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Original Research Article

Maternal outcome in pregnancy with thrombocytopenia

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ABSTRACT

Background: Thrombocytopenia is second most common haematological abnormality in pregnancy after anemia. The aim of this study was to find out the prevalence, causative factor of thrombocytopenia and to observe the obstetrics outcome of pregnancies complicated with thrombocytopenia.

Methods: This is prospective study of maternal outcome in pregnancy with thrombocytopenia carried out at tertiary care center from February 2019 to January 2020. Out of 350 antenatal screened women, 25 women who were diagnosed with thrombocytopenia, were included in the study.

Results: The incidence of maternal thrombocytopenia in this study was 7.1%. 60% of the women had mild thrombocytopenia while 24% and 16% of women were moderate and severe thrombocytopenic respectively. Amongst 25 thrombocytopenic women 68% had gestational thrombocytopenia, 24% had gestational hypertensive disorder, 4% had HELLP syndrome, 4% had immune thrombocytopenic purpura. 60% were delivered vaginally and 40% were delivered by LSCS. The most common indication of LSCS was acute fetal distress (40%) followed by failed induction (30%), breech (10%), and the rest (20%) for other obstetrical indications. The most common indication for induction was pre-eclampsia followed by IUGR, and post-date.

Conclusions: In pregnancy with thrombocytopenia, gestational thrombocytopenia is the commonest and benign condition which does not alter the obstetrical management. Still a vigil 4 should be kept on maternal platelet count in antenatal period to prevent unfavorable outcome in serious conditions that may require specific and urgent management (HELLP syndrome, severe pre-eclampsia, ITP).

Keywords: Gestational hypertension, Maternal outcome, Pregnancy, Thrombocytopenia

INTRODUCTION

Pregnancy is a physiological state which is associated with adaptations in metabolic and biochemical processes. Normal serum platelet count in pregnancy is 1.5-4 lakh/ μ l. Pregnancy causes a physiological fall in the platelet count. Low platelet counts can be due to an increase in consumption or destruction or rarely due to less production of platelets, due to haemodilution of plasma volume platelet count decrease by approximately 6-7% during 3rd trimester.¹

Thrombocytopenia is second most common haematological abnormality in pregnancy after anemia.²

The overall incidence of thrombocytopenia in pregnancy is approximately 8-10% but when patients with pre-existing medical conditions are excluded, then the incidence drops to 5.1%.² A drop in platelet count below 150,000/ μ l is defined as thrombocytopenia. Thrombocytopenia may be mild - 100,000-150,000/ μ l, moderate - 50,000-100,000/ μ l, severe - 50,000/ μ L.³ Any pregnant patient with platelet count below 100,000/ μ l requires further clinical and laboratory assessment.

Here are diverse etiologies of thrombocytopenia in pregnancy out of which some are unique to pregnancy.⁴ Approximately 75% of these cases are due to gestational thrombocytopenia; 15-20% can be due to hypertensive

disorders; 3-4% to an immune process and the remaining 1-2% are made up of rare constitutional thrombocytopenia, infections and hematological malignancies. Thrombocytopenia in the obstetric patient

may be due to benign disorders such as incidental gestational thrombocytopenia to life-threatening syndromes such as the 'hemolysis, elevated liver enzymes, low platelets' syndrome (HELLP).¹

Table 1: Etiology of thrombocytopenia in pregnancy.⁴

	Pregnancy specific	Not pregnancy specific
Isolated thrombocytopenia	Thrombocytopenia gestational thrombocytopenia (70-80%)	Primary ITP (1-4%) secondary ITP (<1%)* drug induced thrombocytopenia** congenital thrombocytopenia** type 2B von willebrand disease**
Thrombocytopenia associated with systemic disorders	Severe preeclampsia (15-20%) HELLP syndrome (<1%) acute fatty liver disease of pregnancy (<1%)	Thrombotic thrombocytopenic purpura /hemolytic uremic syndrome** systemic lupus erythromatosus** anti-phospholipid antibody syndrome** viral infections** bone marrow disorders** nutritional deficiency** thyroid disorders** splenic sequestration (liver diseases, portal vein thrombosis etc.)**

Most of the cases of thrombocytopenia are mild and have no significant effect on mother but in those cases where it is a part of a complex clinical disorder like HELLP syndrome it can be profound and can lead to life-threatening results.

Bleeding during surgery is uncommon unless the platelet counts are less than 50,000/microliter. Clinically significant spontaneous bleeding occurs when platelet counts fall below 10,000/ μ L. Pregnant women with thrombocytopenia have high risk of bleeding during and after childbirth especially if caesarean section, episiotomy procedure, perineal tear or other surgical intervention has done during pregnancy, labor, and puerperium. Such bleeding complications are more likely when platelet count is less than 50,000/ μ L.

The aim of this study was to find out the prevalence, causative factor of thrombocytopenia and to observe the obstetrics outcome of pregnancies complicated with thrombocytopenia.

METHODS

This is prospective study of maternal outcome in pregnancy with thrombocytopenia carried out at tertiary care center from February 2019 to January 2020. Out of 350 antenatal screened women, 25 women who were diagnosed with thrombocytopenia, were included in the study.

