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Research Article

Thrombocytopenia in pregnancy in a tertiary care hospital: a retrospective study

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ABSTRACT

Background: To investigate the etiology, obstetrical risk factors, complications and outcomes of pregnancies affected by thrombocytopenia.
Methods: A retrospective surveillance study was conducted on the basis of hospital records of 1532 women who delivered during a period of one year, in Christian Medical College and Hospital, Ludhiana, India. Clinical data including basic history, physical examination and investigations of those women who had thrombocytopenia, was evaluated and compiled into three groups depending upon the etiological factors.
Results: Sixty four of 1532 women (4.2%) had thrombocytopenia of varying severity. 77.8% of these women had gestational thrombocytopenia (GT) as the commonest cause. Pregnancy specific hypertension and HELLP syndrome (hemolysis, elevated liver enzymes, and low platelets) accounted for 20.6% cases whereas in 3.2% of pregnant women, idiopathic thrombocytopenic purpura (ITP) was the causative factor. A higher rate of IUGR (Intrauterine growth restriction), placental abruption and labor induction was noted among those gravidas who had moderate to severe thrombocytopenia. Maternal mortality, bleeding complications and adverse perinatal outcomes were not seen in this study.
Conclusions: Commonest cause of thrombocytopenia in pregnancy is GT, followed by preeclampsia, eclampsia and HELLP syndrome. ITP is a rare cause of this disorder in pregnancy. Early detection and treatment of expected complications is the key focus in management of such cases.

Keywords: Gestational thrombocytopenia, Idiopathic thrombocytopenic purpura, Preeclampsia, HELLP syndrome

INTRODUCTION

Thrombocytopenia is second only to anemia as the most common hematologic abnormality during pregnancy occurring in 7-10% of cases.[1] It may be a diagnostic and management problem, and has many causes, some of which are specific to pregnancy. Thrombocytopenia is classically defined as a platelet count of less than 150,000/μL caused by accelerated platelet destruction or decreased production. Platelet count of 100,000 to 150,000/μL, 50,000 to 100,000/μL and <50,000/μL are classified as mild, moderate and severe thrombocytopenia respectively.[2,3] Overall, about 75% of cases are due to gestational thrombocytopenia, 21% secondary to hypertensive disorders of pregnancy, 3–4% due to an immune process and the remaining 1–2% made up of rare constitutional thrombocytopenia's, infections and malignancies.[4]

Most existing studies have addressed a specific etiology of thrombocytopenia in pregnant women, but only a few have compared different etiologies. The present study was aimed at investigating the obstetric risk factors, complications and fetomaternal outcomes of pregnancies complicated by thrombocytopenia during labor and delivery and to compare the outcomes of different etiologies.

METHODS

The medical records of all pregnant women with thrombocytopenia who delivered in labor ward of Christian Medical College and Hospital from 01 July 2014 to 30 June 2015 and their immediate neonatal outcomes were reviewed retrospectively. The study included pregnant women with thrombocytopenia (platelet count <150,000/μL) identified by computerized hematology laboratory report. Patients with intrauterine fetal demise at the time of admission were excluded. All clinical manifestations and results of relevant laboratory tests were documented. The following clinical characteristics were evaluated: maternal age, parity, gestational age, past medical and menstrual history and the cause of thrombocytopenia. The prevalence of thrombocytopenia was determined and the patients were classified into three groups according to the cause of thrombocytopenia as gestational thrombocytopenia (Group 1), thrombocytopenia in patients with preeclampsia, eclampsia and HELLP syndrome (Group 2) and patients with ITP (Group 3). Maternal and fetal outcomes in these groups were assessed and compared.

The clinical characteristics and obstetrical risk factors were evaluated. Emergent antepartum and postpartum complications including bleeding during pregnancy or postpartum, blood and platelet transfusions, labor inductions and mode of delivery were recorded. Immediate neonatal outcome was also studied.

RESULTS

A total of 1532 patients delivered in labor ward of Christian Medical College and Hospital during the study period. Out of them, 64 patients had thrombocytopenia. Thus the prevalence was found to be 4.2% (Table 1).

Table 1: Prevalence of thrombocytopenia in pregnant women.

