

Low Platelet Count (Thrombocytopenia) in Females Diagnosed with Hypertensive Disorder after 20 Weeks of Gestation

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ABSTRACT

Background: Platelets are produced in the bone marrow and remain in blood for about 2 weeks before they are destroyed in the reticuloendothelial system. The range of normal platelets count 150 & 450 × 10³/μl that is also the same and is mostly recorded throughout the normal pregnancy. A platelet counts of less than 150 x10³/μl is considered to be thrombocytopenia. It's commonly diagnosed & has attracted interest from the researchers in pregnant females during the last 20.0 years, especially in pregnant hypertensive women.

Objective: To find frequency of low platelet count (thrombocytopenia) in females diagnosed with hypertensive disorder after 20 weeks of gestation.

Methodology

Study Design: Cross sectional study

Setting: Department of Obstetrics & Gynecology Shalimar hospital, Lahore.

Material and Methods: All information was noted on attached proforma after getting written informed consent. From OPD of Department of Obstetrics and Gynecology Shalimar Hospital Lahore, a total of 282 females fulfilling selection criteria were taken. After enrolling the cases a detailed clinical assessment was done and their demographic and gestational information were taken along with parity. Pregnancy induced hypertension was further classified as Gestational HTN, Mild preeclampsia, Eclampsia and Severe preeclampsia. Blood sample with the help of staff nurse was drawn and was sent to hospital laboratory. Values of platelet count were noted after taking reports from hospital laboratory. Moreover using operational definition thrombocytopenia was labeled.

Result: The mean age of cases was 30.68 ± 5.78 years with minimum and maximum age as 17 and 40 years. The mean gestational age was 31.74 ± 5.40 weeks with minimum and maximum gestational age was 22 and 40 weeks. A total of 235(83.33%) cases had thrombocytopenia and 47(16.67%) cases had normal platelet count.

Conclusion: The conclusion of the study the frequency of low plate count (thrombocytopenia) in females diagnosed with hypertensive disorder after 20 weeks of gestation was 83.33%. The statistics is very high and there must be some preventive strategies to reduce the risk of hypertensive disorder, and if it once diagnosed the further therapeutic strategies should be adopted to reduce related complications such as thrombocytopenia.

Keywords: Pregnancy, Thrombocytopenia, Gestational hypertension, Thrombocytopenia.

INTRODUCTION

Pregnancy Induced Hypertension (PIH) or gestational hypertension is the commonest medical disorder occurring in pregnancy, leading to poor maternal & fetal outcome^{1,2}. After 20 weeks of pregnancy, it is characterized by the development of new hypertension above 140/90 mmHg in a pregnant woman without proteinuria or other symptoms of preeclampsia. Preeclampsia, the most prevalent hypertension condition of pregnancy, is a part of the deadly trifecta and affects 2–10% of pregnancies. It is an idiopathic multisystem disorder, along with infection and bleeding, which both have a significant impact on the rates of maternal morbidity and mortality^{1,3}.

A platelet count of less than 150 x10³/μl is considered to be thrombocytopenia. It is usually diagnosed & recently attracted increasing interest from researchers, particularly in cases with hypertensive disorders during pregnancy⁴. It's second only to anemia as the common hematological abnormality in pregnancy^{5, 6}. Since the last 20 years, more pregnant women having thrombocytopenia diagnosed. Pregnant women may experience thrombocytopenia as a result of a number of pathological or physiological factors^{7,8}.

It is associated with pregnancy induced hypertension, as a study found thrombocytopenia in 55.9% females of pregnancy induced hypertension⁹. According to another study thrombocytopenia was assessed in 76% of females of pregnancy induced hypertension¹⁰.

The current study is designed to find frequency of low platelet count (thrombocytopenia) in females diagnosed with hypertensive disorder after 20 weeks of gestation in our population. Studies shows huge variation in frequency of thrombocytopenia in cases of pregnancy induced hypertension i.e.

