



An Observational Study Of Feto – Maternal Outcome In Women Presenting With Thrombocytopenia

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Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Introduction : After anemia, thrombocytopenia is the 2nd most common hematologic abnormality encountered during pregnancy and complicates 7% to 8% of all pregnancies in India, mostly in third trimester. Due to haemodilution secondary to expansion of plasma volume, platelet count in normal pregnancies may decreased approx. 10%, most of this decrease occur during the third trimester.

Methods: This was a prospective observational study conducted in the department of Obstetrics and Gynaecology , SMS Medical College , Jaipur from April 2021 to March 2022 , on 160 pregnant women with gestation more than 28 weeks , who were diagnosed with thrombocytopenia and were followed up throughout the antenatal period till delivery to record any complications that developed due to low platelet counts.

Results : The incidence of thrombocytopenia in our study was 2.27%. 83 (52.20%) of the women had mild thrombocytopenia while 55(35.4%) and 22(13.83 %) of women were moderate and severe thrombocytopenia respectively . Out of total 160 women , 102 (63.7%) women had gestational thrombocytopenia (GTP) as an etiology of thrombocytopenia . 44 (27.4

%) women had hypertensive disease of pregnancy (HDP) and only 1(10.6%) woman had immune thrombocytopenic purpura (ITP) . 7(4.4%) women had dengue , whereas 6 (3.8%) women had malaria . Among complications , PPH was the most common seen in 17(10.6 %) women followed by placental abruption in 14(8.8 %) women . out of 160 neonates , 34 (21.1%) require NICU admission , 71 (44.3%) and 63 (39.3%) had APGAR score < 7 in 1 and 5 min.

Conclusion: In our study , majority of the women with severe thrombocytopenia had hypertensive disease of pregnancy and was related to adverse pregnancy outcome . So by proper antenatal care , timely diagnosis and management of hypertensive disease of pregnancy with thrombocytopenia would decrease the complications and improve the maternal outcomes.

Keywords: NIL

Introduction

After anemia, thrombocytopenia is the 2nd most common hematologic abnormality encountered during pregnancy and is found to complicate 7% to 8% of pregnancies in India, mostly in third trimester.¹The normal reference range of platelet in non-pregnant women is 150-400 ,000//□L, less than this is defined as thrombocytopenia.²

Due to haemodilution secondary to expansion of plasma volume, platelet count in normal pregnancies may decreased approx. 10%, most of this decrease occur during the third trimester.³

Thrombocytopenia may be classified as: -⁴

1. Mild thrombocytopenia is 1,00,000 – 1,50,000/□L

2. Moderate thrombocytopenia – 50,001 – 1,00,000/ \square L
3. Severe thrombocytopenia is less than 50,000/ \square L

Clinical assessment is the most important factor for the evaluation of pregnant patient with thrombocytopenia.⁴ The etiological classification for thrombocytopenia can be divided into 2 broad categories:⁵

a) Obstetric -

1. Gestational thrombocytopenia
2. Hypertensive disorder of pregnancy
3. DIC
4. Multifetal gestation
5. Acute fatty liver disease of pregnancy

b) Non-obstetric -

1. ITP (Immune thrombocytopenia purpura)
2. Hypersplenism
3. Hepatic disorder
4. Viral diseases eg. CMV

From a practical standpoint, the current guideline consider that vaginal delivery is safe when platelet count is higher than 30,000/ \square L. For an operative vaginal or caesarean deliveries, the safe platelet count should be at least 50,000/ \square L. The exact platelet number needed to achieve a safe epidural anaesthesia is debated.³ The purpose of the study is to prevent complications like HELLP syndrome, severe pre-eclampsia, eclampsia, HUS & acute fatty liver of pregnancy in pregnant women presenting with thrombocytopenia by careful examination and simple laboratory test.

Methods

This prospective observational study was conducted in the department of Obstetrics and Gynaecology , SMS Medical College , Jaipur from April 2021 to March 2022 , after obtaining institutional ethical committee clearance .

All consenting pregnant , who attended UNIT II ANC over a period of one year and who fulfilled the inclusion criteria were enrolled in the study.

Inclusion Criteria

1. Women who undergone antenatal check-up in ANC gestational age >28 wks.
2. All pregnant women who have platelet count less than 1,50,000/L.
3. Women willing to participate in the study.