Total deliveries	Thrombocytopenia	Prevalence
1532	64	4.2%

Table 2: Distribution of patients according to etiology.

Etiology	No. of patients(n=64)	Percentage
Group I	49	76.6%
Group II	13	20.3%
Preeclampsia	11	17.1%
Eclampsia	1	1.6%
HELLP syndrome	1	1.6%
Group III	2	3.1%

Most common cause was found to be gestational thrombocytopenia (76.6%) followed by preeclampsia, eclampsia and HELLP syndrome which was seen in 20.3% cases. ITP accounted for only 3.1 % of the cases all of whom were diagnosed before pregnancy (Table 2). Majority of women were primiparous in all the three groups (53.1%, 53.8% and 100% in group I, II and III respectively). Higher rates of preterm deliveries were seen in patients in group II (84.6%) as compared to group 1 (32.7%). Both the patients in group III had term deliveries. Majority of patients in group I had mild and moderate thrombocytopenia (49% each) and mean count was 1,13,000. Majority of patients in group II had moderate thrombocytopenia (61.5%) with mean count of 90,000. Both the patients in group III had severe thrombocytopenia (Table 3). One patient in group III had GDM (Gestational Diabetes Mellitus) while the other patient did not have any obstetrical complication. No GDM was seen in Group I and II. Anemia was a common obstetrical risk factor in both group 1 and 2 (22.4% and 30.8% respectively). Higher rates of oligohydramnios and IUGR were found among patients in group II (46.2% and 53.8% respectively) than in group 1 (8.2% and 14.3% respectively) as shown in Table 4. Higher rate of labor induction, CS (Cesarean Section) and need for blood transfusion was seen in group 2 patients as compared to group I patients. The rate of adverse perinatal outcome (prematurity and low birth weight) among patients in group II was 61.5% each versus 20.4% and 20.5% in group I (Table 5).

Table 3: Clinical characteristics of pregnant women according to the etiology of thrombocytopenia.

Characteristics	Group I(n=49)	Group II(n=13)	Group III(n=2)
Maternal Age	25.9	28.6	31
Parity			
P0	26(53.1%)	7(53.8%)	2(100%)
P1	12(24.5%)	4(30.8%)	0
>P2	11(22.4%)	2(15.4%)	0
Gestational age			
<37wks	16(32.7%)	11(84.6%)	1(50%)
>37wks	33(67.3%)	2(15.4%)	1(50%)
Mean platelet count	1,13,000	90,000	15000
Thrombocytopenia			
Mild	24(49%)	4(30.8%)	0
Moderate	24(49%)	8(61.5%)	0
Severe	1(2%)	1(7.7%)	2(100%)

The major findings of our study were that with the increase in severity of thrombocytopenia, both maternal and neonatal complications increased. These include maternal anemia, preterm deliveries, IUGR and low birth weight (LBW) babies. One patient out of the two in group III (ITP) had CS for malpresentation at 36 weeks and required multiple platelet and packed cell transfusion. However there were no complications like PPH (Postpartum hemorrhage) or hematoma formation observed in this patient. Women with ITP and severe thrombocytopenia may have bleeding complications,

which were not observed in our study, probably due to strict surveillance and treatment.

Table 4: Obstetric risk factors in pregnant women according to etiology of thrombocytopenia.

Characteristics	Group I(n=49)	Group II(n=13)	Group III(n=2)
Gestational DM	3(6.1%)	0	1(50%)
Pre-gestational diabetes	1(2%)	0	0
Maternal anaemia	11(22.4%)	4(30.8%)	0
Hydramnios	1(2%)	0	0
Oligohydramnios	4(8.2%)	6(46.2%)	0
IUGR	7(14.3%)	7(53.8%)	0

Table 5: Labour complications and birth outcomes in different groups.

