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Original Research Article

Low platelet counts in pregnancy: an alarm signal for abruption!

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ABSTRACT

Background: Thrombocytopenia, defined as a platelet count less than 150 million/mm³, affects 6% to 10% of all pregnant women and other than anemia is the most common hematologic disorder in pregnancy.

Methods: We studied all patients with thrombocytopenia in pregnancy from June 2012 to May 2013. There were 86 patients recruited into the study. Pregnant women with preeclampsia and suspected connective tissue disorder were also screened for thrombocytopenia. All women with platelet count of <1.50,000/μl during the study period were included.

Results: Patients were grouped in to mild thrombocytopenia (platelet 100,000-149,999/μl), moderate thrombocytopenia (platelet 50,000-99,999/μl) and severe thrombocytopenia (platelet <49,999/μl). Pregnancy specific cause of thrombocytopenia was in 63 (73.2%) women and non-pregnancy specific were in 23(26.7%) patients.

Conclusions: Preeclampsia and HELLP syndrome is more common cause of thrombocytopenia in pregnancy. Abruptio can occur in patients with severe thrombocytopenia. Though platelet count is not routinely done in pregnancy it is advisable to do so as it may help in detecting gestational thrombocytopenia or other immune related condition.

Keywords: Low platelet counts, Pregnancy specific and non pregnancy specific, Thrombocytopenia

INTRODUCTION

Thrombocytopenia, defined as a platelet count less than 150 million/mm³. It affects 6% to 10% of all pregnant women and other than anemia is the most common hematologic disorder in pregnancy.¹ Thrombocytopenia is effect of various conditions related (specific) and non-related (nonspecific) to pregnancy. Pregnancy specific thrombocytopenia can be isolated thrombocytopenia (Gestational thrombocytopenia) or thrombocytopenia associated with systemic disorders (Preeclampsia, HELLP syndrome, acute fatty liver of pregnancy). Non pregnancy specific thrombocytopenia are Isolated thrombocytopenia, (Primary immune thrombocytopenia-ITP, Secondary ITP Drug- induced thrombocytopenia, Type Iib Von Willebrands disease) and Thrombocytopenia associated with systemic

disorders like thrombotic thrombocytopenic purpura, hemolytic uremic syndrome, systemic lupus erythamatosi, antiphospholipid antibody syndrome, viral infections, bone marrow disorders, nutritional deficiency, liver diseases, portal vein thrombosis, storage disease.²

A thorough knowledge and familiarity of clinical and laboratory features of each of these disorders is essential for the differentiation of these conditions. Among these disorders of thrombocytopenia, gestational thrombocytopenia, also known as incidental thrombocytopenia of pregnancy, is the most common cause of thrombocytopenia in pregnant women, accounting for approximately 75% of all cases.³ It is defined as a mild thrombocytopenia, occurring during the third trimester with spontaneous resolution postpartum and no neonatal thrombocytopenia. It is the most benign

variety of thrombocytopenic disorder with least complications as compared to the thrombocytopenia associated with systemic disorders.⁴ A prompt intervention is required in complicated cases of thrombocytopenia to reduce maternal and perinatal morbidity and mortality.⁵ This study has investigated the spectrum of causes of thrombocytopenia in pregnancy and its effect on fetal-maternal outcome.

METHODS

This is an observational study conducted from June 2012 to May 2013 in the Department of Obstetrics and Gynecology in tertiary care referral center. Institutional ethical committee clearance was obtained. Pregnant women with preeclampsia and suspected connective tissue disorder were also screened for thrombocytopenia. All women with platelet count of $<1,50,000/\mu\text{l}$ during the study period were included.

Patients were grouped into mild thrombocytopenia (platelet $100,000-149,999/\mu\text{l}$), moderate thrombocytopenia (platelet $50,000-99,999/\mu\text{l}$) and severe thrombocytopenia (platelet $<49,999/\mu\text{l}$). The causes of thrombocytopenia were grouped into pregnancy specific and non pregnancy specific thrombocytopenia. After thorough history, examination and relevant investigations the cause of thrombocytopenia was asserted. Obstetric complications like preeclampsia, IUGR, abruption, preterm birth, intra uterine death and post partum hemorrhage were analyzed these patients. Treatment

modalities like platelet transfusion, corticosteroid therapy was also analyzed. Mode of delivery and neonatal thrombocytopenia, hemorrhagic disease of newborn and neonatal mortality were studied.

