

Thrombocytopenia In Pregnancy; Characteristic, Risk Factors and Outcomes

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Abstract

Objective: To evaluate the clinical characteristics, risk factors of thrombocytopenia and its possible outcomes during pregnancy and after delivery.

Methodology: This cross sectional study was conducted in Ghulam Medical college Sukkur October 2020 to march 2021. Thirty five pregnant women with platelet count less than 150,000/uL were enrolled in study after informed consent self-structured proforma used and patient was followed till delivery and maternal and fetal outcome observed.

Results: The most common cause of thrombocytopenia was gestational thrombocytopenia (37.1%), followed by pre- eclampsia (17.1%) and idiopathic thrombocytopenia (14.3%). Thrombocytopenia was significantly linked to the adverse fetomaternal outcome ($p < 0.05$). The major maternal complication was APH 8.6%, 5.7% PPH, 25.7% admitted in ICU and mortality 2.9%, while major fetal adverse outcomes pre-term births and neonatal sepsis, while mortality was 2.9%.

Conclusion: In the study conclusion, the thrombocytopenia in pregnancy was observed to be the major cause of the adverse fetomaternal outcome. Bleeding per vagina and gums, bleeding from nose, anemia and jaundice were seems to be the commonest characteristics, while gestational thrombocytopenia, pre-eclampsia, idiopathic thrombocytopenia and DIC were observed to be the commonest causative factors

Keywords: thrombocytopenia, gestational thrombocytopenia, risk factors, outcome.

Cite this article as: Abro KJ, Soomro S, Moosa S, lakhan H, Mahjabeen Saboor R. Thrombocytopenia In Pregnancy; Characteristic, Risk Factors and Outcomes. J Soc Obstet Gynaecol Pak. 2023; 13(1):32-36

Introduction

Thrombocytopenia is a hematological disorder, characterized by a platelet count of less than 150×10^3 per μL , or the 2.5th lower percentile of the normal platelet count distribution in adults.^{1,2} It is considered mild if the platelet counts are between 70 to 150×10^3 per μL , moderate when 50 to 70×10^3 per μL , and severe when the counts drop below 20×10^3 per μL .³ Thrombocytopenia is encountered in 7-12 % of all pregnancies at the time of delivery.⁴ It is usually mild (7.6% of pregnancies) and not associated with an underlying pathology in majority of cases. It may be caused by a variety of physiologic or pathologic conditions specific to pregnancy including Gestational thrombocytopenia, non-immunological related Thrombocytopenia -Preeclampsia, HELLP, TTP, acute

fatty liver of pregnancy, or Immunological mediated ITP, SLE, anti-phospholipid antibody syndrome, Drugs, HIV infections, Lymphomas. 70% cases of Thrombocytopenia in pregnancy are gestational low platelet count and pose no maternal or fetal risk. However, in some cases of maternal thrombocytopenia particularly if the platelet count in below 100×10^3 per μL , there may be an underlying serious medical disorder with potential for maternal and fetal morbidity.

Since thrombocytopenia typically causes a main hemostasis deficiency, mucosal bleeding is a common side effect. Epistaxis, gingival bleeding, or irregular uterine bleeding are examples of clinical presentation.^{4,5} Occasionally, in patients with severe thrombocytopenia, existence bleeding can occur and manifest as

Authorship Contribution: ^{1,2}Substantial contributions to the conception or design of the work; or the acquisition, Drafting the work or revising it critically for important intellectual content, final approval of the version to be published. ^{3,4}Active Participation in active methodology,

Funding Source: none
Conflict of Interest: none

Received: Oct 18, 2022
Accepted: Mar 11, 2023

hematuria, GIT bleeding, or even cerebral hemorrhage.⁴ Thrombocytopenia can develop in pregnancy for a wide range of reasons, some of which are related to pregnancy and others of which are not; these two categories of reasons are referred to as etiologies.⁶

Although a number of potential risk factors for thrombocytopenia were discovered, and some of the patients had more than one risk factor. Following this, hypertensive condition of pregnancy was identified as a potential risk factor for thrombocytopenia,⁶ as approximately 32.2% of high blood pressure, 7.4% will have a history of fever, 5.8% will have a history of thrombocytopenia in a prior pregnancy, and 2.5% will have a history of recurrent miscarriages, while 5.2% will have no identifiable risk factors.⁷ Furthermore to these common causes of thrombocytopenia, it is important to keep in mind that thrombocytopenia caused by endemic diseases such as malaria and dengue should also be taken into consideration because these diseases have been identified as a substantial risk factor for thrombocytopenia among women during pregnancy.⁷