Inclusion criteria

- The indoor patients who were diagnosed of thrombocytopenia, on the basis of blood investigations and clinical picture and delivered at authors tertiary care center and who agreed to give consent, were included.

Exclusion criteria

- Patient unwilling to give informed consent were excluded.

Antenatal women were diagnosed with thrombocytopenia in the study in second and third trimester. Demographic features, detailed history, presenting complaints if any, findings of general, systemic and obstetrical examination including pelvic examination if required of all the patient were recorded. Baseline investigations was done. The detailed work-up of all cases was done to ascertain the cause of thrombocytopenia. History of petechiae, bruising, drug usage, viral infection, thrombocytopenia in previous pregnancy was taken.

Gestational age was established by menstrual history and clinical examination and confirmed by USG. All the cases were followed till delivery to record any complications like preterm labour, abruption, preeclampsia, any other morbidity and they were managed as multidisciplinary approach. Duration of pregnancy at the time of delivery, indication of induction and method and mode of delivery including indication for caesarean section were recorded. Progress of labor was monitored partographically. All women enrolled were followed up by estimation of platelet count on 10th days postpartum.

RESULTS

During study period from February 2019 to January 2020, 25 women were found having gestational thrombocytopenia.

Out of women having thrombocytopenia, 14 (56%) were less than 25 years, 8 (32%) were between 25 to 30 years and 3 (12%) were more than 30 years of age (Table 2).

Out of women having thrombocytopenia, 60% women were multigravida and 40% women were primigravida.

Table 2: Distribution of study group as per age.

Age group (years)	n (%)
<25	14 (56%)
25-30	8 (32%)
>30	3 (12%)

Amongst thrombocytopenic women 68% had gestational thrombocytopenia, 24% had gestational hypertensive disorder, 4% had HELLP syndrome, 4% had immune thrombocytopenic purpura (Figure 1).

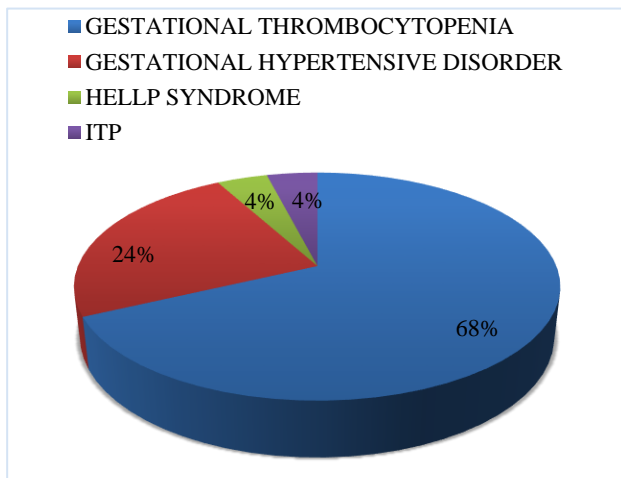


Figure 1: Etiology of thrombocytopenia in pregnancy.

Table 3: Distribution of study group as per mode of delivery.

Mode of delivery	Total n (%)	Preterm	Full-term
Vaginal delivery	15 (60%)	3 (12%)	12 (48%)
Caesarean section	10 (40%)	4 (16%)	6 (24%)
Total	25 (100%)	7 (28%)	18 (72%)

Out of women having thrombocytopenia, 60% of the women had mild thrombocytopenia, 24% had moderate thrombocytopenia and 16% of women had severe thrombocytopenia.

Out of women having thrombocytopenia, 60% were delivered vaginally and 40% were delivered by LSCS. The most common indication of LSCS was acute fetal distress (40%) followed by failed induction (30%), breech (10%), and the rest (20%) for other obstetrical indications (Table 3).

Out of women having thrombocytopenia, 72% were delivered at term (≥ 37 weeks) and remaining 28% were delivered before term (< 37 weeks).

Out of women having thrombocytopenia, 20% were required platelet transfusion and 80% did not required platelet transfusion.

There was no maternal mortality. All the patients discharged in a stable condition. Follow-up was arranged after 6 weeks. On follow-up, platelet count was repeated which is found to be normal in all the cases.

DISCUSSION

Most of the patients with mild thrombocytopenia do not need altered obstetrical management but at times severe thrombocytopenia, in life threatening conditions like HELLP syndrome, poses a great challenge to the treating obstetrician.

Table 4: Comparison of studies according to incidence of maternal thrombocytopenia.

