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Original Research Article

# Feto-Maternal Outcome Assessment among Pregnant Women Presenting with Thrombocytopenia: An Observational Study

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**Conflict of interest: Nil**

**Abstract**

**Aim:** The objective of this study was to study the maternal and fetal outcome among pregnant women presenting with thrombocytopenia.

**Methods:** The present study was conducted at Department of Obstetrics and Gynecology, Patna Medical College & Hospital, Patna, Bihar, India for the period of one year. Pregnant women with singleton pregnancy with period of gestation 28 week onwards who attended ANC & found to have thrombocytopenia after screening were included. The study was performed after the approval of ethical committee of institute. Sample size 100 patients were included in study.

**Results:** Mean gestational age was 38.42 ± 1.69 weeks. 15% were < 37 weeks, 70% were in 37 to 40 weeks and 15% were >40 weeks. The mean platelet count was 106907±30136/ µL. Majority of women had mild thrombocytopenia (62%). 36% women had moderate thrombocytopenia and only two had severe thrombocytopenia. Association of thrombocytopenia with other medical illness was evaluated in our study. It was found that anemia was associated in 8 women, four women had ITP and hypothyroidism was found in only two women. Rest all women have no diagnosed other medical illness. In our study it was found that PIH was associated with 25% of thrombocytopenic women. Among the 25 women who had PIH, majority of them had gestational hypertension in 60% followed by pre-eclampsia in 24%. Severe pre-eclampsia was noted in two (8%) women. Only two had eclampsia (8%).

**Conclusion:** Most common cause of thrombocytopenia during pregnancy was gestational thrombocytopenia but other underlying causes must be considered as well. 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, AFLP) is not missed. Management of pregnant women with platelet disorders requires a multidisciplinary approach.

**Keywords:** Thrombocytopenia, DIC, Fetal, Maternal.

## Introduction

Idiopathic thrombocytopenic purpura (ITP) is an autoimmune disorder characterized by low platelet counts (< 150X 109/L) and mucocutaneous bleeding. It is relatively common among women of the reproductive age and is the most frequent cause of thrombocytopenia during pregnancy after gestational thrombocytopenia. [1,2] The incidence of ITP in pregnant women in India is approximately 1–2 cases for every 10,000 pregnancy and it accounts for 4–5% of all pregnancy-associated thrombocytopenia. [3,4] Thrombocytopenia in ITP occurs due to the presence of anti-platelet auto-antibodies (IgG antibodies) against platelet membrane glycoproteins. The IgG-coated platelets are cleared from the circulation by the reticuloendothelial system, mainly the spleen producing thrombocytopenia.2

The normal range of platelets in non-pregnant women is 150,000- 400,000/μL. Average platelet count in pregnancy is decreased (2,13,000/μl versus 2,50,000 /μL). Decrease in the platelet count is due to hemodilution, increased platelet consumption, and increased platelet aggregation driven by increased levels of thromboxane A2. Clinical assessment is most important factor for evaluation of pregnant patient with thrombocytopenia. Proper medical history Including current and previous bleeding problem, family history, transfusion history etc should be taken. Examination findings suggestive of thrombocytopenia include the following: petechiae, ecchymosis, nose and gum bleeding, hematuria. [5]

Thrombocytopenia or low blood platelet count is encountered in 7-8% of all pregnancies But when patient's obstetric and medical condition are excluded, incidence down to 5.1%. Obstetricians diagnose thrombocytopenia by automated complete blood cell counts during routine prenatal screening. It can result from a wide range of conditions, several of them being pregnancy related. [6]

Alloimmune thrombocytopenia represents the most common cause for profound fetal/neonatal thrombocytopenia and intracranial hemorrhage in the infant. Alloimmune thrombocytopenia has no effect on maternal platelet counts. Thrombocytopenia during pregnancy is an underexplored condition in Indian women, so the study was planned to find out the prevalence and causative factors of thrombocytopenia during pregnancy and to review management strategies for the best feto-maternal outcomes.