Exclusion Criteria

Women with known history of:

1. Diabetes mellitus.
2. Collagen disorders.
3. Tuberculosis.
4. Epilepsy.
5. Previous bad obstetric histories.
6. H/o splenectomy.

Methodology

Those women who had attended the ANC clinic in the Department of Obstetrics and Gynaecology in their 3rd trimesters were enrolled in the study on a random basis. Detailed history and thorough examinations were done. Gestational age was determined by asking the women the date of last menstrual period, or from their earliest USG.

All women underwent baseline investigations like complete hemogram including platelet count which was done through automated blood count analyzer, blood group and Rh typing, USG, DIPSI, urinalysis, VDRL, HBsAg and HIV serology was also carried out in all subjects at the time of enrolment. Special investigations like coagulation profile (PT, APTT, FDP and fibrinogen) KFT and LFT was done if clinically indicated.

All were screened for thrombocytopenia and those with platelet count <150,000 were included in the study and followed till delivery and complications like preterm labour, abruption, preeclampsia, IUFD , PPH , Hematoma were noted . Duration of pregnancy at the time of delivery, indication of induction and method and mode of delivery including indication for instrumental delivery or caesarean section were recorded. Progress of labor was monitored partographically. Neonates of all cases were tested for thrombocytopenia by cord blood sampling. Platelet count was done on day 10 of postpartum.

Platelet transfusion was done when indicated. Data was collected and statistical analysis was done.

Statistical Analysis

Continuous variables were summarized as mean and analyzed by using unpaired t test. Nominal / categorical variables were summarized as proportions and analyzed by using chi- square/ Fischer exact test. p-value <0.05 was taken as significant .

Results

A randomized prospective observational study , conducted in the department of obstetric and gynecology , SMS Medical College , Jaipur from April 2021 to March 2022 , on 160 pregnant women with period of gestation 28 onwards and were found

to have thrombocytopenia after screening . The women who were willing to participate in the study and who fulfilled the inclusion criteria were enrolled in the study after taking informed consent . Data collection and analysis were done and conclusions were drawn which are discussed below

Total 7033 women attended the ANC , during the study period . Out of them ,160 (2.27%) women had thrombocytopenia .

Most of the women belonged to age group 25-30 yrs with mean age 25.40 ± 3.70 yrs . 61 (38.1%) women were in the age group 20-25 Years. 67(41.9 %) women were in the Age group 25-30 Years. 30 (18.8 %) women were in the age group 30-36 Years. Most of the women belonged to age group 25-30 yrs.

Distribution Of Cases According To Age

Age	Cases	Percentage
15-20 Years	2	1.2%
20-25 Years	61	38.1%
25-30 Years	67	41.9%
30-36 Years	30	18.8%
Total	160	100%
Mean age	25.40 ± 3.70 yrs.	

In our study , out of total 160 women , 46 (28.8 %) were diagnosed with thrombocytopenia between 29-32 week of pregnancy .30 (18.8 %) women were diagnosed between 33-36 week of pregnancy .77 (48.1 %) women between 37-40 weeks , while 7(4.4 %) women beyond 41 weeks of gestation respectively.

Distribution Of Cases According To The Period Of Gestation At Diagnosis

Period of Gestation	Cases	Percentage
29-32 Weeks	46	28.8%
33-36 Weeks	30	18.8%
37-40 Weeks	77	48.1%
≥ 41 Weeks	7	4.4%
Total	160	100%

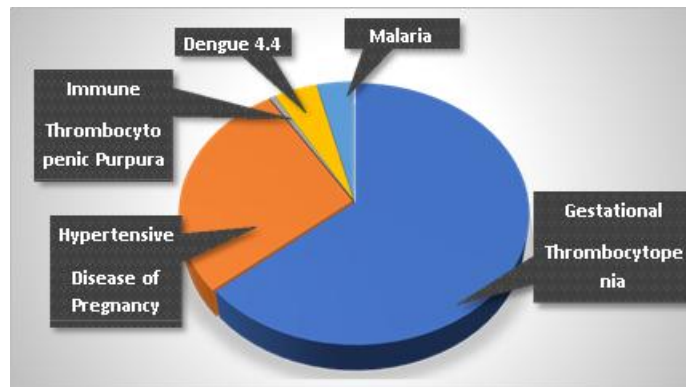
In the present study, out of total 160 women , 102 (63.7%) women had gestational thrombocytopenia (GTP) as an etiology of thrombocytopenia. 44 (27.4 %) women had hypertensive disease of pregnancy (HDP) and only

1(10.6%) woman had immune thrombocytopenic purpura (ITP) .7(4.4%) women had dengue , whereas 6 (3.8%) women had malaria .

