ORIGINAL RESEARCH

Study of maternal outcome among pregnant women with thrombocytopenia

[1]Dr.Mahalaxmi Desai, [2]Dr.Shiv Kumar, [3]Dr. Mahadevaswamy K M, [4]Dr. Jambukala A Y

[1]Senior Resident, Departmentof Obstetrics and Gynecology, SIMS & RH Medical College, Tumkur, Karnataka, India
[2]Assistant Professor, Departmentof Community Medicine, MNR medical college, Fasalwadi, Sangareddy, Telangana
[3]Assistant Professor, Departmentof General surgery, CIMS Medical College Chamrajnagar
[4]Assistant Professor, Departmentof General Surgery, MNR Medical College, Fasalwadi, Sangareddy, Telangana, India

Corresponding Author
Dr. Jambukala A Y
Assistant Professor. Departmentof General Surgery, MNR Medical College, Fasalwadi, Sangareddy, Telangana, India

Received: 12March, 2023 Accepted: 18April, 2023

ABSTRACT
Thrombocytopenia is second to anemia as the most common haematological abnormality during pregnancy. It was a prospective observational study. Diagnosed cases of thrombocytopenia in pregnancy with gestational age more than twenty eight weeks without history of Diabetes Mellitus, Collagen disorders, Tuberculosis, Epilepsy, Liver and renal disorders and fetal anomalies were followed up till delivery according to institutional protocol. Maternal and perinatal outcome were studied. Most common complication in our study was Abruption 46.3% followed by PPH 20.6%, acute renal failure 16.7%, pulmonary edema 9.3%, pulmonary embolism 3.7%, Puerperal sepsis 3.7%.There were 21 maternal deaths (7.7%). Most common cause of death were pulmonary edema and hypovolemic shock (23.8%).Outcome of pregnancy with moderate to severe thrombocytopenia depends mainly on the etiology of thrombocytopenia. Adverse outcomes are especially seen with pregnancy complicated by preeclampsia and HELLP Syndrome.
Key words: Thrombocytopenia, pregnancy induced hypertension, HELLP syndrome, gestational thrombocytopenia, maternal outcome

INTRODUCTION

Thrombocytopenia is the second most common hematologic abnormality after anemia in pregnancy, accounting for 7-10% of all pregnancies[1]. It may be a diagnostic or management problem, and has many causes, some of which are specific to pregnancy, others can be serious medical conditions that have been previously undiagnosed. Although most cases of thrombocytopenia in pregnancy are mild, and have no adverse outcome for either mother or baby, occasionally a low platelet count may be a part of a more complex disorder with significant morbidity and may be life threatening.

Overall, about 75% of cases are due to gestational thrombocytopenia in pregnancy, 15-20% secondary to hypertensive disorders; 3-4% due to an immune process, and remaining 1-2% made up of rare constitutional thrombocytopenia's, infections and malignancies[2].

Thrombocytopenia in pregnancy is defined as a platelet count of less than 150,000/µl [2]. Thrombocytopenia is classified as mild when platelet counts are between 100,000/µl to 150,000/µl, moderate when platelet counts are between 50,000/µl to 100,000/µl, and severe if platelet counts fall lower than 50,000/µl [3].

Platelet count in pregnancy is slightly lower than in non-pregnant women[4]. Most studies report a reduction in platelet count during pregnancy, resulting in levels about 10% lower than pre-pregnant level at term[5]. Majority of women still have levels within the normal range. The mechanism for this are thought to be dilutional effects and accelerated destruction of platelets passing over the often scarred uterus and damaged trophoblast surface of the placenta[6]. Platelet counts may also be lower in women with twin compared with singleton pregnancies, possibly related to greater increase of thrombin generation[7].

Women with low platelet counts in pregnancy are generally less symptomatic due to the pro-coagulant state induced by increased levels of fibrinogen, factor VIII and von willebrand factor (vWF), suppressed fibrinolysis and reduced protein S activity[8].

