Original article

Clinical Presentation & outcome of thrombocytopenia in Pregnancy

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Abstract:

Objective: To study the clinical profile, maternal & perinatal outcomes in thrombocytopenic antenatal patients.

Materials and Methods: In present study, total 63 thrombocytopenic patients were included. A detailed obstetrics history was obtained and maternal high risk factors were noted. Examination, investigation and maternal & perinatal outcomes were assesed.

Results: Out of total 63 patients, 34 (53.97%) had gestational thrombocytopenia the most common etiology. Twenty nine patient had hemorrhagic manifestations & most common presentation was patachiae,ecchymosis & purpura in 11(37.93%) cases. Thirty five (55.55%) cases presented with severe thrombocytopenia. There is no maternal mortality but the most common morbidity was massive haemorrhage due to atonic postpartum hemorrhage as seen in 11 patients. Perinatal mortality was 31.75%.

Conclusion: Clinical assessment is the most important factor for evaluation of a pregnant patient with thrombocytopenia. There is a positive correlation between thrombocytopenia and adverse maternal and fetal outcome. Therefore, proper utilization of health facilities will help in reducing incidence of maternal & perinatal morbidity & mortality.

Keywords: Maternal outcome , Perinatal outcome, Pregnancy, Thrombocytopenia.

INTRODUCTION:

Thrombocytopenia is encountered in 7-8% of all pregnancies. Women are more commonly diagnosed with platelet disorders during pregnancy since screening is done as part of the initial clinic evaluation with automated blood counts. The normal range of platelets in non-pregnant women is 1.5-4.5 lakh/mm^3. Average platelet count in pregnancy is decreased (2.13 lakh/mm^3 vs 2.5 lakh/mm^3). Thrombocytopenia is defined as platelet count less than 1.5 lakh/mm^3 or below 2.5th percentile for pregnant patients (1.16 lakh/mm^3) [1].

Platelets are non-nucleated cells derived from megakaryocytes in the bone marrow and normally live in the peripheral circulation for as long as 10 days. They play a critical initiating role in the hemostatic system. Primary hemostasis begins when platelets adhere to the site of endothelial disruption, leading to platelet clumping. This is followed by platelet activation, which is characterized by release of granules containing von-Willebrand factor, adenosine 5'-diphosphate (ADP) and serotonin. This serves to recruit other platelets into the growing platelet plug, which acts to stop the bleeding. Simultaneously, the synthesis of thromboxane A2 and release of serotonin leads to vasoconstriction to reduce blood loss at the site of vascular injury. The secondary hemostatic phase begins when the coagulation pathway is activated

to form a fibrin meshwork, which serves to reinforce the platelet plug [2].

Thrombocytopenia is caused by one of any three mechanisms: 1) Decreased bone marrow production 2) Increased splenic sequestration & 3) Accelerated platelet destruction. Out of these 3 mechanisms,

platelet destruction is more common in the obstetric practice. Change in platelet count is due to hemodilution, increased platelet consumption and increased platelet aggregation done by increased levels of thomboxane A2. Mild thrombocytopenia is 1-1.5 lakh/mm^3. Moderate thrombocytopenia is 50,000-1 lakh/mm^3. Severe thrombocytopenia is < 50,000/mm^3. In normal pregnancies 7.6% of women present with mild thrombocytopenia and 65% of them will not be associated with any pathology [3].

Any pregnant patient with a platelet count of less than 1 lakh/mm^3 should undergo further clinical and laboratory assessment. With this impression, present study was conducted to analyze the clinical presentation & obstetric and perinatal outcomes among antenatal thrombocytopenic cases in our scenario.

AIMS & OBJECTIVE:

To study the clinical profile, maternal & perinatal outcomes in thrombocytopenic antenatal patients

MATERIAL & METHODS:

Present study was conducted on 63 cases at Department of Obstetrics and Gynecology in Kamineni Institute of Medical Sciences,Narketpally from August 2014 to July 2015. Patients were selected according to following criteria:

Inclusion Criteria: Pregnant women with platelet count <1 lakh/mm^3 (with or without clinical bleeding) in third trimester.

Exclusion Criteria: Pregnant women having malignancy with thrombocytopenia or due to treatment with cancer chemotherapy .

A detailed obstetrics history was obtained and maternal high risk factors like preeclamsia, eclampsia, DIC, HELLP syndrome etc were noted. Medical history like anemia, malaria, dengu, liver disorder, current or previous bleeding problems,family history of bleeding & transfusion history were noted.