Detailed evaluation of patients by history, physical examination, and laboratory studies can differentiate patients requiring hospitalization or immediate intervention from patients who can be safely managed at homes as outpatients. Treatment is based on the etiology and severity of the condition. Around 31% cases may require treatment during pregnancy, to increase platelet count to an optimum level for safe delivery and positive maternal and fetal outcome; however termination of pregnancy may be required in severe Hypertension, eclampsia, preeclampsia and HELLP for maternal safety. Complications like post-partum hemorrhage in mothers or neonatal asphyxia, thrombocytopenia and intracranial hemorrhage have commonly been associated with thrombocytopenia in pregnancy. Over the recent years, there has been an increased recognition of maternal thrombocytopenia, identification of potential risk factors and prediction of maternal and fetal outcomes, but the data is still lacking and non-coherent in our part of the world. Because of this, more research has to be done on the connections between the two so that we can properly treat and manage the condition and reduce the risk that it poses to both the mother and the fetus. Therefore, this study has been done to determine etiology of Thrombocytopenia and assess maternal and fetal outcome, and correlate outcome to severity of condition in our population.

Methodology

This case series was conducted in gynecology department of Ghulam Muhammad Mahar Medical College Sukkur from January 2021 to March 2021. Study was done after taking ethical approval was obtained from Ethical review board. Non probability sampling technique was used. Thirty-five pregnant women with platelet count less than $150 \times 10^3 / \mu\text{L}$ were enrolled in study after a written informed consent after calculating sample by using Rao soft software. All pregnant women with no prior history or thrombocytopenia, and diagnosed with thrombocytopenia for first time during pregnancy, and negative clinical and laboratory assessment of underlying pathology, and normalization of platelet count in postpartum period were labelled as Gestational Thrombocytopenia. All the women those who were not agreeing to participate in the study were excluded. Patients were evaluated in terms of clinical history, clinical findings on examination and laboratory findings. After taking informed consent patients were assessed for pre-eclampsia (raised blood pressure $>140/90\text{mm Hg}$ after 20 weeks of gestation), a five ml, blood sample was taken from each case to assess the proteinuria $>300 \text{ mg}/24 \text{ hours}$, HELP by haemolysis, elevated liver enzymes, CBC (low platelet count) lactate dehydrogenizes, LFTs, systemic lupus erythematosus (SLE) by anti-nuclear antibodies and anti-mitochondrial antibodies. The severity of thrombocytopenia, mild, moderate, and severe thrombocytopenia were defined as a platelet count of $100\text{--}150 \times 10^9/\text{L}$, $50\text{--}99 \times 10^9/\text{L}$, and $<50 \times 10^9/\text{L}$. All the Participants were followed until 6 weeks postpartum and both maternal and fetal outcome assessed. All the data was collected via study proforma. SPSS version 20 was used for the data analysis. Results were described as the mean and standard deviation for continuous variables and percentages and frequencies for categorical variables.

Results

A total of 35 pregnant women with thrombocytopenia were studied, their mean age was 29 ± 7 years, 74% women were gravida <4 . Out of all 74.1% women were asymptomatic, while few had mild nose bleeding and gums bleeding. Anemic women were 77%, 22.9% had jaundice, while few had hepatomegaly and time of diagnosis shown in table I

Gestational Thrombocytopenia was found to be the most common cause 37%, followed by Preeclampsia (17.1%), ITP (4.3%) and DIC (11.4%), as depicted in table II.

Most to the cases had 62.90% had mild thrombocytopenia as shown in figure .1

Severity of the thrombocytopenia was found significantly associated with adverse maternal outcome ($p=0.001$), and severity of the thrombocytopenia was found also significantly associated with adverse maternal outcome ($p=0.053$) as shown in table III.