The objective of this study was to study the maternal and fetal outcome among pregnant women presenting with thrombocytopenia.

### Materials and Methods

The present study was conducted at Department of Obstetrics and Gynecology, Patna Medical College & Hospital, Patna, Bihar, India for the period of one year. Pregnant women with singleton pregnancy with period of gestation 28 week onwards who attended ANC & found to have thrombocytopenia after screening were included. The study was performed after the approval of ethical committee of institute. Sample size 100 patients were included in study.

### Inclusion criteria

All pregnant women with platelet count less than 1,50,000/μL who were willing to participate in the study were enrolled for study after period of gestation 28 week.

### Exclusion criteria

Women with known history of

- Diabetes mellitus
- Collagen disorders
- Tuberculosis
- Epilepsy
- Previous bad obstetric histories
- Pancytopenia
- Bone marrow suppression

### Methodology

Antenatal women were enrolled in the study in third trimester. All women had platelet count estimation at the time of enrollment. Platelet count assessment was done through automated blood count analyser with routine antenatal haematological evaluation of the patient.

Baseline investigations like complete haemogram, blood group and Rh typing, O"Sullivan"s test, urinalysis, VDRL, HBsAg and HIV serology were carried out in all subjects. Special investigations like Coagulation profile (PT, APTT, FDP and fibrinogen), KFT, LFT were done if clinically indicated. Any other investigation was done as and when required. The detailed work up of all cases was done to ascertain the cause of thrombocytopenia. All women enrolled were follow up by estimation of platelets count on 7th postpartum.

**Statistical analysis**

Quantitative data was summarized as mean and standard deviation whereas qualitative data was presented as proportion (%). One-Way ANOVA test ("analysis of variance") and Post hoc Bonferroni test were used for analysis of quantitative data while Chi-square test was used for analysis of qualitative data. P value < 0.05 was taken as significant. Medcalc 16.4 version software was used for all statistical calculation.

**Results**

**Table 1: Distribution of patients according to gestational age and according to platelet count**

| **Gestational Age** | **N%** |
|---|---|
| >37 weeks | 15 (15) |
| 37-40 Week | 70 (70) |
| >40 Week | 15 (15) |
| Mean gestational age | 38.42 ± 1.69 weeks |
| **Platelet count** | |
| Mild 100000- 149999 | 62 (62) |
| Moderate 50000 -99999 | 36 (36) |
| Severe <50000 | 2 (2) |
| Mean platelet count | 106907±30136/µL |

Mean gestational age was 38.42 ± 1.69 weeks. 15% were < 37 weeks, 70% were in 37 to 40 weeks and 15% were >40 weeks. The mean platelet count was 106907±30136/ µL. Majority of women had mild thrombocytopenia (62%). 36% women had moderate thrombocytopenia and only two had severe thrombocytopenia.

**Table 2: Distribution of women according to relation with other medical illness and association with PIH**

| **Related medical illness** | **N%** |
|---|---|
| None | 86 (86) |
| Anemia | 8 (8) |
| ITP | 4 (4) |
| Hypothyroidism | 2 (2) |
| **PIH n=25** | |
| Gestational hypertension | 15 (60) |
| Pre-eclampsia | 6 (24) |
| Severe Pre-eclampsia | 2 (8) |
| Eclampsia | 2(8) |

Association of thrombocytopenia with other medical illness was evaluated in our study. It was found that anemia was associated in 8 women, four women had

ITP and hypothyroidism was found in only two women. Rest all women have no diagnosed other medical illness. In our study it was found that PIH was associated with 25% of thrombocytopenic women. Among the 25 women who had PIH, majority of them had gestational hypertension in 60% followed by pre-eclampsia in 24%. Severe pre-eclampsia was noted in two (8%) women. Only two had eclampsia (8%).

**Table 3: Distribution of patients according to mode of delivery**

| Mode of delivery | N% |
|---|---|
| LSCS | 45 (45) |
| NVD | 55 (55) |

In our study 55% patients were delivered vaginally and 45% were delivered by LSCS.