Clinical findings suggestive of thrombocytopenia like petechiae, ecchymoses , nose & gum bleeding , vaginal bleeding, hematuria and gastrointestinal bleeding were noted. After physical & obstetrics examination of patients, fetal wellbeing was assessed with ultrasonography & cardiotocography. Routine Investigation in form of complete blood count, peripheral smear & platelet count by automated method, renal profile , liver profile, coagulation profile etc. were carried out . The special investigations like widal, dengue Serology, HIV, Coomb's test, fibrinogen, FDP, D-dimers, RA Factor etc. were done as and when required. Mode of delivery was decided depending on state of mother and fetus.

Platelet transfusion was given as per indication. Newborns were examined for APGAR score, weight and abnormality. Those with birth asphyxia were admitted to Neonatal Intensive Care Unit (NICU) the patients were treated with disease specific treatment and data were collected in proforma and maternal and fetal outcome were analyzed.

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RESULTS :

Total sixty three patients were included in present study , maximum number of cases were seen between 33-36 weeks of gestration.

"Table-1" Distribution according to Gestrational Age (N=63)

S.No	Gestrational Age in weeks	Number of patients & Percentage
1	29-32	17 (26.98%)
2	33-36	27 (42.86%)
3	37-40	19 (30.16%)

"Table-2" Etiology of Thrombocytopenia (N=63)

Causes	Number of patients	Percentage (%)
Gestational Thrombocytopenia	34	53.97%
Preeclamsia/ eclampsia*	13	20.63%
HELLP syndrome	7	11.11%
DIC	5	7.94%
Acute Fatty Liver of Pregnancy	2	3.17%
Malaria(Vivax & Falciparum)	9	14.28%
Megloblastic Anemia**	4	6.35%
Enteric Fever	1	1.58%
HIV	2	3.17%
Dengu***	5	7.94%
Systemic Lupus Erythematosis	1	1.58%
Idiopathic thrombocytopenic purpura (ITP)	1	1.58%
Thrombotic thrombocytopenic purpura (TTP)	1	1.58%
Hypersplenism	1	1.58%

* 3 Patients with preeclamsia and 2 patients with HELLP syndrome also had DIC.

** 1Patients of enteric fever and 1 patient with P.Vivax malaria also had Megaloblastic anemia.

***2 patients with dengue fever also had P. Falciparum malaria.

"Table-3" Hemorrhagic Manifestations Associated with Thrombocytopenia

Site of bleeding	Number of patients (n=29)	Percentage (%)
Patachiae,ecchymosis & purpura	11	37.93%
Gum bleeding	5	17.24%
Epistaxis	1	3.45%
Vaginal bleeding	9	31.03%
Hematemesis	1	3.45%
Hematuria	1	3.45%
Malena	1	3.45%

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Twenty nine patient had hemorrhagic manifestations & rest 34 gestational thrombocytopenia had no hemorrhagic manifestations.

"Table-4" Correlation of etiology with platelet count (N=63)

Etiology	Mild thrombocytopenia (1-1.5 lakh/mm3)	Moderate thrombocytopenia (50,000-1 lakh/mm3)	Severe thrombocytopenia (< 50,000/ mm3)
Gestational Thrombocytopenia	34	0	0
Preeclamsia/ eclampsia	2	5	6
HELLP syndrome	0	2	5
DIC	0	2	3
Acute Fatty Liver of Pregnancy	0	1	1
Malaria(Vivax & Falciparum)	1	3	5
Megloblastic Anemia	0	2	2
Enteric Fever	0	1	0
HIV	0	1	1
Dengu	1	2	2
SLE	1	0	9
ITP	1	0	0
TTP	0	0	1
Hypersplenism	1	0	0

35 cases required platelet transfusion. Remaining patients were given disease specific treatment.

"Table-5" Distribution of Maternal & Fetal Outcome

S.No	Outcome		Cause	Number of patients & Percentage (N=63)
1	Maternal	No Morbidity	Nil	34 (53.97 %)
		Morbidity	Massive Haemorrhage	11 (17.46 %)
			Puerperal sepsis	5 (7.94 %)
			ARF (Renal failure)	3 (4.76 %)
			DIC	5 (7.94 %)
			Pulmonary Edema	5 (7.94 %)
2	Perinatal	No Morbidity	Nil	34 (53.97 %)
		Morbidity	IUGR	5 (7.94 %)
			Severe thrombocytopenia	4 (6.35 %)
			Birth asphyxia	7 (11.11 %)
			Intracranial Haemorrhage	4 (6.35 %)
		Mortality	Intrauterine fetal death	9 (14.29 %)
			Early neonatal death	11 (17.46 %)

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Most frequent morbidity was massive haemorrhage due to atonic post partum hemorrhage (PPH) occurring in 11 patients.

