Section: Obstetrics & Gynecology

Original Research Article

A PROSPECTIVE STUDY OF THROMBOCYTOPENIA IN PREGNANCY IN A TERTIARY CARE CENTRE, CHENNAI

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Abstract

Background: This study was conducted among all the women admitted with platelet count less than 1,50,000/microlitre in third trimester study participants in the Institute of Social Obstetrics and Govt. Kasturba Gandhi Hospital for women and children. **Materials and Methods:** The study was done for a period from November 2019 to September 2020. 250 study participants recruited based on inclusion and exclusion criteria. The study participants were divided into three groups mild thrombocytopenia, moderate thrombocytopenia and severe thrombocytopenia .After obtaining the Institutional Ethical Committee clearance, the study was started after obtaining patients informed consent Baseline characteristics like name, age Gestational weeks, mode of delivery were all collected .Laboratory investigations like Complete blood count, Liver function test, Coagulation profile, Fever profile, Urine and Blood culture and sensitivity were done. The obtained data was entered in MS Excel Windows 10. Statistical analysis was done with the help of SPSS 23. p values <0.05 is considered as statistically significant. **Result:** 21-25 age group were more common in mild and severe thrombocytopenia group whereas 26-30 years were common in Moderate group. Multigravida were predominant in our study. Most of the study participants crossed >37 weeks of gestation. Majority of the study participants underwent labour natural. The prevalence of thrombocytopenia in our study was found to be 5.2%. Gestational thrombocytopenia is the most common cause (31.2%).The second major common cause was hypertension. Birth weight of <2.5 Kg was found to be comparatively higher in severe thrombocytopenia group. Both antenatal and postnatal Complications was found to be more in Severe thrombocytopenia group and it was found to be statistically significant. **Conclusion:** Our study concluded stating prevalence of Thrombocytopenia was 5.2% and Gestational thrombocytopenia is the most common cause during pregnancy. As risk factors like hypertension, anemia also causes the condition. Early screening for these risk factors and prompt management can reduce the risk of developing thrombocytopenia related complications in pregnancy.

INTRODUCTION

Platelets are formed in the Bone marrow due to fragmentation of megakaryocytes. It is also known as Thrombocytes. The normal range of the platelet in the blood is 1,50,000-4,00,000 per microlitre. Generally the platelets will present in the peripheral circulation for around eight to ten days. Through tissue marcrophage system it will get eliminated from the circulation. In the hemostatic system platelets plays a major role. Several mechanisms are there in achieving the hemostasis.[1] When the platelet count is less than 1,50,000 micro litre than it is known as Thrombocytopenia. Thrombocytopenia is generally classified as Mild, moderate and severe. In mild thrombocytopenia the platelet count will be 1-1.5 lakhs per microliter, in moderate thrombocytopenia the platelet count will be 50000-1 lakh per microliter and in Severe thrombocytopenia the platelet count will be less than 50,000 microliter.[2,3]

Around 10% of gravidas develop thrombocytopenia during pregnancy. Less than 1% of pregnant women have immune thrombocytopenia.[4,5] Platelet abnormalities can occur during pregnancy or induced by pregnancy or may precede pregnancy .In singleton uncomplicated pregnancy the mean platelet count will decrease throughout the pregnancy and will be increased after the delivery. In the first trimester the platelet counts was found to be significantly lower

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compared to the pre-pregnanct state. The decrease in platelets during the pregnancy may be due to physiological or pathological reasons. The physiological decrease in platelet count during pregnancy may be due to hemodilution, increased consumption of peripheral tissue and increased aggregation. Physiological thrombocytopenia will be usually mild and will not affect mother and fetus. In contrast the significant thrombocytopenia with associated medical conditions will cause serious maternal and fetal consequences which requires specific monitoring and appropriate management. Though thrombocytopenia is a normal phenomena in pregnancy seldom it leads to life threatening complications. The management depends on the underlying etiology.

Aim

The aim of the study is to study the causes, treatment and maternofetal outcome of thrombocytopenia in pregnancy.

MATERIALS AND METHODS

Study Setting: This study was conducted among all the women admitted with platelet count less than 1,50,000/microlitre in third trimester study participants in the Institute of Social Obstetrics and Govt. Kasturba Gandhi Hospital for women and. Children. The study was done for a period from November 2019 to September 2020.

Study Design: Prospective cross sectional study

Sample Size: The study participants fulfilling the inclusion and the exclusion criteria were included in the study throughout the study period. The final attained sample is 250. The study participants were divided into three groups mild thrombocytopenia, moderate thrombocytopenia and severe thrombocytopenia.

Inclusion Criteria

- All pregnant women admitted in their third trimester of pregnancy with platelet count < 1,50,000/microlitre,
- Singleton pregnancy
- Both primigravida and multigravida

Exclusion Criteria

- Pregnant mothers with Hepatitis, SLE and HIV infection
- Previous history of thrombocytopenia
- Previous history of liver disorders, renal disorders complicating pregnancy
- Spleenectomised pregnant mothers and patients, on NSAIDS therapy and steroid and immunotherapy.