**Table 4: Neonatal platelet count**

| Neonatal Thrombocytopenia | N% |
|---|---|
| Absent | 95 |
| Present | 5 |

Out of 100 neonates, 95% (95) had normal platelet count and 5% (5) had thrombocytopenia with platelet count less than 150000/mm$^3$. In our study, almost similar incidence of maternal complication occurred in mild, moderate and severe group of patients. Mean weight of neonates born to the women enrolled in our study was 2.58 kg with SD of 0.49 kg. The maximum weight was 3.5kg and minimum was 1.1kg.

## Discussion

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

In our study, Mean gestational age was 38.42 ± 1.69 weeks which was similar to studies conducted by Chauhan V et al. [7] (38.6 ± 1.34weeks), Sojitra M et al. [8] (38 weeks) and Lin et al. [9] (39 weeks) where as in the study by Bouzari et al. [10] the mean age was 35.83 ± 3.61 weeks which was lower than our study. In our study maximum cases 70% belonged to gestational age 37 to 40 week which was similar to Parnas et al. [11] In our study, 55% women delivered vaginally and 45% had delivered by LSCS which was comparable, to study by Singh J et al. [12] (vaginally 52% and LSCS 48%), Sojitra M et al. [8] (vaginally 60% and LSCS 40%) and Vyas et al. [13] (vaginally 63% and LSCS 37%) whereas the incidence of LSCS was higher in the studies conducted by pafumi et al. [14] (55%) and Yuce et al. (56%). [15]

In present study mean gestation age at delivery was 38.6±1.34 weeks. In a study conducted by Lin et al and Kasai et al the age was similar to our study 39 weeks and 38 weeks respectively. [9,16] Where as in the study by Bouzari et al the age was 35.83+3.61 weeks which was lower than our study. [10] The mean platelet count in present study was 106907.7±30136.52/µL. In the study conducted by Singh et al mean platelet count was 110320+21345.4/µL which was comparable to our study. [17] Higher mean platelet count was seen in the studies conducted by Pourrat et al (131000/µL) and Jaleel et al (122960+28146.5/µL). [18,19] The mean neonatal platelet count was 175307.7+33834.87/µL. The mean neonatal platelet count was lower than our study in Pourrat et al study (122100/µL). [19] In the study of Yuce et al mean neonatal platelet count was 203000+12101.2/µL which was higher than our study.15 In the present study the association of thrombocytopenia with PIH

was seen in 25% women, which was similar to the studies of Brohi et al (26.70%) [20], Singh et al [17] (24.20%), Vyas et al [13] (22%) Parnas et al [11] (21.11%) and Burrows et al (21%). [21]

The mean weight of neonates born to the women enrolled in our study was 2.58 ± 0.49 kg which was similar to study by Bouzari et al10 (2.58 ± 0.8kg) whereas the mean weight was higher in study by Chauhan V et al. [7] (2.80 ± 0.32kg) and Onisai et al. [22,23] (2.9 ± 0.23 kg) as we included patients with hypertensive disorders (HELLP, preeclampsia, eclampsia, gestational hypertension and superimposed preeclampsia). In our study, out of 100 neonates, 95% (95) had normal platelet count and 5% (5) had thrombocytopenia with platelet count less than 150000/mm3 which is comparable to study reported by Chauhan V et al. [7] in which incidence of neonatal thrombocytopenia was 3.10%. In the study by Singh et al. incidence was 1.09% which lower than our study. [12]

## Conclusion

Present study concluded that most common cause of thrombocytopenia during pregnancy was gestational thrombocytopenia but other underlying causes must be considered as well. A detailed history and physical examination is mandatory to rule out most other causes. A thorough study of CBC and smear should be done to rule out pancytopenia and platelet clumping associated with pseudo thrombocytopenia. Previous history of thrombocytopenia should rise the doubt of ITP. 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 favorable obstetric outcome in all types of thrombocytopenia. Management of pregnant women with platelet disorders requires a multidisciplinary approach and accurate etiological diagnosis is essential for optimal therapeutic management.

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