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Hospital based Prospective Study of Thrombocytopenia in Pregnancy

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Abstract- Background: Thrombocytopenia is the second most common hematologic abnormality after anemia during pregnancy and is usually a benign condition. Thrombocytopenia affects 7% to 10% of all pregnant women. All pregnant women with platelet counts less than 100000/mm³ require careful hematological and obstetric consultation to rule out other more serious disorders.

Objectives: To study the various etiological factors associated the effect and outcome of the mother and neonates born, to study the Management in pregnancy.

Methods: The study was conducted in this tertiary institute over a period of two years and three months. 130 pregnant patients with a platelet count of or less than 100000/mL were included. The course of pregnancy was studied and the investigation profile and maternal and fetal outcome was monitored.

Keywords: thrombocytopenia, pregnancy.

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Hospital based Prospective Study of Thrombocytopenia in Pregnancy

Dr. Swati Motilal Maraskolhe ^α & Dr. Ashok Ramchandra Anand ^σ

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Methods: The study was conducted in this tertiary institute over a period of two years and three months. 130 pregnant patients with a platelet count of or less than 100000/mL were included. The course of pregnancy was studied and the investigation profile and maternal and fetal outcome was monitored.

Result: Out of 130 cases 107 cases (17.69%) had severe thrombocytopenia and 23 cases (82.3%) had moderate thrombocytopenia. Total incidence of thrombocytopenia in pregnancy is 2.8 %. In this study 42.3% cases were primigravidas, 58 % cases were multigravida. In this study gestational thrombocytopenia was the most common etiological factor with 42% cases followed by other infectious diseases, 1.5% for pregnancy induced hypertension and for eclampsia, 25.5% cases for HELLP syndrome. 3.07% cases of severe thrombocytopenia had deranged liver function tests and 21.5% cases of moderate thrombocytopenia had deranged liver function tests. In this study out of the total 4.8% acute febrile illness cases 1.5% had P. vivax Malaria. And Among the 6 cases of dengue in this study, 0.7 % were IgM positive, 3.8% were NS1Ag positive. Most of the 63.7% cases were of ≥ 36 weeks of gestation. In this study out of 130 cases there were 10 (7.69%) neonatal deaths.

Conclusion: Conclusion from this study is the incidence of thrombocytopenia during pregnancy is quite uncommon that is 2.8% and if present with thrombocytopenia then it is considered as an emergency for an obstetrician mostly during labor or whenever she having bleeding Fetal outcome in pregnant patients with thrombocytopenia was favourable; it was dependent on the gestation of delivery.

Keywords: thrombocytopenia, pregnancy.

I. INTRODUCTION

Platelet abnormalities may precede pregnancy, developed during pregnancy coincidentally or be induced by pregnancy. Pregnancy is associated with physiological and pathological changes in platelet numbers and function which can be of clinical concern. Inherited defects in platelet function and number may also manifest during pregnancy with the risk of bleeding dependent on the underlying problem. Thrombocytopenia affects 7% to 10% of all pregnant women and other than anemia is the most common hematologic disorder in pregnancy.²

Thrombocytopenia in pregnancy may occur secondary to a variety of causes ranging from benign disorders such as gestational thrombocytopenia to syndromes associated with significant morbidity such as eclampsia, HELLP, ITP, TTP-HUS. Other causes of thrombocytopenia in pregnancy are rare such as Type II von Willebrand Disease (vWD), and disseminated intravascular coagulation.

Among the all causes most common cause is Gestational Thrombocytopenia, Which is 75 % occurs mostly in third trimester and is thought to be predominantly due to hemodilution. All pregnant women with platelet counts less than 100000/mL require careful hematological and obstetric consultation to rule out other more serious disorders.

To reduce the platelet disorder related complications during pregnancy, there should be stratification done regarding the predictors, frequency and their effects on the foetus.

In this study we study the various etiological factors associated, the effect and outcome of the mother and neonates borne to study the Management in pregnancy.

a) Aims and objectives of the study

1. To study the various etiological factors associated with thrombocytopenia in pregnancy
2. To study the number and percentage of cases of moderate and severe thrombocytopenia in pregnancy.
3. To study the different diseases in which thrombocytopenia manifests in ANC patients.
4. To study the effect and outcome of the mother and neonates borne to them.
5. To study the management of cases of thrombocytopenia in pregnancy.

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6. To study the morbidity and mortality associated with thrombocytopenia in pregnancy.

II. METHODS

Study-Hospital based prospective study

Inclusion criteria

1. Pregnant patients with 2nd and 3rd trimester with low platelet count.
2. Platelet count equal to or below 100000 per micro-liter were included in the study in Pregnant women.

Exclusion Criteria– 1) Patients on steroid, NSAIDS therapy or who underwent for splenomegaly.