Data Collection Method: After obtaining the Institutional Ethical Committee clearance, the study was started after obtaining patients informed consent. The study participants recruited during the study period 250.

Baseline characteristics: Name, age, parity, gestational age, presenting illness, menstrual history, obstetric history, History of bleeding manifestations were obtained.

Laboratory investigations:

- Complete blood count-Hemoglobin, Packed cell volume, Total count, Differential count, Platelet count and Peripheral smear.
- Liver function test-SGPT, SGOT, Serum uric acid, Bleeding time, Clotting time, LDH
- Coagulation profile
- Fever profile like Dengue, MSAT, WIDAL, MP/MF
- Urine and Blood culture and sensitivity

Statistical analysis: The obtained data was entered in MS Excel Windows 10. Statistical analysis was done with the help of SPSS 23. Continuous data was expressed in terms of mean and standard deviation. Categorical data was expressed in terms of Numbers and Percentages. Test of association for Categorical data was Chi square test and for Continuous data was t test and Anova test. .p values <0.05 is considered as statistically significant.

RESULTS

21-25 age group were more common in mild and severe thrombocytopenia group whereas 26-30 years were common in Moderate group. Mulitgravida were predominant in our study Most of the study participants crossed >37 weeks of gestation. Majority of the study participants underwent labour natural.

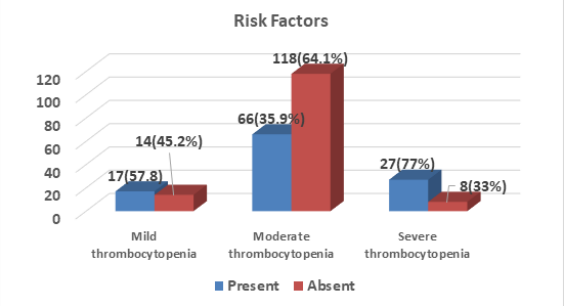

Figure 1: Prevalence of Risk factors among the study participants

Risk factors was found to be more in severe thrombocytopenia 27(77%) and decrease gradually as severity decreases.

Table 1: Demographic profile of the study participants

Baseline Characteristics	Mild	Moderate	Severe	P value
Age				
<= 20 years	1(3.2%)	9(4.9%)	0(0%)	0.352
21-25 years	18(58.1%)	68(37%)	16(45.7%)	
26-30 years	9(29%)	85(46.2%)	14(40%)	
31-35 years	3(9.7%)	18(9.8%)	5(14.3%)	

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36-40 years	0(0%)	4(2.1%)	0(0%)	
Gravida status				.206
Primigravida	13(41.9%)	89(48.4%)	14(40%)	
Multigravida	18(58.1%)	95(51.6%)	21(60%)	
Gestational weeks				
<=37 weeks	8(26%)	44(23.9%)	13(37%)	.262
>37 weeks	23(74%)	140(76.1%)	22(63%)	
Mode of Delivery				
Natural labour	22(71%)	112(61%)	25(71.4%)	.527
LSCS	9(29%)	68(37%)	10(28.6%)	
Vaccum	0(0%)	4(2%)	0(0%)	

Table 2: Risk factors present among the study participants(N=110)

Risk factors	Number(N)	Percentage (%)
Hypertension	55	50
Anemia	18	16.4
Dengue	18	16.4
Covid	15	13.6
Malaria	2	1.8
Liver cirrhosis	1	0.9
Klippel Trenay syndrome	1	0.9
Total	110	100

Hypertension was the most common risk factor 50% followed by Malaria 1.8% and Anemia 16.4%.

Table 3: APGAR score of the study participants

APGAR	Mild	Moderate	Severe	P value
1 minute	6.74±0.068	6.53±1.34	6.31±1.53	0.154
5 minute	7.77±0.669	7.55±1.45	7.34±1.71	0.228

The mean APGAR score was found to be low in the severe thrombocytopenia group compared to moderate and mild thrombocytopenia group.

Table 4: Maternal and Neonatal outcome

Variables		Mild (N=31)	Moderate (N=184)	Severe (N=35)	P value
Birth weight	<2.5 Kg	12(38.7%)	48(26.1%)	13(37.1%)	.193
	>2.5 Kg	19(61.3%)	136(73.9%)	22(62.9%)	
Complications	Present	5(16%)	46(25%)	22(62.8%)	0.001*
	Absent	26(84%)	138(75%)	13(37.14%)	
Maternal outcome	Live Births	31(100%)	181(98)	35(100%)	0.580
	Death	0(0%)	3(2%)	0(0%)	
Perinatal outcome	Live Birth	31(100%)	178(97%)	34(97%)	0.646
	Death	0(0%)	2(1%)	0(0%)	
	IUD	0(0%)	4(2%)	1(3%)	
Neonatal outcome	Well baby	16(51.6%)	101(54.8%)	16(45.7%)	.002*
	Death	0(0%)	2(1%)	5(15.6%)	
	Still birth	0(0%)	1(0.5%)	0	
	RDS	2(6.4%)	40(22%)	4(12.5%)	
	HIE	8(26%)	14(7.6%)	4(12.5%)	
	Perinatal asphyxia	2(6.4%)	15(8.2%)	3(9.4%)	
	TTN	3(9.6%)	11(5.9%)	3(9.4%)	