Characteristics	Group I (n=49)	Group II (n=13)	Group III (n=2)
Maternal complications			
Abruption	0	1(7.7%)	0
Labor Induction	7(14.3%)	3(23.1%)	1(50%)
Mode of delivery			
Vaginal	31(63.3%)	5(38.5%)	1(50%)
CS	18(36.7%)	8(61.5%)	1(50%)
Blood transfusion	10(20.4%)	3(23.1%)	1(50%)
Platelet transfusion	1(2%)	1(7.7%)	
Postpartum hemorrhage	0	0	0
Episiotomy hematoma/CS incision site bleeding	0	0	0
Foetal outcome			
Still Birth	0	0	0
Prematurity	10(20.4%)	8(61.5%)	1(50%)
Low birth weight	12(24.5%)	8(61.5%)	0
Apgar at 1and 5 minute <7	2(4.1%)	0	0
Early thrombocytopenia	0	0	0

DISCUSSION

Thrombocytopenia during pregnancy is a challenging task for obstetricians. Decreased platelet count may be a pregnancy induced disorder or a preconceptional condition. Although pathophysiology of GT is unknown, it is thought to be due to dilutional effect and accelerated destruction as platelets pass over the scarred and damaged surface of placenta.[1,5] The main differential diagnoses that may be difficult to separate until after delivery are GT and ITP as both are diagnoses of exclusion. Existence of preconceptional thrombocytopenia should rule out GT but thrombocytopenia diagnosed during pregnancy favours GT.[6] In first and second trimester, significantly decreased platelet count is more likely to be due to an immune process or rarely a platelet production deficit. In GT, there is no past history suggestive of thrombocytopenia and women are typically asymptomatic in early pregnancy. In majority of cases, the disorder remains benign but in some cases, it may become a risk for serious morbidity and mortality. ITP is caused by platelet destruction in the reticuloendothelial system, due to platelet auto-antibodies against several platelet membrane glycoprotein complexes.[7]

The cause of thrombocytopenia from preeclampsia, eclampsia and HELLP syndrome is unknown but might be related to abnormal vascular tone with resultant accelerated platelet destruction, platelet activation, and coagulation defects.[8] The main maternal concern in thrombocytopenia is hemorrhage during delivery or postpartum. Where the maternal platelet count remains low (<50,000/µL) around the time of delivery, platelets should be available on standby, but are likely to be destroyed quickly after transfusion due to immune process, so platelets administration should be timed judiciously and should be given in well-established rather than early labor, if there are increased bleeding complications.[9] The challenge to the clinician is to weigh the risks of maternal and fetal bleeding complications against the benefits of diagnostic tests and interventions.

In present series a higher rate of preterm delivery (<37 weeks) were observed in parturients with moderate to severe thrombocytopenia in pregnancies affected by preeclampsia, eclampsia and HELLP syndrome. Only one out of the two patients with ITP had preterm delivery.

Present study depicts higher prevalence of maternal anemia, oligohydramnios and IUGR among patients with moderate thrombocytopenia. Higher incidence of labor induction and cesarean section was seen in patients with moderate to severe platelet deficiency. In the present study, approximately one-fifth of cases of GT and pregnancy induced hypertensive disorders required blood transfusion because of concomitant anemia though platelet deficiency was mild to moderate. Only two of these cases, though asymptomatic, were given platelet transfusion because of decreasing platelet count near term. Fetal outcome, in our study, revealed higher incidence of premature and LBW babies in presence of moderate to severe thrombocytopenia. No case of still birth or early neonatal thrombocytopenia was noticed in our study. Thrombocytopenia in pregnancy does not significantly affect the Apgar score of neonate as far as present observations are concerned.

It is worth mentioning that maternal haemorrhagic complications like postpartum hemorrhage, episiotomy or CS incision site bleeding which are reportedly seen in women with moderate to severe thrombocytopenia, were

not encountered in the present study probably due to strict surveillance and management.[10]

CONCLUSION

GT is the most common cause of thrombocytopenia in pregnancy and is not associated with any adverse event both for the mother or baby. Preeclampsia, eclampsia and HELLP syndrome constitute the second common etiological factor. ITP is a rare cause of thrombocytopenia in pregnant women accounting for about 3% of such cases. Although there is no risk of fetomaternal haemorrhagic complications in GT, thrombocytopenia caused by hypertensive disorders of pregnancy and ITP expose the mother and fetus to potentially fatal consequences which needs careful supervision. Proper evaluation and appropriate management by both the obstetrician and haematologist plays a significant role in preventing ensuing complications.

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