unit. Fetal and neonatal outcomes are detailed in Table 4.

Table 4: Fetal and Neonatal Outcomes (n = 138)

Outcome	n (%)
Preterm birth	34 (24.6)
Low birth weight	30 (21.7)
Stillbirth	6 (4.3)
Neonatal thrombocytopenia	14 (10.1)
NICU admission	20 (14.5)

Discussion:

Thrombocytopenia is a hematological condition that is frequently encountered during pregnancy and its clinical outcome varies greatly depending on the underlying etiology and severity. In the current research, the majority of the women who were affected were of the 26-35 years' age range and multigravida a pattern also observed by Choi et al who reported that higher levels of thrombocytopenia were detected with increasing maternal age and parity.¹¹ In this study, most patients presented with no symptoms and thrombocytopenia was incidentally discovered when patients underwent routine antenatal tests. Al-Farsi et al. have also reported similar results specifically among gestational thrombocytopenic cases where majority of them are clinically silent.¹² Mild thrombocytopenia had the highest percentage in the present study, a finding which is consistent with those of Wu et al. who reported that most thrombocytopenia associated with pregnancy is benign.¹³ In this study, gestational thrombocytopenia was found to be the most prevalent etiology. This observation is consistent with reports by Sifakis et al. who have described gestational thrombocytopenia as the most common cause of thrombocytopenia in pregnancy.¹⁴ Hypertensive disorders of pregnancy, such as preeclampsia and HELLP syndrome, were the most common pathological causes, in agreement with their findings reported by Haram et al.¹⁵ Immune thrombocytopenic purpura was reported to be the least common, similar to the frequencies previously reported by Fogerty et al. in tertiary-care studies.¹⁶ Platelet transfusion was

needed in a part of the patients in the current study; these were mainly individuals who had severe thrombocytopenia. Reese et al. reported similar transfusion practices in studies devoted to management of pregnancy-associated thrombocytopenia,¹⁷ indicating that the most common maternal complication was postpartum hemorrhage as described by Payne et al. which revealed a high risk of bleeding in women with moderate and severe thrombocytopenia.¹⁸ No maternal mortality was identified as well, and it was also reported by Ahmed et al., which was indicative of better obstetric care and timely response.¹⁹ Fetal and neonatal outcomes Preterm birth was the most common adverse outcome in this study. Nisha et al have found this correlation between maternal thrombocytopenia and preterm birth along with low birth weight which they have attributed to pathological effects of thrombocytopenia in pregnancy, as have been reported by Yadav et al.^{20,21} Stillbirth though rare, has been seen in pregnancies with severe thrombocytopenia and hypertensive syndromes as observed by Boehlen et al.²² The current study identified neonatal thrombocytopenia in a percentage of those born, which is similar to those exposed to neonatal thrombocytopenia in the study by Al-Sheeha and colleagues, which revealed higher morbidity among the children born of pregnant women with IOM.²³ Admission to the neonatal intensive care unit occurred in a percentage of those who were born, which is in agreement with the findings reported by Khan et al., which indicates that children born of pregnant women with IOM exhibit higher

morbidity.²⁴Comprehensively, the results of this study support the view that, although the majority of thrombocytopenia observed during pregnancy is benign, pathological thrombocytopenia correlates with high levels of maternal and fetal morbidity, and hence the significance of diagnosis and proper management.

Limitations:

This was a single-center, hospital-based investigation, and this fact can narrow the scope of the application of the results elsewhere. The study design was descriptive and did not enable them to evaluate associations and causal relationships between thrombocytopenia and adverse outcomes. Moreover, maternal and neonatal follow-up (long-term) was not done.

Conclusion:

The condition of thrombocytopenia during pregnancy is not an exception and most often it is associated with gestational factors. Nonetheless, pathological thrombocytopenia especially hypertensive disorders and immune etiologies are linked to morbidities in the mother and the fetus. The underlying etiology must be identified at an early stage and observed closely to maximize the outcomes of pregnancy.

Author Contributions (ICMJE):

Dr. Pirya Kumari

Conceived and designed the study, collected the data, performed data analysis and interpretation, and drafted the manuscript.

Dr. Shakira Parveen:

Supervised the research work, contributed to study design and methodology, critically revised the manuscript for important intellectual content, and approved the final version.

Dr. Kareema Bhagat:

Assisted in data collection and data entry, contributed to statistical analysis and interpretation of results, and helped in manuscript drafting.

All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work in accordance with ICMJE authorship criteria.

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