21.8%¹¹ as minimum and 76%² as maximum percentage. As, local studies are not widely available on our populations so this can help us to see exact frequency of thrombocytopenia in pregnancy induced hypertension that further can manifest the fetal and maternal outcome. If we find high frequency of thrombocytopenia, then platelet count estimation was a routine at first antenatal visit for timely diagnosis & to achieve favorable fetomaternal outcome.

MATERIAL AND METHODS

This cross sectional study was conducted in Obstetrics & Gynecology Department, Shalimar Hospital, Lahore. Sample of 282 females are estimated using percentage of thrombocytopenia = 76%¹² in pregnancy induced hypertension. 95% confidence level and 5% margin of error are used.

All females of age 16-45 years, gestational age 21-40 weeks, PIH as per operational definition and any parity were included. Females with history of dengue fever (on record), with chronic systemic problems i.e. diabetes (BSR>186mg/dl) or history of GDM (on record), abnormal renal function reports (creatinine>1.2mg/dl) and females with history of cardiovascular disease were excluded.

After enrolling the cases a detailed clinical assessment was done and their demographic and gestational information was taken along with parity. Pregnancy induced hypertension was further classified as Gestational HTN, Mild preeclampsia, Eclampsia & Severe preeclampsia. Blood sample with the help of staff nurse was drawn and was sent to hospital laboratory. Values of platelet count were noted after taking reports from hospital laboratory. Moreover, using operational definition thrombocytopenia was labeled.

Data was entered & analyzed in SPSS version 18. Age, gestational age was presented as mean ± S.D. Parity was presented as frequency and percentage. To address effect modifiers, we stratified the data for age, gestational age, parity, BMI (obese, non-obese) and types of PIH (Gestational HTN, Mild preeclampsia, Eclampsia and Severe preeclampsia). Post stratification Chi-square test was used by taking p-value ≤ 0.05 as significant.

RESULTS

Total 282 cases were included. The mean age of cases was 30.68 ± 5.78 years. The mean gestational age was 31.74 ± 5.40 weeks. There were 159(56.4%) cases parity < 3 and 123(43.6%) cases parity ≥ 3. Thrombocytopenia cases 235(83.33%) and 47(16.67%) cases were normal platelet count.

Data was stratified for age, the frequency of thrombocytopenia was seen in 101(43%) of cases aged 16-29 years and 134(54%) in 30-40 years old cases. The frequency of thrombocytopenia was statistically insignificant with age group, p-value = 0.957. The frequency of thrombocytopenia was seen in 170(72.3%) male cases and in 65(27.7%) female cases. Thrombocytopenia was seen in 135(57.4%) female with parity <3 and in 100(42.6%) females having parity ≥ 3. There was insignificant relation thrombocytopenia with gender. Table: 2

Data was stratified for BMI, the frequency of thrombocytopenia was seen in 61(26%) obese females and in 174(74%) non-obese females. The frequency of thrombocytopenia was statistically same in obese and non-obese females, p-value = 0.401.

The frequency of thrombocytopenia was seen in 74(31.5%) female having mild preeclampsia, 78(33.2%) females with Eclampsia and 83(35.3%) females with severe preeclampsia. The frequency of thrombocytopenia was statistically same in all groups of hypertensive disorders, p-value = 0.255. Table: 2.

Table 1: Distribution of Age, Gestational Age, Parity and thrombocytopenia

	Mean+ SD	Frequency (%)
Age	30.68+5.78	
Gestational Age	31.74+ 5.40	
Parity	<3	159(56.4%)
	3 or more	123(43.6%)
Thrombocytopenia	Yes	235(83.33%)
	No	47(16.67%)

Table 2: Comparison of Thrombocytopenia with respect to Age, Gestational Age, Parity & BMI