The study was conducted in the tertiary institute over a period of two years and three months, from. 130 pregnant patients with a platelet count of or less than 100000/mL were included in the study group. Patients

with 2nd And 3rd trimester of pregnancy were included. On admission a thorough history was taken and a detailed clinical examination was carried out. All the patients were subjected to biochemical investigations, special investigations and ultrasonography.

Patients were grouped into 2 categories- one with moderate thrombocytopenia (platelet count >50000 or less than or equal to 100000/ml and one with severe thrombocytopenia (platelet count equal to or less than 50000/ml).

The course of pregnancy was studied and the investigation profile was monitored. The obstetric outcome was noted. The entire hospital stay course was noted. Final outcome of all cases and complications if any was studied.

Table no. 1: Distribution according to parity

Parity	No.	Percentage
Primigravida	55	42.3
Multigravida	75	58
Total	130	100

III. RESULT

The total number of deliveries in our institute over the period from Jan 2017 to July 2018 was 4669. Out of deliveries, there were 130 cases of

Thrombocytopenia. Thus the incidence of Thrombocytopenia in the present study is 2.8%.

In this study 42.3% cases were primigravidas, 58 % cases were multigravida.

Table no. 2: Distribution of case according to weeks of gestation

Weeks of gestation	No.	Percentage
26-30	14	10.7
31-35	34	26.1
36-41	82	63.07
Total	100	100%

In this study 10.7% cases were of 26-30 weeks of gestation, 26.1% cases were of 31-35 weeks of gestation, 63.7% cases were of ≥36 weeks of gestation.

Table no. 3: Distribution of cases according to OBSTETRIC HIGH RISK CONDITION

Obstetric high risk condition	No. of patients(50)	Percentage (%)
HELLP	33	25.53
Severe PIH	2	1.54
DIC	10	7.6
Antepartum hemorrhage	5	3.8

In this study most common high risk condition is HELLP among 33 patient and percentage 25.53%

Table no. 4: Distribution of case according to Etiology

Etiology	No.	Percentage
Gestational Thrombocytopenia	55	42%
Dengue	8	6.6%
HELLP	33	25.5%
DIC	10	7.6%
ART Induced	1	0.7%
Heparin Induced	1	0.7%
Idiopathic	5	3.8%
Pancytopenia	2	1.5
Severe PIH	2	1.5
APH	5	3.8
Acute Febrile Illness	6	4.8%
P.Vivax	2	1.5%
Total-	130	100%

In this study gestational thrombocytopenia was the most common etiological factor with 42% cases followed by 1.5% for malaria followed by 6.6% for dengue, 1.5% for pregnancy induced hypertension and for eclampsia, 25.5% cases for HELLP syndrome. 3.07% cases of severe thrombocytopenia had deranged liver

function tests and 21.5% cases of moderate thrombocytopenia had deranged liver function tests.

In this study out of the total 4.8% Acute febrile illness cases, 1.5% had P. vivax Malaria. And Among the 6 cases of dengue in this study, 0.7 % were IgM positive, 3.8% were NS1Ag positive.

Table no. 5: Distribution of case according to Classification of Thrombocytopenia

PLT Count	No.	Percentage
Moderate (>50,000)	107	82.3
Severe (<50000)	23	17.69
Total	130	100%

Out of the 130 cases, 107 cases (82.3%) had moderate thrombocytopenia and 23 cases (17.69%) had severe thrombocytopenia.

Vaginal delivery was the most common mode of delivery seen in 87% of the patients. 13.07% of the

cases had LSCS, with 5 Still birth with 24 are FTND with episiotomy, 50 are FTND with intact perineum, and 34 are PTVGD.

Table no. 6: Distribution according to mode of delivery

Mode of delivery		No. of patients (N = 60)		Percentage (%)
Vaginal	FTND with episiotomy	24	113	87
	FTND with intact perineum	50		
	PTVGD	34		
	Still birth	5		
LSCS		17		13.07

Vaginal delivery was the most common mode of delivery seen in 87% of the patients. 13.07% of the cases had LSCS, with 5 Still birth with 24 are FTND with episiotomy, 50 are FTND with intact perineum, and 34 are PTVGD.

Table no.7: Distribution of case according to Neonatal Outcome

Outcome	No. of patients (N = 130)	Percentage (%)
Baby with mother	99	76.15
Baby in NICU	26	20
Still birth	5	3.86

Above data states that most common neonatal outcome was baby with mother in 76.15% of the patients

Table no. 8: Distribution of cases according to other associated medical disorder

Medical disorder	No.(25)	Percentage (%)
Dengue	8	6.6
ART induced	1	0.7
Heparin induced	1	0.7
Idiopathic	5	3.8
Pancytopenia	2	1.5
Acute febrile illness	6	4.8
P.Vivax	2	1.5

Analysis of Platelet Transfusion

No. of cases requiring platelet transfusion (All cases) Antenatal & Postnatal	69
Mean +/- SD	4.16 +/- 890
Median	5.130
Minimum	2
Maximum	132

As per this data, 53.07% of the patients had required platelet transfusion followed by 22.30% had required blood transfusion other 10 % need conservative treatment.