Distribution Of Cases According To Etiology Of Thrombocytopenia

Etiology of Thrombocytopenia	Cases	Percentage
Gestational Thrombocytopenia (GTP)	102	63.7%
Hypertensive Disease of Pregnancy (HDP)	44	27.4%
Immune Thrombocytopenic Purpura (ITP)	1	0.6%
Dengue	7	4.4%
Malaria	6	3.8%
Total	160	100%

Pie Chart showing Distribution of Cases According to the Etiology of Thrombocytopenia



Out of 44 (27.4 %) women of hypertensive disease of pregnancy , 36 (22.5 %) women had gestational hypertension , 5 (3.1 %) women had pre -eclampsia , 1 (0.6%) had severe pre-eclampsia and 2 (1.2) % had eclampsia .

Distribution Of Cases According To Hypertensive Diseases Of Pregnancy

HDP	Cases	Percentage
Gestational Hypertension	36	22.5%
Pre-eclampsia	5	3.1%
Severe pre-eclampsia	1	0.6%
Eclampsia	2	1.2%

Total	44	27.4 %
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In the present study , 36 (22.5%) women were pre-term (<37 Weeks) , whereas 114 (71.2 %) women were term (\geq 37-40 Weeks) and 10 (6.2%) women were post-term (\geq 40 Weeks) respectively .

In our study , 83 (52.20%) women had mild thrombocytopenia , 55(33.96 %) women had moderate while , 22 (13.83%) women had severe thrombocytopenia respectively .

Out of total 160 women , 131 (81.9 %) women delivered vaginally and 29 (18.1%) women had caesarean section .Among them , the most common indication for LSCS was failed induction (FI) and foetal distress (FD) in 4 (13.8%) women each followed by s. oligo , pre-eclampsia , meconium stained liquor (MSL) , cephalopelvic disproportion (CPD) and prev.cs scar tenderness in 3 (10.3%) women each , while there was only 1(3.4%) women who had LSCS for 2 loops of cord around neck (CAN) and abruption placentae each respectively .

PPH was the most common maternal complication seen in 17(10.6 %) women followed by placental abruption in 14(8.8 %) women . Episiotomy haematoma were seen in 6 (3.8%).women , while LSCS site haematoma in 1(0.6%) women respectively .

4 (2.5%) women developed HELLP Syndrome , 2 (1.3%) women had Acute Renal Failure and 3 (1.9%) had pulmonary oedema .There was intracranial haemorrhage and ARDS in 1(0.6%) woman each . The one woman having ARDS later succumbed to death . 8(5%) women had ICU admission , while 109 (68 %) women had no complications .

Distribution Of Cases According To Maternal Outcomes

Sr.no	Maternal Outcomes	Cases	Percentage
1.	Placental abruption	14	8.8 %
2.	Postpartum Haemorrhage (Atonic PPH)	17	10.6%
3.	Episiotomy Haematoma	6	3.8%
4.	LSCS site Haematoma	1	0.6%
5.	HELLP Syndrome	4	2.5%
6.	Acute Renal Failure	2	1.3%
7.	Pulmonary Oedema	3	1.9%
8.	Intracranial Haemorrhage	1	0.6%
9.	ARDS (Adult Respiratory Distress Syndrome)	1	0.6%
10.	Maternal Mortality	1	0.6%
11.	ICU Admission	8	5%
12.	Nil	109	68 %

In our study , the perinatal outcomes were as follow , in women with mild thrombocytopenia , Apgar score of <7/10 at 1 min and 5 min were 43(51.8%) and 32(38.5%). 2 (2.4 %) neonates were IUFD , 2 (2.4 %) neonates had intracranial haemorrhage , while 19 (22.89%) neonates required NICU admission respectively . Similarly , in women with moderate thrombocytopenia , Apgar score of < 7/10 at 1 min and 5 min were 16(29.1 %) and 11 (20%) . 2 (3.6%) neonates were IUFD , while 9 (16.4%) neonates required NICU admission . In women with severe thrombocytopenia , mean Apgar score of <7/10 at 1 min and 5 min were 12 (54.5%) and 10 (45.4%). IUFD and stillbirth seen in 1 (4.5%) neonate each , while NICU admission seen in 6 (27.2%) neonates .