Birth weight of <2.5 Kg was found to be comparatively higher in severe thrombocytopenia group. Complications was found to be more in Severe thrombocytopenia group and it was found to be statistically significant .3 maternal death was reported in moderate thrombocytopenia .1 IUD reported in the Severe thrombocytopenia group whereas 4 IUD observed in moderate thrombocytopenia. Well baby was 45.7% which is comparatively lesser in severe thrombocytopenia group. There is a statistically significant difference observed in the Neonatal outcome.

Table 5: Platelet count at admission and follow up

	Platelet count at admission	Follow up after delivery	P value
Mean	76968	134609	<0.001*
Standard deviation	25009	45567	

The mean difference of the platelets in the study group during the time of admission and follow up after the delivery was 57641 and the difference was statistically significant.

Authors	Incidence
Burrow Et al and Kelton Et al,[6]	7.6%
Salnlo Et al,[7]	7.2%
Vyyas Et al,[8]	7.67%

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Dwivedil Et al,[9]	8.17%
Jeffery Et al,[10]	8%
Our study	5.2%

DISCUSSION

The purpose of my study is to know the incidence, causes, treatment and maternofetal outcome of thrombocytopenia in pregnancy. A total of 4763 antenatal mother were screened out of which 250 patients found to have thrombocytopenia. Thus the incidence was found to be 5.2%. Thus our incidence was compared with other studies.

The most common cause is Gestational thrombocytopenia in our study (31.2%). Similar results was also seen in Burrow et al (78.2%), Sussana et al (81%)and Parnas et al (59.3%).[7-12] Majority of the patients with gestational thrombocytopenia are moderate in our study. This may be due to the sample size and as it is conducted in the tertiary care center which handles the referral cases in large. Gestational thrombocytopenia was the most common etiological factor followed by 23% for hypertensive disorders and Malaria. In a study by Parnas M et al the most important etiological factors for thrombocytopenia are gestational thrombocytopenia accounting for 59.3% followed by hypertensive disorders 21.1% which is similar to our results.

In our study 63.6% of the study participants underwent Normal vaginal delivery. Similar results was also seen in Marco Ruuggeri et al,[13] study where 80% study participants delivered through Normal Vaginal delivery. S. Padmanaban et al,[14] also in his study reported 7.7% of thrombocytopenia and more than 50% delivered through normal vaginal delivery (53.2%). In our study 22% of the patients were complicated with hypertension including 6.4% of HELLP syndrome. Susssana et al (16%), Burrows et al (21%) reported less cases than our study. Whereas in Parnas et al study reported 23% of the cases which is slightly more than our study. Nearly All cases of HELLP developed DIC25%.

In Sibai Et al,[15] 38% of patient with HELLP developed DIC. Audibert Et al,[16] – reported cerebral bleeding in 1.5%. But in our study and Sibai Et al,[15] study there was no cerebral bleeding. The variation may be due to early referral and timely management. In my study Maternal mortality occured in moderate thrombocytopenia group contributing to 1.2%. Whereas in Sibai Et al – maternal mortality1.7%.

According to Our study, majority of the babies had APGAR score of above 6 at 1 minute and above 7 in 5 minutes. In our study 29.2% are of low birth weight<2.5kgs. In mild thrombocytopenia 38.7% and severe thrombocytopenia 37% delivered low birth weight babies. In our study there were 243 live birth (97.2%). 2% of IUD reported in moderate and severe thrombocytopenia groups.0.8% of infant death was found in moderate thrombocytopenia group. Perinatal death was noticed in 14.3% in severe thrombocytopenia group. None of the neonates had bleeding complications or intracranial haemorrhage. Nation-wide study of ITP by Fujimura Et al reported no cases of intra cranial haemorrhage. The mean difference of platelet count in the study group during the time of admission and follow up after delivery was 57641 in my study. This co relates with various other studies like Relton JG and Burrow et al.

CONCLUSION

Our study concluded stating that prevalence of Thrombocytopenia was found to be 5.2%. Gestational thrombocytopenia is the most common cause during pregnancy followed by hypertension. Risk factors like hypertension, anemia also causes thrombocytopenia. Early screening for these risk factors and prompt management can reduce the risk of developing thrombocytopenia in pregnancy. Referral during proper time will also help us in saving the maternal and foetal outcome.

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