In this study 7.2% cases were of 19-20 years. of Age group, 44.1% cases were of 21-25 years of Age group. 27.4% cases were of 26-30 years of Age group. 21.3% cases were of 31-40 years of age group.

This analysis reveals that, 14.61% of the cases were registered in Antenatal clinic followed by 78.46% of the patients came as referrals from other hospitals and 6.9 % of the cases were unregistered.

This data reveals that, 1.53% of the cases had 1 antenatal.

Visits followed by 14.61% of the patients had 2-4 antenatal visits and 6.8 % of the patients had 5-6 antenatal visits and 0.76 % of the patient had >6 visit.

In this study 1.5 % cases had deranged renal function tests. 98.46 % cases had renal function tests within normal limit. 1.5 % cases of moderate thrombocytopenia had deranged RFTs.

In this study 24.6 % cases had deranged liver function tests. 75.4 % cases had liver function tests within normal limit. 21.5% cases of moderate thrombocytopenia had deranged LFTs.

As per this data, 5.38 % of the cases had Previous 1 LSCS followed by 2.3% of the cases had IUGR with Fetoplacental Insufficiency and of Postdatism with thick MSAF.

As per this data, 39.23% of the babies were in the range of <1.5 followed by 31.53% of the babies were in the range of 2.1 – 2.5kg.

This data reveals that 7.61% of the patients had Low birth weight with respiratory distress was the commonest indication for admission of the NICU.

This data indicates that, Postnatal course was uneventful in 96.9 % of the patients.

As per this data, 2.30 % of the cases were admitted for Critical monitoring followed by 1.53% of the patient's was admitted for Ventilator Support.

As per this data, 2.30 % were admitted in the CCU for < 2 days.

Respiratory distress was the most common complication seen in 3.8% of the babies.

As per this data, 83.07% of the patients had duration of hospital stay < 10 days followed by 16.15% of the patients had hospital stay 11 – 20 days. The reason for prolonged stay was to monitor vital parameters, to look for signs and symptoms of bleeding and hypertension, to look for growth of baby.

The neonatal mortality with Severe birth asphyxia was 3.9% and with Cardiorespiratory arrest was 2.30% with the perinatal mortality rate was 8.5%.

The most common cause of stillbirth was prematurity. followed by 22.30% had required blood transfusion other 10 % need conservative treatment.

This data reveals that 88.28% of the babies had Apgar score in the range of 7 to 9.

IV. DISCUSSION

In this prospective study of all pregnant patients with thrombocytopenia with platelet count less than or equal to one lakh per mL were included.

The present study was aimed at investigating thrombocytopenia during pregnancy.

Their detailed history, examination findings, investigations were noted. Course of pregnancy was followed up and the maternal, obstetric and fetal outcome was studied.

The results of the study were then compared with the available literature and the following points were noted.

The total number of deliveries in our institute over the period from Jan 2017 to Aug 2018 was 4669. Out of deliveries, there were 130 cases of Thrombocytopenia. Thus the incidence of Thrombocytopenia in the present study is 2.8%.

From the above studies our study and Zahida Parveen Brohi^{etall} shows similar findings of Incidence among the patient.

Age

In our study, most of the patients (n=60) i.e. 44.1% cases were of 21-25 yrs. of Age group with mean age of 30.7 ± 2.08 years in the study group.

Out of 130 patient total 14.61% of the cases were registered in Antenatal clinic followed by 78.46% of the patients came as referrals from other hospitals and 6.9 % of the cases were unregistered. 14.61 % had 2-4 antenatal OPD visit and 6.9 % had no visit.

In this study 42.3% cases were primigravidas, 58 % cases were multigravida. most of the studies shows similar findings that most patient reported are primigravida.

In this study 26.1% cases were of 31-35 weeks of gestation with mean gestational age 34 ± 5

Similar findings consistent with the study conducted by Michal Parnas^{etall} 2005¹ <36 weeks– 25.6%,

In this study, 63.7% cases were of ≥ 36 weeks of gestation. The study conducted by Michal Parnas^{etall} 2005¹ observed that 37-39 weeks – 46.2% which shows opposite findings to our study.

In our study gestational thrombocytopenia (42%) was the most common etiological factor with 42% cases followed by 1.5% for malaria followed by 6.6% for dengue, 1.5% for pregnancy induced hypertension and for eclampsia, 25.5% cases for HELLP syndrome.