Comparison Of Cause Of Thrombocytopenia With Various Studies :

Risk factors	Present study	Chouhan et al	VArora al	etPandey al	etSingh S et al
Gestational Thrombocytopenia	63.7 %	68.2%	61%	44%	64.21%
HDP	27.4 %	26.3%	24%	23%	24.21%
ITP	0.6%	3%	2%	2%	5.26%
Dengue	4.4%	-	2%	7%	-
Malaria	3.8%	-	11%	21%	-

Comparison Of Neonatal Outcomes Of Various Study

Foetal outcome	Present study	Chouhan V et al	Shashikala Karanth et al	M Parnas et al
Low birth weight	35.2%	-	-	7.1%
APGAR score at 1 min <7/10	44%	6.15%	29.78%	16.8%
APGAR score at 5 min < 7/10	33.3%	6.15%	8.5%	8.7%
IUFD	3.1%	3.84%	10.6%	6.5%
Stillbirth	0.6%	-	1.94%	-

Intracranial haemorrhage	1.3%	-	0%	0%
NICU Admission	21.4 %	6.15%	50.48%	-

Discussion

The incidence of thrombocytopenia in our study is 2.27% , similar to the observation made by Brohi et al (1.9%) , Varghese S et al (4.2%) and Lin et al (4.3%) .

In our study , majority of the women belongs to the Age group 25-30 yrs , with mean age 25.40 ± 3.70 i.e. 67(41.9%). Which is similar to the observations made by Asrie et al (2017) 26 - 30 yrs , Chouhan V et al and P Dwivedi et al with mean age 25.74 ± 3.86 and 24.48 ± 3.62 , but other studies found majority of women in age group 20 - 25 yrs .

In our study , 46(28.8%) women were diagnosed with thrombocytopenia between 29-32 weeks of gestation , 30(18.8 %) women between 33-36 weeks , 77(48.1 %) women between 37-40 weeks , while 7(4.4 %) women were diagnosed beyond 41 weeks of gestation . Whereas , similar observation was made by Asrie et al (2015) where 38.26% case diagnosed beyond 37 weeks and in M Parnas et al (2005) 25.65 % case diagnosed < 37 weeks of gestation , 46.2% case diagnosed between 37-39 week , 28.1% case diagnosed ≥ 40 weeks of gestation . The present study shows that 69(44.5 %) women were primigravida and 6(3.9%) of the women were multigravida .

In the present study , the most common cause of thrombocytopenia was gestational thrombocytopenia 102(63.7%). 44(27.4%) thrombocytopenic women had hypertensive disease of pregnancy (HDP) , 1(0.6%) had immune thrombocytopenia purpura (ITP) , 7(4.4%) had dengue and 6(3.8%) had Malaria . Results of our study are compared with other studies as shown below :

In the present study, 44(27.4 %) thrombocytopenic women had hypertensive disorder of pregnancy . Out of which , 36(22.5%) women had gestational hypertension , 5(3.1%) had pre- eclampsia , while

1(0.6%) had s.pre-eclampsia and 2(1.2 %) had eclampsia respectively . In the study conducted by Chouhan V et al (2016) 64.9% had gestational hypertension , 23.5% had pre-eclampsia , 5.8% had s.pre-eclampsia and 5.8% had eclampsia .`

Our study showed that majority of the women , were having mild thrombocytopenia i.e. 83(52.2%) , while 55(33.96 %) and 22(13.83%) women were having moderate and severe thrombocytopenia respectively . While in study conducted by Chouhan V et al (2016) , 63% women had mild thrombocytopenia , 35.4% and about 1.5 % women had moderate and severe thrombocytopenia .

In our study , majority of the women delivered vaginally i.e. 131(81.9 %) and 29(18.1%) women delivered by caesarean section .

