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Original Research Article

Obstetric and Neonatal Outcomes of The Pregnancies Complicated with Thrombocytopenia

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Abstract

Background: After anemia, the second most common abnormality in pregnancy is thrombocytopenia.

Aim: This study aimed to evaluate the factors associated with newborns prognosis with gravidas having thrombocytopenia during pregnancy and compare the infants with and without thrombocytopenia in terms of maternal and neonatal outcomes.

Materials and Methods: This study is prospective study which was conducted in department of Obstetrics and gynaecology a total number of deliveries in our institute were 10,000-13000. Sample size was 90.

Results: Most common cause of thrombocytopenia was 20 (22%) of patients were diagnosed with gestational thrombocytopenia,16 (18%) of patients were diagnosed with pre-eclampsia. 82 (91%) of patients of thrombocytopenia in pregnancy were diagnosed in antepartum period. Majority of patients 50 (55%) were diagnosed with moderate thrombocytopenia. Most common complication in mothers was 8 (9%) had oozing at caesarean site followed by 3 (3%) had placental abruption. The thrombocytopenia degree and need for blood and blood product transfusion showed no statistical significance (0.55). In a total of 90 patients, 21 (23%) of newborn babies of mothers having thrombocytopenia were admitted in NICU.

Conclusion: Pregnancy is complicated by thrombocytopenia. Approximately 10% is the overall incidence of thrombocytopenia in pregnancy. The complications in mothers delivering new borns were oozing at caesarean site, placental abruption, postpartum haemorrhage and hemo-peritoneum. By antenatal follow up, vigilant monitoring and appropriate treatment can prevent most of the complications.

Keywords: Thrombocytopenia, Pregnancy, Maternal and Neonatal Outcomes.

Introduction

Thrombocytopenia occurs in both adults and children and it is an autoimmune disorder in which platelets are destroyed by autoantibodies.[1] Young women who are childbearing suffer from thrombocytopenia and it is also associated with maternal and fetal complications[2]. Higher perinatal mortality rate of 10 to 22% was observed in other studies and it has not been confirmed in neonates. Intracranial haemorrhage is very rare affecting only 1% of babies. 3 to 6% of cases reported severe thrombocytopenia ($<20*10^9$ per liter) in neonates who were born from mothers who were suffering from thrombocytopenia. Various studies were designed to evaluate the maternal characteristics to predict the levels of platelets in neonates, however correlation has not been found between neonatal thrombocytopenia (NT) and maternal thrombocytopenia (MT)[3,4]. Hence, reliable predictors of NT was severity of maternal disease and history of previous NT. This study aimed to evaluate the factors associated with newborns prognosis with gravidas having thrombocytopenia during pregnancy and compare the infants with and without thrombocytopenia in terms of maternal and neonatal outcomes[5].

Materials and Methods:

This study is prospective study which was conducted in department of Obstetrics and gynaecology at Chalmeda Ananda Rao Institute of Medical Sciences, Telangana. Total number of deliveries in our institute were 10,000-13000. Sample size was 90. During pregnancy, mothers diagnosed with thrombocytopenia and those who had history of thrombocytopenia were included in the study. Exclusion criteria was infants who were born to mothers who had other auto-immune disorders such as pre-eclampsia, haemolytic anaemia, elevated liver enzymes, low platelet count syndrome and systemic lupus erythematosus. Infants who had other thrombocytopenia causes like sepsis, perinatal asphyxia, intravascular coagulation, drug induced thrombocytopenia and hereditary forms of thrombocytopenia were also excluded from the study. Thrombocytopenia more than 6 months, a normal examination of bone marrow, a normal RBC and WBC counts were the standard criteria used to diagnose thrombocytopenia. From time of pregnancy to delivery, every 3 weeks, maternal platelet count was determined. Platelet counts were determined by collecting blood samples in tubes containing potassium ethylenediamine tetraacetate (K_2EDTA) and was detected by using a cell counter. Pseudo-thrombocytopenia cases were excluded by peripheral blood smear examination. Normal platelet count was greater than $150*10^9$ per liter, mild was a platelet count of 100 to $150*10^9$ per liter, moderate was 50 to $99*10^9$ per liter, severe was less than $50*10^9$ per liter. Indirect immune-fluorescence test was used to detect circulating antiplatelet antibodies in mothers. Treatment was given to patients with less than $50*10^9$ per liter or patients with significant bleeding signs at initial diagnosis time. Patients were administered with prednisone who were suspected to have an indication and were administered with steroids when the patients showed normal platelet counts. Every 28 days, for two cycles, for 5 consecutive days, intravenous immunoglobulin (IVIG) was administered. Spleenectomy was performed on patients who became resistant to steroids and those patients who did not respond to IVIG therapy. Neonatal passive platelet count of lesser than $150*10^9$ per liter in infants born to gravidas with thrombocytopenia, mild was a platelet count of 100 to $150*10^9$ per liter, moderate was 50 to $99*10^9$ per liter, severe was less than $50*10^9$ per liter. Spinal cord blood platelet count was performed for all new borns born to gravidas with thrombocytopenia. Venipuncture was followed in all newborns on days 1,3 and 5. Mucosal bleeding, gastrointestinal or intracranial bleeding were evaluated in all