		Thrombocytopenia		p-value
		Yes	No	
Age groups	16-29	101(43.0%)	20(42.6%)	0.95
	30-40	134(57.0%)	27(57.4%)	
Gestational Age	21-36	170(72.3%)	39(83.0%)	0.129
	37-40	65(27.7%)	8(17.0%)	
Parity	<3	135(57.4%)	24(51.1%)	0.42
	3 or more	100(42.6%)	23(48.9%)	
BMI	Obese	61(26.0%)	15(31.9%)	0.401
	Non-Obese	174(74.0%)	32(68.1%)	
Types of hypertensive Disorder	Mild Preeclampsia	74(31.5%)	16(34.0%)	0.255
	Eclampsia	78(33.2%)	20(42.6%)	
	Severe Preeclampsia	83(35.3%)	11(23.4%)	

DISCUSSION

Thrombocytopenia is one of the common hematologic problem of pregnancy & is caused by various factors. Pregnancy-associated thrombocytopenia (PAT), which makes up 65% to 80% of cases, is the most common form, followed by hypertensive

disease in pregnancy (PIH)¹³. In PIH, higher maternal and foetal morbidity and mortality rates are associated with decreased platelet counts^{14,15}. PIH is also the common & potential life threatening complications of pregnancy with maternal & perinatal morbidity and the frequency of death rate 5.0-7.0% of all pregnancy¹⁶. About 8% to 10% of all pregnancies are complicated by thrombocytopenia¹⁷.

The common cause of thrombocytopenia in pregnancy is gestational thrombocytopenia. It represents 80% of cases^{18,19}. The etiology is unidentified, but it is thought to be believed that due to the relative hemodilution of pregnancy, and increase platelets destruction in the placenta²⁰. Gestational thrombocytopenia occurred in second to third trimester, platelet counts greater than 75 thousand/μl, asymptomatic with no history of bleeding, no previous history of thrombocytopenia before pregnancy and normal platelet counts after delivery. Low rates of foetal or newborn thrombocytopenia occur when gestational thrombocytopenia is present. Low levels of foetal or newborn thrombocytopenia commonly follow gestational thrombocytopenia^{18,21}.

In our study, the mean age was 30.68 ± 5.78 years. In comparison with other study, the mean age of pregnant women with thrombocytopenia was 26±4.32²². They are between the ages of 18 and 49. The mean age is almost similar with previous study. The frequency of thrombocytopenia increases in females with pregnancy induced hypertension as a local study reported that thrombocytopenia was present in 55.9% of all patient groups⁹. One more study reported that thrombocytopenia was seen in 39.2% among 153 females with PIH²³. In current study a total of 235(83.33%) cases had thrombocytopenia and 47(16.67%) cases had normal platelet count. This frequency is higher from the given studies.

A study thrombocytopenia (less than 150 × 10³/μl) was recorded in women (23.5 %). All pregnancies cases in safe deliveries without any foetal problems¹⁵. They also stated that the primary cause of abdominal pain, liver failure, the appearance of schistocytes in the peripheral smear, proteinuria, foetal distress, and the need for blood transfusions was thrombocytopenia. Additionally, preterm birth and intrauterine development retardation were related to thrombocytopenia by a higher incidence of both conditions. In 56.7% (21 of 37) of the cases, the platelet count was performed within 48 hours following delivery²⁴.

In one study, preeclampsia- mild (29.25%) & severe (22.5%), accounted for most of the cases followed by eclampsia. Among these hypertensive patients, mild thrombocytopenia was noted in 60 cases (40%), moderate 48 (32%), severe 12 (8%) & normal platelet counts 30 (20%) were noted⁴. As compared to our study in hypertensive patients, mild thrombocytopenia was observed in 31.5%, severe (35.3%) and eclampsia was found in 33.3%.

CONCLUSION

The conclusion of this study, the frequency of low plate count (thrombocytopenia) in females diagnosed with hypertensive disorder after 20 weeks of gestation was 83.33%. The statistics is very high & there must be some preventive strategies to reduce the risk of hypertensive disorder, and once diagnosed the further therapeutic strategies should be adopted to reduce related complications such as thrombocytopenia.

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