Many women with severe thrombocytopenia or platelet functional defects are generally able to maintain a normal pregnancy, it is at delivery that the hemostatic consequences of more significant thrombocytopenia in pregnancy become life apparent. At delivery, placental separation occurs at a time when the normal maternal blood flow is approximately 700ml/minute through the placental vessels. This flow is dampened by uterine contraction leading to placental or myometrial extravascular compression and simultaneous occlusion by physiologic thrombosis of the open maternal vessels. Defects in either mechanism to arrest uterine bleeding can lead to significant and potentially lethal hemorrhage.

METHODOLOGY

SAMPLING TECHNIQUE

All pregnant patients with thrombocytopenia who fit to the inclusion criteria were selected for the study within stipulated time period.

SAMPLE SIZE

271 patients with a diagnosis of thrombocytopenia admitted in department of OBG for a period of 18 months.

INCLUSION CRITERIA

1. Pregnant women with gestational age more than 28 weeks with platelet count less than 1,50,000/microliter.

EXCLUSION CRITERIA

1. Women with known history of
   Diabetes mellitus
   Collagen disorders
   Tuberculosis
   Epilepsy
   Liver and Renal diseases
2. Pregnancies complicated with fetal anomalies
3. Pregnancies with gestational age less than 28 weeks.

METHOD OF COLLECTION OF DATA

1. Patients meeting the study criteria.
2. Platelet count assessment through automated blood count analyzer as routine antenatal hematological evaluation of the patient.

PROCEDURE OF STUDY

Platelet count assessment was done through automated blood count analyzer with routine hematological evaluation of the patient. Demographic features, detailed history, presenting complaints if any, findings of general, systemic, and obstetrical examination including pelvic examination were recorded in approved proformaafter takingconsent. Baseline investigations like complete hemogram, blood group and Rh typing, urine analysis, HIV, HBsAg, VDRL serology, special investigation like coagulation profile (PT, APTT, FDP, Fibrinogen) RFT and LFT were done if clinically indicated. History of petechiae, bruising, drug usage, viral infection, thrombocytopenia in previous pregnancy was noted. Detailed work up of all cases was done to ascertain cause of thrombocytopenia. Gestational age was established by menstrual history and clinical examination and confirmed by USG.

Pregnancies complicated with fetal anomalies, preexisting maternal disease (Diabetes mellitus, liver or renal disease, blood dyscrasias, Tuberculosis, epilepsy, collagen disorders) were excluded from the study.

All the cases were followed till delivery to record any maternal complications like postpartum haemorrhage, abruption, puerperal infection and any other morbidity. Duration of pregnancy at the time of delivery, mode of delivery including indication for cesarean section were recorded. Progress of labor was monitored by using partograph and fetal condition monitored using cardiotocograph.

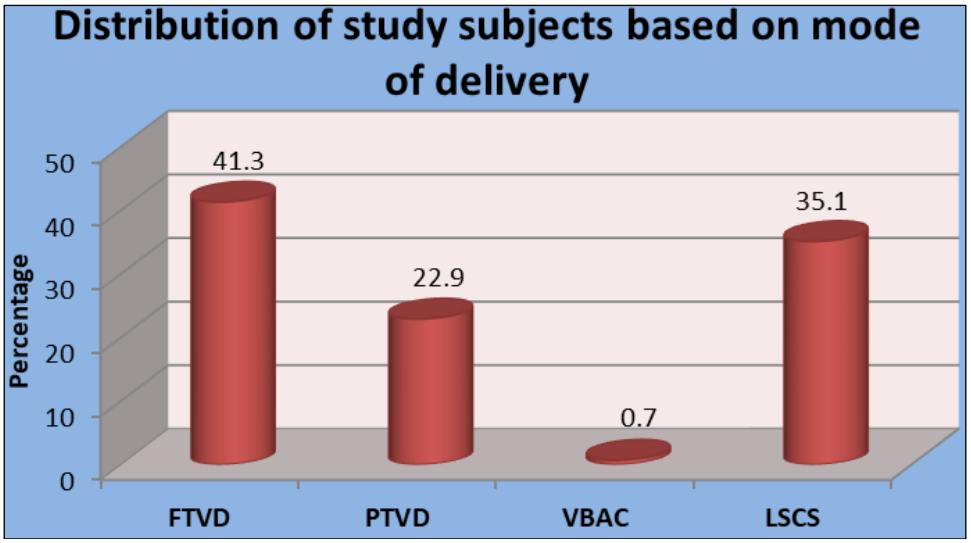
Neonates of all cases were tested for thrombocytopenia by cord blood sampling. All women enrolled were followed up by estimation of platelet count till 7th postpartum day.