DISCUSSION:

Thrombocytopenia can result from a wide range of conditions with several of them being pregnancy related. Gestational thrombocytopenia (GT) is the most common cause of thrombocytopenia during pregnancy (70%) followed by preeclampsia (21%), immune thrombocytopenic purpura (3%) & other (6%) [4], our findings are in aggrement with this study.

The pathophysiology of gestational thrombocytopenia is unknown, but it is associated with 2 main factors .

1) Accelerated platelet activation at placental circulation.

2) Accelerated consumption of platelets during pregnancy reducing its life span.

Diagnosis is based on: Asymptomatic patient with no history of abnormal bleeding, mild thrombocytopenia, incidental detection on routine antenatal screening. usually develops in the third trimester.

Gestational thrombocytopenia does not adversely affect maternal and fetal outcome. Our findings are consistent with [5]

Samuels evaluated 162 pregnant women and their infants with thrombocytopenia, 74 with presumed GT. No infant from a GT gravida had a platelet count < 50,000/μ L or intracranial hemorrhage [6].

In Burrows' study 756 of 1027 women, who were thrombocytopenic (73.6%) had GT. Only 1 infant had a platelet count < 50,000/μ L and this infant had trisomy 21 and congenital bone marrow dysfunction. He concluded that GT is the most frequent type of thrombocytopenia and poses no apparent risks for either the mother or infant [7].

Preeclampsia accounts for 21% of cases of maternal thrombocytopenia. Thrombocytopenia is usually moderate to severe. Thrombocytopenia correlates well with severity of the disease. The most severe spectrum of preeclampsia is established when the vascular endothelial damage produces microangiopathic hemolytic anemia, elevating liver enzymes along with thrombocytopenia and establishing a syndrome known as HELLP. It is considered a sign of worsening disease and is an indication for delivery, which is the ultimate cure. They noted perinatal mortality in 11%, which they attribute to placental abruption, asphyxia, and extreme prematurity [8,9].

In Burrows' study of women with thrombocytopenia, 216 had preeclampsia with HELLP and 5 gave birth to infants with severe thrombocytopenia, all were preterm. Out of five, two infants experienced intracranial hemorrhages [7].

In present study, 1.58% patients had Idiopathic thrombocytopenic purpura. In this IgG antiplatelet antibodies coats the platelets, which are destroyed by mononuclear macrophase system, predominantly in the spleen. Antiplatelet antibodies may also cross placenta and cause significant fetal thrombocytopenia, which could result in bleeding complications in the neonate like purpura, ecchymoses, melena and intracranial hemorrhage leading to neurologic impairment or death.

Cook in his review of ITP study in pregnant patient reported severe thrombocytopenia in 6 out of 32 infants [10].

In large series of maternal platelet counts (15,607 samples) over a 6-year period at McMaster University, Burrows found that out of 46 women with ITP, 4 infants had severe thrombocytopenia. Three of these were delivered vaginally and 1 by cesarean delivery. No infant experienced an intracranial hemorrhage [7].

Payne in his 10-year experience reviewed 55 newborns born to 41 women who had ITP. Two

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were associated with complications- one had fetal bradycardia and other had an umbilical cord hematoma with fetal distress resulting in with anoxic encephalopathy and cerebral palsy in infant [11].

Thrombotic thrombocytopenic purpura (TTP) is characterized by thrombocytopenia, hemolytic anemia and multi-organ failure.

In Burrows' study of thrombocytopenia in pregnancy, 0.81% mothers had SLE. None of the infants had thrombocytopenia. Although both SLE and antiphospholipid syndrome can cause fetal/neonatal complications (eg, heart block & fetal demise), thrombocytopenia has no significant role[7].

Although almost all viruses can result in thrombocytopenia, cytomegalovirus and human immunodeficiency virus (HIV) are well-known causes.

Disseminated intravascular coagulation (DIC) is usually associated with bleeding. It is seen in abruption and postpartum hemorrhage. It is associated with low platelet count, low fibrinogen, elevated fibrin split products and presence of D-dimers.

Because of nutritional deficiency, women in India are prone for dimorphic anemia. Also malaria, dengue being endemic in our region, they worsens gestational thrombocytopenia.

The commonest maternal morbidity observed in present study was major haemorrhage due to atonic PPH. This is consistent with other studies [3,7]. **Conclusion:**

Maternal & perinatal morbidty & mortality is a public health problem. There is a positive correlation between thrombocytopenia with adverse feto-maternal outcome. Therefore monitor platelet count periodically. Proper antenatal care and institutional deliveries enable obstetricians to diagnose thrombocytopenia & its complications at an early stage and early intervention results in better outcome. Therefore, one has to monitor platelet counts periodically during antenatal period so, that one can reduce morbidty & mortality due to thrombocytopenia, which is one of the preventable cause to improve feto-maternal outcome.

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Conflict of Interest - Nil

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