Variables	%	N
Age in years		
Under 30	71.42%	25
Over 30	28.57%	10
Gravida		
4 or less than 4	74.28%	26
More than 4	25.71%	9
Clinical presentation		
Asymptomatic	77.14%	27
Bleeding per vagina	11.4%	4
Bleeding from Nose	8.6%	3
Bleeding from gums	2.84%	1
Clinical findings		
Anemia	77.1%	27
Jaundice	22.9%	8
Hepatomegaly	2.9%	1
Time of diagnosis of Thrombocytopenia		
Before 12 weeks gestation	2.85%	01
12-28 weeks gestation	31.42%	11
Above 28 weeks gestation	65.71%	23

Table II: Causes of thrombocytopenia

Causes	Frequency (%)
Gestational Thrombocytopenia	13 (37.1%)
Pre-eclampsia	6 (17.1%)
Idiopathic Thrombocytopenia	5 (14.3%)
DIC	4 (11.4%)
Chronic Liver Disease	2 (5.7%)
Septicemia	2 (5.7%)
Dengue	1 (2.9%)
HELPP	1 (2.9%)
Malaria	1 (2.9%)

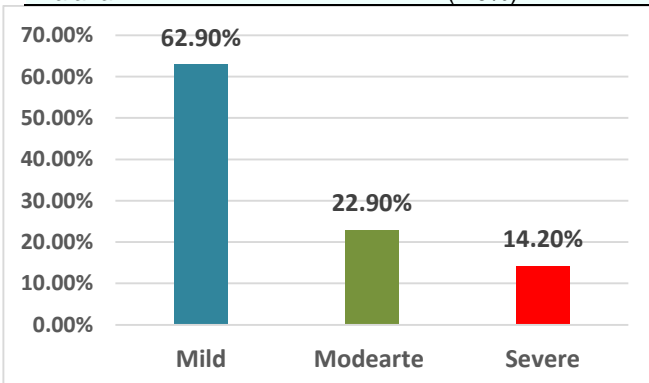


Figure 1. Severity of thrombocytopenia (n=35)

Discussion

Thrombocytopenia is second most diagnosed hematological disorder of pregnancy. Despite being encountered in 1 out of 10 pregnant women, it is often overlooked and commonly mismanaged⁶ especially in third world countries. Thrombocytopenia usually occurs in the latter half of pregnancy i.e., from mid-second or third trimester⁷(65%) women in current study were diagnosed after 28 weeks of gestation, which could also be a socioeconomic influence, as most pregnant women in our population seek medical advice in late pregnancy or when they develop complications. As previously reported^{8,9} present study too could not establish maternal age and multiparity as risk factor for thrombocytopenia in pregnancy.

In current study, the most common cause of thrombocytopenia in pregnancy was found to be gestational thrombocytopenia (37% cases). Similarly other published studies reported that it as cause in 49% -75% cases.^{10,11} Although it is established as the leading cause of thrombocytopenia in pregnancy, the pathogenesis of Gestational thrombocytopenia is poorly understood, it is postulated to be caused by pregnancy-induced hemodilution and increased platelet turnover¹². The patients with gestational thrombocytopenia are usually asymptomatic, detected on routine investigation and diagnosed by exclusion of other causes. The thrombocytopenia in these cases is mild, and does not impose an increased risk of bleeding in either the mother or neonate. It usually resolves spontaneously within 2 weeks to 2months after delivery. The neonate's platelet count is usually normal unlike autoimmune thrombocytopenia.^{13,14} as in present study. The majority of patients with gestational thrombocytopenia in current study were asymptomatic, but unlike previously reported the thrombocytopenia was more frequently moderate, and two cases were found to have severe thrombocytopenia that required platelet transfusions. However, it is difficult to establish if the severe form of thrombocytopenia in these cases was gestational, Idiopathic or immune. They are all similar in clinical presentation and diagnosed by exclusion as there is no laboratory test to distinguish between them¹⁵. Gestational and idiopathic thrombocytopenia occur in late second and third trimester, while immune thrombocytopenia is usually detected in the first and second trimesters, these patients may have a personal history of bleeding prior to pregnancy. Since majority of patient in current study presented after second trimester and had unclear history, the etiology in severe cases

Table III: Feto-maternal outcome according to severity of thrombocytopenia (n=35)