The data compiled was statistically evaluated using SPSS version 17 and expressed as percentage.

RESULTS

There were 86 pregnant women with thrombocytopenia. Pregnancy specific cause of thrombocytopenia was in 63 (73.2%) women and non-pregnancy specific were in 23 (26.7%) patients (Table 1).

Table 1: Demographic profile of the patients.

Age range (Y)	19-39
Parity index	Primipara-56
	Multipara-30
Period of gestation	Upto 13 weeks - 1
	>13-28 weeks - 16
	>28-40 weeks - 69

Preeclampsia 45 (52.3%) was the most common cause of pregnancy specific thrombocytopenia. Immune Thrombocytopenic Purpura was the second common cause 19 (22%). The lowest platelet count observed in the present study was 10,000 in a case of thrombotic thrombocytopenic purpura (Table 2).

Table 2: Causes of thrombocytopenia.

	Thrombocytopenia			Total 86
	Mild (1,00,000-1,49,999/ μl)	Moderate (50,000-99,999/ μl)	Severe ($<49,999/\mu\text{l}$)	
Pregnancy specific Cause (62)				
Gestational Thrombocytopenia	8	2	0	10 (11.6%)
Severe Preeclampsia	29	12	3	44 (51.16%)
HELLP	2	2	4	8 (9%)
Not pregnancy specific (24)				
ITP	2	10	7	19 (22%)
SLE	3 *	1	0	4 (4.6%)
TTP	0	0	1	1 (1.16%)
Total	44	27	15	86 (n)

*one patient had secondary Antiphospholipid antibody syndrome

Maternal complications observed in patients with thrombocytopenia complicating pregnancy were steroid induced diabetes, abruption, post partum hemorrhage. During the analysis of the data of the maternal complications, it was found that one patient with preeclampsia and one patient with immune thrombocytopenic purpura had steroid induced diabetes. Abruption was the commonest complication observed in

these patients. A total of 13 patients (15.11%) with thrombocytopenia complicating pregnancy had abruption. It was observed that among the 62 cases of pregnancy specific thrombocytopenia, one patient with gestational thrombocytopenia, 8 cases of preeclampsia, 2 cases of HELLP syndrome had abruption. Three patients with ITP had abruption in the group of not pregnancy specific thrombocytopenia. Four cases of mild thrombocytopenia,

5 cases of moderate thrombocytopenia and 4 cases of severe thrombocytopenia had abruption.

Atonic post-partum hemorrhage was seen in 3 patients with HELLP syndrome. It was observed that 2 patients with PPH had cesarean section however had mild thrombocytopenia and one patient with severe thrombocytopenia HELLP syndrome had vaginal delivery. It was noted that 36 (41.8%) patients had

vaginal delivery, 48 (55%) patients had emergency LSCS and 2 (2.3%) had elective LSCS cesarean. Cesarean delivery was done for obstetric indications.

Patients with moderate and severe thrombocytopenia required platelet transfusion. It was observed that 32 patients received platelet transfusions. Two patients with SLE and 2 patients with ITP received oral prednisolone (Table 3).

Table 3: Perinatal complications.

	SGA	Low platelet	Intracranial bleed	Sepsis	IUD	Neonatal death
Pregnancy specific cause (62)	42	11	2	2	11	3
Gestational thrombocytopenia (10)	4	1	1	2	0	0
Severe Preeclampsia (44)	32	7	1	0	11	2
HELLP (8)	6	3		0	0	1
Not Pregnancy specific cause (24)	15	3	0	1	6	1
ITP (19)	11	2	0	0	5	
TTP (1)	1	0	0	0	0	
SLE (4)	3	1	0	1	1	1
Total (86)	57	14	2	3	17	4

Perinatal complication was (55) 87.3% among the patients with pregnancy specific thrombocytopenia and (18) 78.26% among the non-pregnancy specific. It is important to note that there were 17 (19.7%) cases of intrauterine death. There were 5 cases intrauterine fetal demise in 19 patients of Immune Thrombocytopenic Purpura. There were no other risk factors in these patients.

Table 4: Platelet transfusion.

	Moderate	Severe	Total (20)
Pregnancy specific cause (63)			
Preeclampsia	4	1	5
HELLP	2	3	5
Not pregnancy specific cause (23)			
ITP	6	3	9
TTP		1	1

Perinatal complications are higher in patients with preeclampsia and HELLP syndrome. It is known to be associated with growth restricted babies, preterm birth, abruption. Babies born to mother with preeclampsia and HELLP syndrome also had mild to severe thrombocytopenia; it can be explained by the fact that these babies were preterm and had sepsis.