Study	Incidence
Dwivedi et al ⁶	8.17%
Vyas et al ⁷	7.6%
Burrows et al ⁸	7.6%
Singh et al ⁹	8.8%
Ajibola et al ¹⁰	13.5%
Onisai et al ¹¹	11.11%
Brohi et al ¹²	1.9%
Lin et al ¹³	4.3%
Present study	7.1%

In present study the incidence of maternal thrombocytopenia was 7.1% which was comparable to the studies by Dwivedi et al (8.17%), Vyas et al (7.60%) Burrows et al (7.60%) and Singh et al (8.80%).⁶⁻⁹ However, the incidence of thrombocytopenia was higher in the studies by Ajibola et al (13.50%) and Onisai et al (11.11%).^{10,11} Lower incidence was noted in the study of Brohi et al (1.90%) and Lin et al (4.30%) (Table 4).^{12,13}

The mean age of patients in present study was 27.33 years. In a study by Suri et al, the mean age was 27 years.¹⁴ In study by Borna et al, Turgot et al, Jaleel et al mean age of patient was 28, 27.6 \pm 5.7 and 28.43 respectively.¹⁵⁻¹⁷ Where as in a study by Ruggri et al the mean age was higher i.e. 32.20.¹⁸

Majority of the patients in present study were multigravida 60% followed by primigravida 40%. This was in contrast with the study conducted by Janes SL et al, which showed its prevalence was more in primigravida (70%) and in multigravida (30%).¹⁹

In this study 60% women had mild thrombocytopenia. However, mild thrombocytopenia was noted in 54% and 74.7% patients included in the study by Borna et al which is lower than this study and Singh et al respectively.^{9,15} Singh et al reported a higher incidence of thrombocytopenia i.e. 74.4% as compare to this study.⁹

24% patient had moderate thrombocytopenia which is similar to study conducted by Borna et al 30% whereas in study by Singh et al moderate thrombocytopenia was seen in less number of patient i.e. 17.9%.^{9,15} Severe thrombocytopenia was seen in 16% of patient, as in study of Borna et al and Singh et al severe thrombocytopenia was seen in 16% and 7.4% respectively (Table 5).^{9,15}

Table 5: Comparison of studies according to severity of maternal thrombocytopenia.

Study	Mild	Moderate	Severe
Singh et al ⁹	74.7%	17.9%	7.4%
Borna et al ¹⁵	54%	30%	16%
Present study	60%	24%	16%

In present study mean gestation age at delivery was 38 weeks. In a study conducted by Lin et al and Kasai et al the age was 39 weeks and 38 weeks respectively.^{13,20} Where as in the study by Bouzari et al the age was 35.83±3.61 weeks which was lower than this study.²¹

Table 6: Distribution of subjects according to association with gestational hypertension.

Study	Association with gestational hypertension
Vyas et al ⁷	22%
Burrows et al ³	21%
Singh et al ⁹	24.2%
Onisai et al ¹¹	21.15%
Brohi et al ¹²	26.7%
Parnas et al ²²	21.11%
Present study	24%

In the present study the association of thrombocytopenia with gestational hypertension was seen in 24% women, which was similar to the studies of Brohi et al (26.70%), Singh et al (24.20%), Vyas et al (22%) Parnas et al (21.11%) and Burrows et al (21%) (Table 6).^{7,9,12,22}

In the present study HELLP syndrome was seen in 4% of the thrombocytopenic women, in study by Vyas et al 4.08%, Turgot et al 1.14% and Habas et al 0.37%.^{7,23,24} Whereas studies by Parnas et al and Onisai et al showed HELLP syndrome in 12.06% and 9.52% women respectively, which was higher than this study.^{11,22}

In present study incidence of ITP was 4% amongst pregnant thrombocytopenic women. In the study conducted by Burrows et al incidence was 3%.³ In the study conducted by Singh et al the incidence of ITP was 8.40%.⁹

In this study 60% of subjects had delivered vaginally and 40% patient delivered by LSCS which was similar to study by Singh et al (vaginally 64% and LSCS 36%) and Vyas et al (vaginally 63% and LSCS 37%) and Ruggri et al (vaginally 80% and LSCS 20%).^{7,18} Whereas the

incidence of LSCS was higher in the studies conducted by Pafumi et al (55%) and Yuce et al (56%).^{25,26}

In this study, platelet transfusion was required in 20% patients. In study conducted by Ajzenberg N et al, showed 22% needed treatment for thrombocytopenia out of which only 2% needed platelet transfusion.²⁷

CONCLUSION

The normal range of platelet count in non-pregnant women is 1,50,000/μL to 4,00,000/μL. It decreases in pregnancy (2,15,000/μL).

In this study the incidence of thrombocytopenia was 7.1%. Gestational thrombocytopenia was the commonest cause with incidence of 68%, followed by gestational hypertension 24%, ITP 4% and HELLP syndrome 4%.

Gestational thrombocytopenia is the commonest cause of thrombocytopenia and may not be related to adverse pregnancy outcome, thus can be treated as benign condition. Clinical assessment is the most important factor for evaluating a patient with thrombocytopenia. A detailed history including previous or current bleeding problem, family history, past obstetrics history, drug abuse and blood transfusion history is important.

A careful examination and simple laboratory test are needed so that a serious condition that may require specific and urgent management (examples HELLP syndrome, severe pre-eclampsia, TTP, HUS and acute fatty liver of pregnancy) is not missed.

Monitoring of platelet count of mother should be a routine at antenatal visits for timely diagnosis and to achieve favourable obstetric outcome in all types of thrombocytopenia.

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