infants. Ultrasonography was conducted on all infants detected with thrombocytopenia by paediatric radiologist to determine intracranial haemorrhage. All follow up was taken for all infants for the first 3 months to evaluate the duration of thrombocytopenia postnataly. Information regarding gestational age, gender, birth weight, APGAR scores and mode of delivery were collected from all infants. Thrombocytopenic infants were compared with infants who had normal platelet counts in terms of maternal outcomes. Intravenous immunoglobulin (IVIG) was administered to infants with less than $50*10^9$ per liter, and steroidal therapy was given to patients who failed to respond to IVIG therapy. If severe haemorrhage or anaemia was observed in infants, packed red blood cells and platelet transfusions were administered. SPSS version 16 was used for statistical data analysis. For qualitative data, x^2 test was used. For quantitative data, a non-parametric test was used.

Results:

27.08 years (18-46 years) was the mean maternal age in our study

Table 1: Distribution based on age of study group.

Age group	Number	Percentage
<25 years	42	46.7%
26-30 years	33	36.7%
>30 years	15	16.6%

Table 1 shows that majority of patients were in the age group of less than 25 years (42%). In the present study, 65% (72) of the patients were multigravida and 35% (18) of the patients were primigravida. 55% (61) of the patients were presented at more than 37 weeks of gestation 45% (29) of the patients were presented at gestational age in between 30 to 36.6 weeks.

Table 2: Distribution as per diagnosis time of thrombocytopenia in study group.

Diagnosis time	Number	Percentage
Antepartum	82	91%
Intrapartum	8	9%
Postpartum	0	0%

Table 2 shows that 82 (91%) of patients of thrombocytopenia in pregnancy were diagnosed in antepartum period and 8 (9%) of patients of thrombocytopenia in pregnancy were diagnosed in intrapartum period and none of patients were diagnosed in post partum period.

Table 3: Distribution based on thrombocytopenia cause in study group.

Thrombocytopenia cause	Number	Percentage
Gestational thrombocytopenia	20	22%
Pre-eclampsia	16	18%
Eclampsia	5	6%
HELLP syndrome	7	8%
Dengue positive	13	14%
Complicated malaria	4	4%
ITP	6	7%
Liver disease in pregnancy	8	9%
DIC, aplastic anemia, chronic hypertension	11	12%

Table 3 shows that 20 (22%) of patients were diagnosed with gestational thrombocytopenia,16 (18%) of patients were diagnosed with pre-eclampsia, 5 (6%) of patients were diagnosed with eclampsia, 7 (8%) of patients were diagnosed with haemolysis elevated liver enzymes low platelets (HELLP) syndrome, 13 (14%) dengue positive, 4 (4%) complicated malaria, 6 (7%) immune thrombocytopenia purpura, 8 (9%) liver disease in pregnancy and DIC, aplastic anemia, chronic hypertension in 11 (12%) of patients.

Table 4: Distribution as per thrombocytopenia classification, mode of delivery.

Thrombocytopenia classification	**Number**	**Percentage**
Mild (1 lakh to 1.5 lakhs)	30	33%
Moderate (50000-1 lakh)	50	55%
Severe (<50000)	20	22%
Mode of delivery	**Number**	**Percentage**
Full term normal vaginal delivery (FTND)	35	39%
Pre-term vaginal delivery (PTVD)	31	34%
Caesarean Section (LSCS)	20	22%
Vacuum Delivery	3	3%
Forceps Delivery	1	2%

Table 4 shows that majority of patients 50 (55%) were diagnosed with moderate thrombocytopenia followed by mild thrombocytopenia 30 (33%) and severe thrombocytopenia was observed in 20 (22%) of patients. Majority of patients 35 (39%) had FTND, 31 (34%) had PTVD, 20 (22%) had caesarean section, 3 (3%) had vacuum delivery and 1 (2%) had forceps delivery.