Considerable overlap between the diagnosis of gestational thrombocytopenia and ITP explains the reason for one baby of patient with gestational thrombocytopenia having intracranial bleed (Table 4). The platelet transfusion trigger was 80,000 for cesarean

delivery. Patient with thrombotic thrombocytopenic purpura was initially diagnosed as partial HELLP syndrome. Hence multiple platelet transfusions were given for the patient but in vain when the possibility of immune reaction was thought. She delivered vaginally after induction of labor for preeclampsia. Platelet transfusion was given for 9 patients with Immune Thrombocytopenic Purpura. All transfusion was given just before delivery.

It was observed that patients with gestational thrombocytopenia and women with mild thrombocytopenia did not receive any platelet transfusion.

DISCUSSION

Most common pregnancy specific cause of thrombocytopenia is preeclampsia and most common pregnancy nonspecific cause of thrombocytopenia is ITP. Literature review suggests that gestational thrombocytopenia is the most common cause of pregnancy specific thrombocytopenia.⁵⁻⁷ It may be explained by the fact that platelet count is not done in all patients in the third trimester in the center. Hence significant number of patients with gestational thrombocytopenia may not have been diagnosed.

Abruption occurs more commonly in patients with severe preeclampsia and HELLP syndrome however it is important to note that one patient with gestational thrombocytopenia and 3 patients with ITP had abruption.

Studies quote that gestational thrombocytopenia and ITP do not increase the risk of obstetric complications however increases the risk of bleeding during the surgery.^{8,9} Use of corticosteroids in pregnancy increases risk of preterm prelabor rupture of membranes and abruption.^{10,11} Possibility of abruption in patients with gestational thrombocytopenia and ITP should be kept in mind during the management of these patients. It is also important to note that there were no other bleeding problems in post-operative and post-delivery periods. Prompt recognition and appropriate management of thrombocytopenia could have reduced the risk of hemorrhage.

Post-partum hemorrhage was observed in only 3 patients who were diagnosed as HELLP syndrome. The mode of delivery is not decided by thrombocytopenia or its severity, instead the decision is purely based on obstetric indications. Small for gestational age babies are the most common association in babies born to mothers with thrombocytopenia. Irrespective of the cause, thrombocytopenia in pregnancy responds to platelet transfusion.

Perinatal complications are commonly seen in patients with preeclampsia and HELLP syndrome. Gestational thrombocytopenia and ITP are less commonly associated with perinatal complications. There were 5 (26.31%) cases of intrauterine death in patients with immune thrombocytopenic purpura. There were 3 cases of abruption and one patient had severe thrombocytopenia and one had mild thrombocytopenia at 30 weeks.

Twenty patients with thrombocytopenia received platelet transfusion. Patients with gestational thrombocytopenia did not receive platelet transfusion. Studies quote that gestational thrombocytopenia do not require platelet transfusion unless there are bleeding tendencies. Patients with preeclampsia and HELLP syndrome received platelet transfusion before delivery in order to reduce the risk of bleeding. Platelet transfusion is advisable in cases with moderate to severe thrombocytopenia. Mild thrombocytopenia does not require transfusion unless they are symptomatic. One patient received 3 pints of single donor platelets. The major advantage of apheresis platelets or single donor platelets is that enough platelets can be collected from a single donor to constitute a transfusion dose. While to obtain an equivalent number of platelets requires pooling 4 to 6 whole blood-derived platelets concentrates.

Immune Thrombocytopenic Purpura in pregnancy has to be managed with corticosteroids or IV Immunoglobulin. However, there is a role for platelet transfusion if such patients have to undergo surgery.¹³⁻¹⁴ In the present study platelet transfusion were given for those patients with ITP just before delivery which did not improve even after steroid therapy. Platelet count when less than 50,000 in parturient may require transfusion in patients with ITP

before delivery due to risk of bleeding at the surgical incision.¹⁵

CONCLUSION

Abruption can occur in patients with severe thrombocytopenia. Preeclampsia and HELLP syndrome is more common cause of thrombocytopenia in pregnancy. It should alarm the clinician for anticipated abruption placenta. Platelet count in third trimester helps in screening the woman for gestational thrombocytopenia.

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