Whereas study conducted by Chouhan V et al , observed that 72 % women delivered vaginally and 27.7 % by caesarean section , while in studies by Varghese S et al (2016) , Vesna et al (2016) , Singh S et al (2011) , observed 42.19 % , 16 % , 36.26% caesarean delivery respectively .

In the present study, majority of the women had LSCS for failed induction (FI) i.e. 4 (13.8%) and foetal distress (FD) i.e. 4(13.8%) . 3(10.3%) women had LSCS due to s.oligo. , pre-eclampsia , meconium stained liquor(MSL), cephalopelvic disproportion (CPD) and prev.cs with scar tenderness . 2(6.9 %)women had LSCS due to eclampsia and prev.2cs with scar tenderness each , while 1(3.4%) had LSCS for abruptio placentae and 2 loops of cord around neck (CAN) each respectively .

Whereas study conducted by Chouhan V et al (2016) observed 55% LSCS due to meconium stained liquor with fetal distress. 25% LSCS due to breech, 10% LSCS due to failed induction 5% LSCS due to prev.cs with scar rupture, 5% due placenta previa.

In our study , maternal outcomes were mainly PPH in 17(10.6 %) women and abruptio placentae in 14 (8.8%) women .Whereas in study conducted by Arora et al (2017) , 6.6 % mothers were complicated by abruption and Singh S et al (2011) , where 9.8 % women had PPH .

In other studies , Vesna et al (2016) and Shashikala Karanth et al (2018) 2% and 4.3 % women complicated with PPH which is lower than present study. This is because of most of the women of our study , were having medical illness like anaemia , Hypertensive Disease of pregnancy (HDP) and were Unbooked and having different Sociodemographic conditions.

Other maternal complications includes caesarean wound hematoma in 1(0.6%) and episiotomy site hematoma in 6(3.8 %) women .

These are less in studies by Arora et al (2017) 3.6 % , Varghese S et al (2016) 0% and P Dwivedi et al (2012) 0%. This is because our institute being a tertiary care centre has more patient load , as most of the women are referred .

4(2.5%) women developed HELLP syndrome in the present study , which was statistically similar to the studies conducted by Chouhan V et al (1.5%) , Turgot et al (1.14%) and Vyas et al (4.8%) .

In the present study , 2 (1.3%) women had acute renal failure and 3(1.9%) had pulmonary oedema and 1(0.6%) had intracranial haemorrhage . Mortality was seen in 1(0.6%) woman in our study , which is lower than in studies by Nisha S et al (2011) and Usha et al where 5.26% and 4.37% maternal mortality was reported . This is due to strict surveillance ,management and speciality services like laboratories , blood bank ...etc at our hospital

In our study , in women with mild thrombocytopenia , the APGAR score of <7/10 at 1 min and 5 min was seen in 43(51.8%) and 32(38.5%) neonates , 2(2.4%) neonates were IUFD , while 2(2.4%) had intracranial haemorrhage and 19(22.9%) required NICU admissions respectively .

In women having moderate thrombocytopenia , the APGAR score of <7/10 at 1 min and 5 min was seen in 16(29.1%) and 11 (20%) neonates , 2(3.6%) neonates were IUFD , while 9 (16.4%) required NICU admissions.

In women with severe thrombocytopenia , the APGAR score of <7/10 at 1 min and 5 min was seen in 12(54.5%) and 10 (45.4 %) neonates , 1(4.5%) neonates were IUFD , while 1 (4.5%) was stillbirth and 6(27.3%) required NICU admissions respectively .

Conclusion

Thrombocytopenia is one of the common hematologic abnormality encountered during pregnancy .In our study the incidence of thrombocytopenia was 2.27% . Gestational thrombocytopenia was the commonest cause with the incidence of 63.7 % followed by hypertensive disorder of pregnancy (27.4%) , ITP (0.6 %) , Dengue (4.4%) and Malaria (3.8%) .

In our study , majority of women with severe thrombocytopenia had hypertensive disease of pregnancy and was related to adverse pregnancy outcome like acute renal failure , HELLP syndrome ,pulmonary oedema and intracranial haemorrhage . While gestational thrombocytopenia was associated with better maternal . Proper antenatal care , timely diagnosis and management of hypertensive disease of pregnancy with thrombocytopenia would decrease the complications and improve the maternal outcomes . Thus accurate etiological diagnosis is essential for optimal therapeutic management.

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