Michal Parnas^{etall} 2005¹ Observed that the main causes of thrombocytopenia were gestational thrombocytopenia 118 patient (GT) (59.3%), 22 immune thrombocytopenic purpura (ITP) (11.05%), 20 with severe pre-eclampsia (10.05%), and 24 with HELLP (Hemolysis, elevated liver enzymes and low platelet count) syndrome (12.06%). 10 with DIC, 1 with TTP, 6.2% with APH.

In our study vaginal delivery was the most common mode of delivery seen in 87% of the patients. 13.07% of the cases had LSCS, with 5 Still birth with 24 are FTND with episiotomy, 50 are FTND with intact perineum, and 34 are PTVGD.

Michal Parnas^{etall} 2005 conclude that most common mode is Vaginal delivery. and LSCS is done only in case of any obstetric emergency.

Michal Parnas^{etall} 2005 observed that most of the patient had vaginal deliveries 64 % and Cesarean section -36.2% preterm deliveries with higher rates of labor induction.

In our study the neonatal mortality with severe birth asphyxia was 3.9% and with Cardiorespiratory arrest was 2.30% with the perinatal mortality rate was 8.5 %. The most common cause of stillbirth was prematurity.

50 patients (38.46%) had preterm deliveries out of which 60 patients (56.07%) belonged to the severe thrombocytopenia group. This was due to the associated obstetric and medical complications that indicate preterm delivery.

10 patients (7.68%) had neonatal deaths (NNDs) as opposed to the study of Parnas *et al.* in 2006¹ in which 2.5% patients had NNDs. Out of that 2 patients (1.53%) belonged to the severe thrombocytopenia group. The association of NNDs with severe thrombocytopenia was not statistically significant and in the moderate thrombocytopenia group there were 6.15 % neonatal deaths.

Similar findings also reported in the study conducted by Kasturi V. Donimath^{etall} in 2014-2015.²

According to Kasturi V. Donimath^{etall} Prospective observational study was done during November 2014 to June 2015. Out of 100 cases 56% had thrombocytopenia. There was very high significant relationship between the degree of thrombocytopenia with the severity of the PIH (at $p < 0.001$). 12% of the fetuses had IUD, 10% had IUGR, 4% died after birth and 2% had severe birth asphyxia.

In our study Out of the 130 cases, 107 cases (82.3%) had moderate thrombocytopenia and 23 cases (17.7%) had severe thrombocytopenia.

In the present study, Postnatal course was uneventful in 96.9 % of the patients. periperal complications were seen in 3.07% patients. 4 patient were shifted to CCU (3.07% of cases) I/V/O the severe thrombocytopenia group with HELLP with DIC with severe anemia.

As per this data, 53.07% of the patients had required platelet transfusion followed by 22.30% had required blood transfusion other 10 % need conservative treatment.

As per this data, 2.30 % of the cases were admitted for Critical monitoring followed by 1.53% of the patient's was admitted for Ventilator Support.

V. CONCLUSION

Conclusion from this study is the incidence of thrombocytopenia during pregnancy is quite uncommon that is 2.8% and if present with thrombocytopenia then it is considered as an emergency for an obstetrician mostly during labor or whenever she having bleeding. There are decreased in platelets count at different stages of pregnancy, most low platelet counts observed in the pregnant patients are due to normal physiologic changes and various pathological changes also.

This Study conclude that, Thrombocytopenia in pregnancy may occur secondary to a variety of causes. Most of these cases occur during specific periods of gestation. Out of the etiological factors most common cause of thrombocytopenia in pregnancy is gestational thrombocytopenia with the rate of 42%.

Early diagnosis and management play a key role in decreasing the adverse outcome by understanding the auto-pathology. Treatment of thrombocytopenia depends upon the severity and condition of the patients.

The above observations show that failure can occur at any time during pregnancy or in the puerperium. Hence, constant vigilance and multidisciplinary approach. is required throughout antenatal, intrapartum and post-partum period.

Vaginal delivery is safer and caesarean section should be reserved only for Obstetric indications with access to intensive care units.

In my study emergency LSCS was done in fetal jeopardy and resulted favourable outcome.

Need of platelet transfusion depends on severity and the type of platelet disorder that patient have.

Cases of ITP is also observed which is diagnosed as an diagnosis of an exclusion and treated with Corticosteroids it is the first line of therapy for thrombocytopenia usually prednisone drug is used.

Patients with gestational thrombocytopenia and ITP have better maternal and perinatal outcomes as compared to preeclampsia and HELLP syndrome, which are associated with adverse fetomaternal outcome.

Fetal outcome in pregnant patients with thrombocytopenia was favourable; it was dependent on the gestation of delivery.

Prematurity and its complications with a rate of 7.61% were with most common associated with thrombocytopenia in pregnant patients.

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