The complications in mothers delivering new borns were petechiae rashes, eechymosis, nose bleeding, gum bleeding, intracranial bleeding, gastrointestinal bleeding and anaesthetic complications were not observed in any of patients. 8 (9%) had oozing at caesarean site, 3 (3%) had placental abruption, 1 (2%) had postpartum haemorrhage and 1 (2%) hemo-peritoneum. The maternal complications in the mothers with mild, moderate and severe thrombocytopenia showed P value of 0.035 which was statistically significant on applying Pearson ‘s chi square test.

Table 5: Distribution based on study group needing platelet transfusion, fetal and neonatal outcomes and neonatal thrombocytopenia

Platelets transfusion	**Number**	**Percentage**
Yes	25	28%
No	65	72%
Fetal and neonatal outcomes	**Number**	**Percentage**
MSB	7	8%
FSB	4	4%
NND	2	2%
Live birth	**77**	86%
Neonatal thrombocytopenia	**Number**	**Percentage**
Yes	4	4%
No	86	96%

Table 5 shows that in a total of 90 patients, 28% needed platelet transfusion and 72% did not require platelet transfusion. 2 neonatal deaths (NND) were reported, 4 fresh still births (FSB) and 7 macerated still births were reported in total of 90 patients. 4% neonates of thrombocytopenic mothers had thrombocytopenia. The thrombocytopenia degree and need for blood and blood product transfusion showed no statistical significance (0.55). In a total of 90 patients, 21 (23%) of new born babies of mothers having thrombocytopenia were admitted in NICU.

Discussion:

27.08 years (18-46 years) was the mean maternal age in our study. Similar results were observed in Janes SL et al[6] study, which was 25.38 years (24-29 years), Thanoon et al[7] study, which was 28.80 years (16-44 years) and in Prathima Kumari et al[8] study, 26.87 years (19-45 years). 65% (72) of the patients were multigravida and 35% (18) of the patients were primigravida. In Prathima Kumari et al[8]; majority of the patients in present study were multigravida 66 (66%) followed by primigravida 34 (34%). Janes SL et al[6] showed prevalence was more in 70% primigravida and 30% multigravida. In present study, 55% (61) of the patients were presented at more than 37 weeks of gestation 45% (29) of the patients were presented at gestational age in between 30 to 36.6 weeks. 82 (91%) of patients of thrombocytopenia in pregnancy were diagnosed in antepartum period and 8 (9%) of patients of thrombocytopenia in pregnancy were diagnosed in intrapartum period and none of patients were diagnosed in post-partum period. In Janes SL et al study, it was conducted on thrombocytopenia in pregnancy which showed 22% in 24-28 weeks, 28% in 28-32 weeks, 26% in 33-37 weeks and 22% in 38-40 weeks. In Prathima Kumari et al[8], 42 (42%) patients presented at 30-36.6 weeks of gestation and 58 (58%) patients diagnosed at >37 weeks of gestation. In majority 94 (94%) of the patients, thrombocytopenia diagnosed in antepartum, followed by 6 (6%) patients who presented with thrombocytopenia in intra-partum and none presented in postpartum period. In present study, 20 (22%) of patients were diagnosed with gestational thrombocytopenia,16 (18%) of patients were diagnosed with pre-eclampsia, 5 (6%) of patients were diagnosed with eclampsia, 7 (8%) of patients were diagnosed with haemolysis elevated liver enzymes low platelets (HELLP) syndrome, 13 (14%) dengue positive, 4 (4%) complicated malaria, 6 (7%) immune thrombocytopenia purpura, 8 (9%) liver disease in pregnancy and DIC, aplastic anemia, chronic hypertension in 11 (12%) of patients. The most common cause of thrombocytopenia in pregnancy was gestational thrombocytopenia in 25 (25%) cases followed by preeclampsia 20 (20%). Various other causes were dengue NS1 positive 14 (14%), HELLP syndrome 8(8%), ITP 6 (6%), eclampsia 5 (5%), complicated malaria 4(4%), liver diseases in pregnancy 7 (7%) and 11 (11%) cases due to other causes like DIC, aplastic anemia, chronic hypertension in Prathima Kumari et al study[8] which showed similar results. The most common cause of thrombocytopenia was gestational thrombocytopenia (81%) and followed by preeclampsia (16%) and ITP (3%) in Sainio et al[9]study. In Maccrae R et al[10] study, 71% were gestational, 6% preeclampsia and 5% were ITP which is comparable to our study. In Bai ARG et al[11] study; it was found that thrombocytopenia incidence in pregnancy was 7.6%. In Parnas M et al[12] study; the main causes of thrombocytopenia were gestational thrombocytopenia (GT) (59.3%), immune thrombocytopenic purpura (ITP) (11.05%), preeclampsia (10.05%), and HELLP syndrome (12.06%) which is comparable to our study. In the present study, majority of patients 50 (55%) were diagnosed with moderate thrombocytopenia followed by mild thrombocytopenia 30 (33%) and