Variables	Severity of thrombocytopenia				p-value	
	Mild	Moderate	Severe	Total		
Maternal outcome	APH	0	1	2	3	0.001
		0.0%	2.9%	5.7%	8.6%	
	PPH	0	2	0	2	
		0.0%	5.7%	0.0%	5.7%	
	ICU admission	5	3	1	9	
		14.3%	8.6%	2.9%	25.7%	
Mortality		0	0	1	1	
		0.0%	0.0%	2.9%	2.9%	
Fetal outcome	IUD	3	1	1	5	0.053
		8.6%	2.9%	2.9%	14.3%	
	Pre-term birth	8	2	2	12	
		22.9%	5.7%	5.7%	34.3%	
	Thrombocytopenia	0	1	0	1	
		0.0%	2.9%	0.0%	2.9%	
	Neonatal sepsis	0	2	1	3	
		0.0%	5.7%	2.9%	8.6%	
	Neonatal death	0	0	1	1	
		0.0%	0.0%	2.9%	2.9%	

remain debatable. In such of severe thrombocytopenia with conflicted cause, a short trial of prednisolone has been suggested to be helpful both diagnostically and therapeutically.

In this study preeclampsia was found as the second leading cause of thrombocytopenia in pregnancy in current study accounting for 17.1 % cases followed by ITP (14.3%) and DIC (11.4%). Consistently in another study by Ciobanu AM¹⁶ reported that the in pregnant women, preeclampsia is responsible for around 20% of occurrences of thrombocytopenia. On the other it is stated that, approximately 50% of women with preeclampsia develop thrombocytopenia, which is usually mild to moderate¹⁷ and resolves in post partal period, as delivery is definitive treatment for PE, but some patients with bleeding or counts below may require platelet transfusion due to accelerated platelet destruction. In current study majority of patients with PE were in the similar age range, and all had moderate thrombocytopenia. Two patients required platelet transfusion due to bleeding at time of delivery. One of the PE mothers had an IUD, while neonates were born prematurely and both were IUGR. One of the preterm neonates had thrombocytopenia, which is more likely to be associated with prematurity and/or IUGR then maternal thrombocytopenia.

In this study, most of the women, 62.90% had mild thrombocytopenia, 22.90% has moderate thrombocytopenia and 14.20% had severe thrombocytopenia. Similarly, Ahmed OI et al¹⁸ reported that the majority of the women 65.80% had mild

thrombocytopenia, 7.80% had moderate thrombocytopenia and 6.40% of the women had severe thrombocytopenia.

In this study severity of thrombocytopenia was significantly linked to the adverse feto-maternal outcome, the major maternal complication was APH 8.6%, 5.7% PPH, 25.7% admitted in ICU and mortality 2.9%, while major fetal adverse outcomes pre-term births and neonatal sepsis, while mortality was 2.9%. Consistently Al-Husban N et al¹⁹ reported that the APH was 3.93%, PPH 4.21%, peripartum hysterectomy 3.09%, and 3.09% wound hematoma. In the line of this study Ahmed OI et al¹⁸ reported that thrombocytopenia in pregnant women was associated with considerably increased rates of maternal and neonatal morbidity, in their study the commonest feto-maternal complications were placental abruption, PPH, DIC, rectus sheath hematoma, acute renal failure and puerperal sepsis, while preterm deliveries, birth asphyxia, IUGR, and stillbirths. Although Yuce T. and colleagues discovered that pregnancy outcomes with thrombocytopenia were associated with poor results for both the mother and the newborn. Our findings are consistent with those of Yuce T et al²⁰ and are similar to those found by Pafumi C et al.²¹

Conclusion

In the study conclusion, the thrombocytopenia in pregnancy was observed to be the major cause of the adverse feto-maternal outcome. Bleeding per vagina and gums, bleeding from nose, anemia and jaundice were seems to be the commonest characteristics, while

gestational thrombocytopenia, pre-eclampsia, idiopathic thrombocytopenia and DIC were observed to be the commonest causative factors. However, some of the cases of thrombocytopenia in pregnancy are related to disease processes that may have serious bleeding consequences at delivery or for which thrombocytopenia may be an indicator of a more severe systemic disorder requiring emergent maternal and fetal care. Thus, all pregnant women with less number of platelet counts require careful hematological and obstetric consultation to exclude serious disorders.

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