Appropriate statistical methods (Proportion, mean, standard deviation, chi square test, and fisher exact test) were used to analyze the data.

RESULTS

Table 1: Distribution of the study subjects based on mode of delivery (N=271)

Mode of delivery	Frequency	Percentage %
FTVD	112	41.3
PTVD	62	22.9
VBAC	2	0.7
LSCS	95	35.1
Total	271	100.0

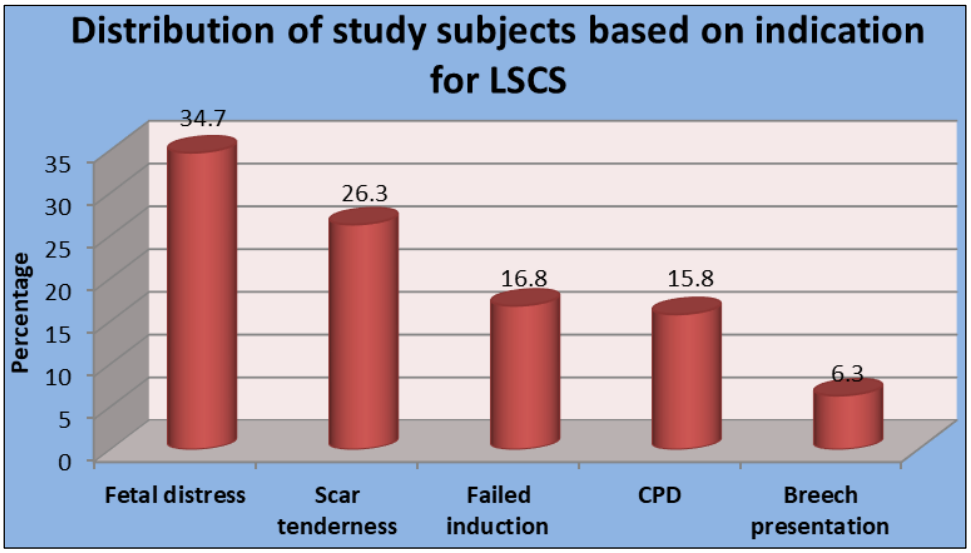


Graph 1: Distribution of the study subjects based on mode of delivery

Table 1 shows that majority 176 subjects (64.9%) had vaginal delivery of which 41.3% term deliveries, 22.9% (n=62) preterm deliveries, 35.1% patients (n=95) were delivered by LSCS and 2 (0.7%) patients had VBAC.

Table 2: Distribution of study subjects based on indication for LSCS (N=95)

Indication for LSCS	Frequency	Percentage %
Fetal distress	33	34.7
Scar tenderness	25	26.3
Failed induction	16	16.8
CPD	15	15.8
Breech presentation	6	6.3
Total	95	100.0