severe thrombocytopenia was observed in 20 (22%) of patients. In Asmaa M T et al[13] study, 63.5% had mild thrombocytopenia (100-149 x 109/L), 36.5% had moderate thrombocytopenia (50-99 x109/L) while none had severe thrombocytopenia (<50x109/L). Mean platelet count in the present study was $82.9*10^9$ /L, In Prathima Kumari et al study[8], mean platelet count was $84.6*10^9$ /L. In Bai ARG et al study[11], mean platelet count was $135*10^9$ /L. In Ajzenberg et al[14] study, mean platelet count was $69*10^9$ /L. In present study, majority of patients 50 (55%) were diagnosed with moderate thrombocytopenia followed by mild thrombocytopenia 30 (33%) and severe thrombocytopenia was observed in 20 (22%) of patients. Majority of patients 35 (39%) had FTND, 31 (34%) had PTVD, 20 (22%) had caesarean section, 3 (3%) had vacuum delivery and 1 (2%) had forceps delivery. In Janes SL et al[6] study, 58% patients needed caesarean section and 42% delivered vaginally. In present study, the complications in mothers delivering new borns were petechiae rashes, eechymosis, nose bleeding, gum bleeding, intracranial bleeding, gastrointestinal bleeding and anaesthetic complications were not observed in any of patients. 8 (9%) had births (MSB).

In present study, 21 (23%) of new born babies of mothers having thrombocytopenia were admitted in NICU. Contrast results were observed in Prathima Kumari et al study[8], only 2 (2%) neonates of thrombocytopenic mothers had thrombocytopenia. In Sainio et al[9] study, neonatal thrombocytopenia was reported in 2.1% of cases and in Bai ARG et al study[11], neonatal thrombocytopenia was reported in 4% of cases. Similar results were observed in Ajzenberg et al[14] study, neonatal thrombocytopenia was reported in 38% of cases.

Conclusion:

Pregnancy is complicated by thrombocytopenia. Approximately 10% is oozing at caesarean site, 3 (3%) had placental abruption, 1 (2%) had postpartum haemorrhage and 1 (2%) hemo-peritoneum. In Prathima Kumari et al[8]; similar results were observed such as 9 (9%) had caesarean section site oozing followed by 4 (4%) had placental abruption, 2 (2%) had episiotomy hematoma, 2 (2%) had postpartum hemorrhage 1 (1%) had hemo-peritoneum. None had petechiae rashes, nose bleedings, gum bleeding, ecchymosis, gastrointestinal bleeding, intracranial bleeding or anesthetic complications like spinal or epidural hematoma. In present study, 28% needed platelet transfusion and 72% did not require platelet transfusion. In Ajzenberg et al[14] study, 2% needed platelet transfusion. In present study, 2 neonatal deaths (NND) were reported, 4 fresh still births (FSB) and 7 macerated still births were reported in total of 90 patients. 4% neonates of thrombocytopenic mothers had thrombocytopenia. Similar results were observed in Prathima Kumari et al study[8], 19 (19%) of newborn babies of thrombocytopenic mother required neonatal intensive care unit (NICU) admission. There were 2 neonatal deaths (NND), 3 fresh still births (FSB) and 8 macerated still

the overall incidence of thrombocytopenia in pregnancy. The main cause of thrombocytopenia in pregnancy is unknown in most of cases, however, gestational thrombocytopenia, pre-eclampsia, eclampsia, haemolysis elevated liver enzymes low platelets (HELLP) syndrome, dengue malaria, immune thrombocytopenia purpura, liver disease in pregnancy and DIC, aplastic anemia, chronic hypertension are the suspected causes. The complications in mothers delivering new borns were oozing at caesarean site, placental abruption, postpartum haemorrhage and hemo-peritoneum. By antenatal follow up, vigilant monitoring and appropriate treatment can prevent most of the complications.

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