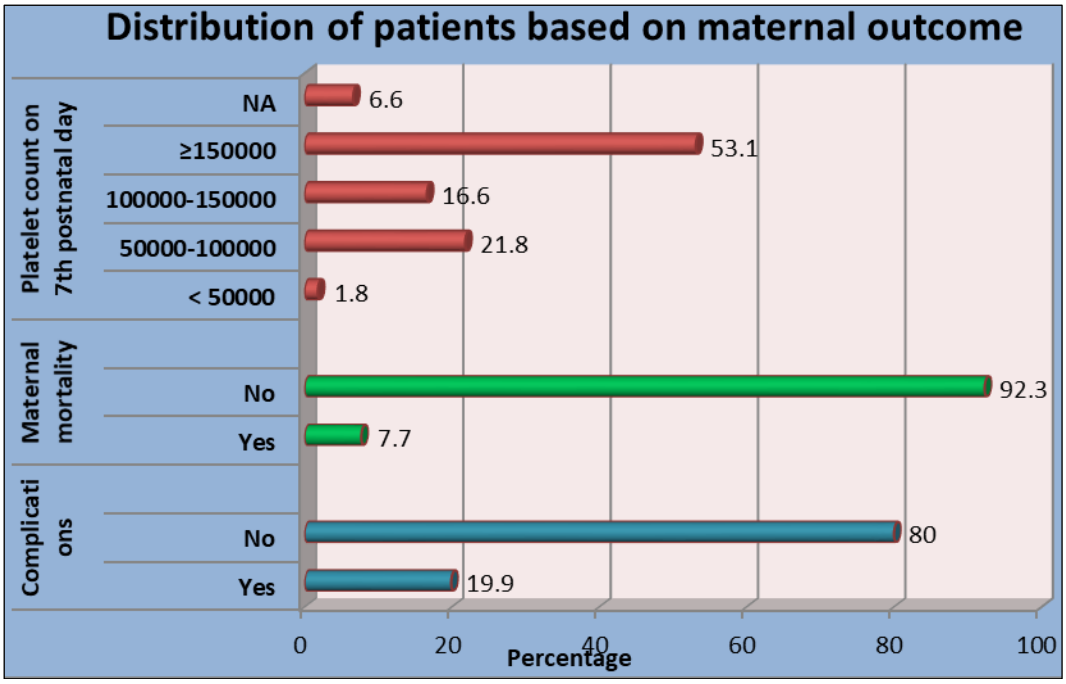


Graph 2: Distribution of study subjects based on indication for LSCS

Table 2 shows most common indication for LSCS was fetal distress (34.7%) followed by scar tenderness (26.3%), failed induction (16.8%), CPD (13.6%), breech presentation (6.3%), obstructed labour (2.1%).

Table 3: Distribution of patients based on maternal outcome (N=271)

Outcome	Frequency	Percentage
Complications		
Complication	54	19.9
No complication	217	80
Total	271	100
Maternal mortality		
Yes	21	7.7
No	250	92.3
	271	10
Platelet count on 7th postnatal day		
< 50000	5	1.8
50000-100000	59	21.8
100000-150000	45	16.6
≥150000	144	53.1
NA	18	6.6
Total	271	100

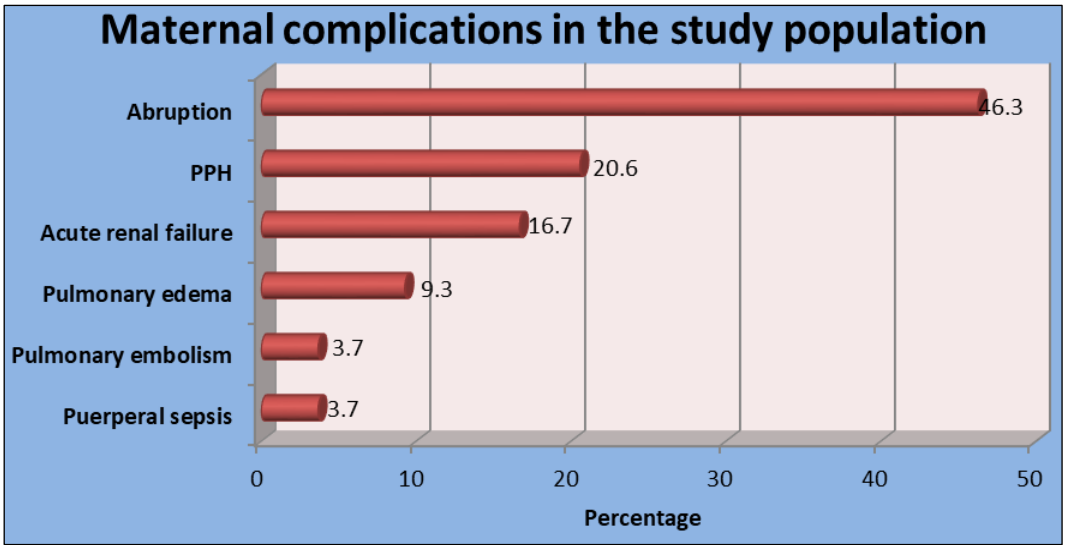


Graph 3: Distribution of patients based on maternal outcome

Table 3 shows the distribution of patients based on the maternal outcome. Platelet count was >150000/microL in 144 patients (53%) by 7th postnatal day. Maternal complications were seen in 54 (19.9%) cases and 21 cases of maternal mortality were reported.

Table 4: Maternal complication in the study population (N=54)

Maternal complications	Frequency	Percentage %
Abruption	25	46.3
PPH	11	20.6
ARF	9	16.7
Pulmonary edema	5	9.3
Pulmonary embolism	2	3.7
Puerperal sepsis	2	3.7
Total	54	100



Graph 4: Maternal complications in the study population

In our study maternal complications were seen in 19.9% (n=54) of the patients. Most common complication in our study was Abruption 46.3% followed by PPH 20.6%, acute renal failure 16.7%, Pulmonaryedema 9.3%, Pulmonary embolism 3.7%, Puerperal sepsis 3.7%.

Table 5: Causes of Maternal death in the study population (N=21)

Cause of maternal death	Frequency	Percentage
Pulmonary edema	5	23.8
Hypovolemic shock	5	23.8
Multi organ dysfunction	3	14.3
Disseminated intravascular coagulation	2	9.5
Cerebrovascular accident	2	9.5
Puerperal sepsis	2	9.5
Pulmonary embolism	2	9.5
Total	21	100

Most common cause of death in our study was pulmonary edema and hypovolemic shock 23.8% (n=5 cases) followed by multi-organ dysfunction (14.3), DIC (9.5%), cerebrovascular accident (9.5%), puerperal sepsis (9.5%) and pulmonary embolism (9.5%)

DISCUSSION

In our study, out of 271 women, 72% (n=195) admitted with spontaneous onset of labour. In 28% (n=76) cases induction was sought by pharmacological or non-pharmacological means for various obstetrical indications. In study by Chauhan *et al*.[9] and Parnas*et al*.[10], 30% and 27.20% required induction of labour which was comparable to our study.

In the present study, 64.9% patients delivered vaginally and 35.10% of subjects delivered by LSCS and which was similar to study by Singh *et al*.[11] (Vaginal 64% and LSCS 36%) and Vyas *et al*.[12] (Vaginal 63% and LSCS 37%). Whereas the incidence of LSCS was higher in the study conducted by Yuce*et al*.[13] which was 56%.

The various serious morbidity factors have a greater influence on mortality than thrombocytopenia itself. In our study 19.9% of patients suffered serious complications. %. In our study maternal complications were seen in 19.9% (n=54) of the patients. Most common complication in our study was Abruption 46.3% followed by PPH 20.6%, acute renal failure 16.7%, Pulmonaryedema 9.3%, Pulmonary embolism 3.7%, Puerperal sepsis 3.7%. Dwivedi*et al*.[14] noted 4.2% postpartum haemorrhage and 2.4% placental abruption.

Mortality complicating thrombocytopenia was 7.7% (n=21) in our study. Most common cause of death in our study were pulmonary edema and hypovolemic shock 23.8% (n=5 cases) followed by multi-organ dysfunction (14.3%), DIC (9.5%), cerebrovascular accident (9.5%), puerperal sepsis (9.5%) and pulmonary embolism (9.5%)

CONCLUSION

- 19.9% of patients suffered serious complications. Most common complication in our study was Abruption 46.3% followed by PPH 20.6%, acute renal failure 16.7%, pulmonary edema 9.3%, pulmonary embolism 3.7%, Puerperal sepsis 3.7%.

- There were 21 maternal deaths (7.7%). Most common cause of death in our study was pulmonary edema and hypovolemic shock (23.8%)

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