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# A retrospective observational study on thrombocytopenia in pregnancy and its varied presentations, management and outcome.

Dr. Karthika.S M.S.OG, Dr. Sridevi, G, M.D DGO
*(Assistant professor) (Associate Professor)*
*Department of Obstetrics and Gynecology,Government Erode medical college, Perundurai, Erode.*
**Corresponding author: Dr.Sridevi G*

***Abstract:***
*Background: Platelet disorders are the second most common hematological disorders in pregnancy. Thrombocytopenia is defined as the platelet count below 150000/micro litre. Of all the platelet disorders, gestational thrombocytopenia constitutes 70-80% of all cases of thrombocytopenia in pregnancy.*
***Methods:*** *This study was conducted in a tertiary care hospital for a period of 4 years ( June 2016 to May 2020). The data was collected from the medical records department of Government Erode medical college.*
*RESULTS: of the 4105 patients studied, 5.8% had thrombocytopenia in pregnancy. Though there were many secondary causes to thrombocytopenia, gestational thrombocytopenia of which ;pre eclampsia was the leading cause constituting 49% of the total cases, incidence of gestational thrombocytopenia was 5.4%.*
***Conclusion:*** *Thrombocytopenia in pregnancy may occur due to various causes across the trimester, however the management should be a multidisciplinary approach in collaboration with the obstetrician, hematologist, and the neonatologist.*

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## I. Introduction:

5-10% of gravidas with no history of bleeding manifestations and menstrual irregularities, who were apparently normal throughout the pregnancy upto the third trimester, may develop thrombocytopenia in pregnancy or in the immediate postpartum with a platelet count <1,50,000/microlitre. The low platelet count may be due to immunological causes/ incidental but most of the cause would be due to the underlying medical diseases that may warrant necessary intervention. This may be due to the

1.hemodilution in third trimester[1] ,
2. Increase in splenic mass,
3. Hyperoestrogenemia.

Gestational thrombocytopenia:

It is defined as the platelet count less than 150000/cu.mm in the third trimester[6]. It occurs in 4.4% to 11.6% of pregnancies[1].Usually the platelet count follows a downward trajectory commencing at the start of the second trimester, which is mostly due to hemodilution which is the physiological plasma expansion in pregnancy and also due to the increase in platelet clearance[1,2]. This increase in platelet clearance is due to the increase in the mean platelet count, increase in the platelet distribution width and the rise in the platelet derived cyclo oxygenase products. There is a subset of women who have a significant decline in platelet count and a reduction in antithrombin III, suggesting the discrete pathogenesis that lies in continuum with the HELLP syndrome (hemolysis, low platelet, elevated liver enzymes) or AFLP (Acute Fatty liver of pregnancy)[1].

Gestational thrombocytopenia usually occurs after the mid second trimester. It rarely falls below 75000/cu.mm and there are no biomarkers available for the affirmation of diagnosis and its distinction from other etiologies. It does not harm the mother and also the incidence of fetal thrombocytopenia is <2%[1].

However, there were a few cases with severe thrombocytopenia who required medical treatment and platelet transfusion and those patients have been analysed retrospectively to evaluate the management, complications and outcome of the pregnancy.

Immune thrombocytopenia:

It occurs in 3% of all pregnancies and is the most common cause of the low platelet count i.e., < 50000/cu.mm detected in the first and second trimesters. There is no confirmatory test for ITP and there is no

laboratory test to differentiate the ITP from gestational thrombocytopenia. Thus, the diagnosis of ITP is based on the history, and retrospectively by the platelet response to the steroid course.
Management of ITP includes weekly monitoring of platelet count from 32-34 weeks, use of oral prednisolone, intravenous immunoglobulin, and splenectomy in refractory cases. The risk associated with steroid therapy in the early trimester is cleft palate and in late trimester is preterm birth and the gestational diabetes mellitus. Off late the use of human recombinant thrombopoietin has been found successful in a pilot study[3,4].
Neonatal outcome of mothers with ITP is uncomplicated. However, there is incidence of fetal and neonatal thrombocytopenia of 1-5% and <1% incidence of intracerebral hemorrhage.
The above causes of thrombocytopenia in pregnancy namely – incidental and immune thrombocytopenia have been analysed with respect to treatment and outcome.

**AIM:**
1.To study the incidence of various causes of thrombocytopenia in pregnancy.
2. To customise treatment options for gestational/immune thrombocytopenia – a multidisciplinary approach.

**OBJECTIVE:**
1. To determine the severity of presentation of gestational/ immune thrombocytopenia.
2. To estimate the percentage of patients who were diagnosed with gestational/ immune thrombocytopenia who required treatment.

## II. Methodology

A Retrospective observational study done for a period of 4 years (JUNE 2016- MAY 2020) in a tertiary care institute. Details of all the patients were collected from the medical records department of the tertiary care hospital. The inclusion and the exclusion criteria are given as below.

**INCLUSION CRITERIA:**
1. All pregnant mothers diagnosed to have thrombocytopenia platelet count <1,50000/microlitre.
2. Delivered by any mode – vaginal or caesarean.
3. Any gestational age >28 weeks

**EXCLUSION CRITERIA:**
1.Patients diagnosed with PIH, pre eclampsia, other medical conditions like APLA positive, EHPVO.

**OUTCOME MEASURES:**
1.Incidence and etiology of thrombocytopenia in pregnancy in tertiary care centre
2.Need for intervention a)steroid
b) platelet transfusion
3. Incidence of PPH

All pregnant mothers with thrombocytopenia irrespective of the gravida and gestation,who had delivery in tertiary care centre after the 28$^{th}$ week of gestation were followed retrospectively. Data was collected from the outpatient and inpatient records from the medical records department. The outcome measures were calculated and tabulated using Microsoft Excel.The statistical analysis included the correlation between thrombocytopenia and need for active treatment and the correlation between severity of thrombocytopenia and PPH. The data were tabulated in excel sheet and SPSS software was used for analysis.

## III. Results:

Of the total 4105 deliveries for the 4year period, 240 patients met the inclusion and exclusion criteria and were retrospectively analysed for the various etiology of thrombocytopenia in pregnancy. Thus, the incidence of thrombocytopenia in pregnancy is 5.8%.

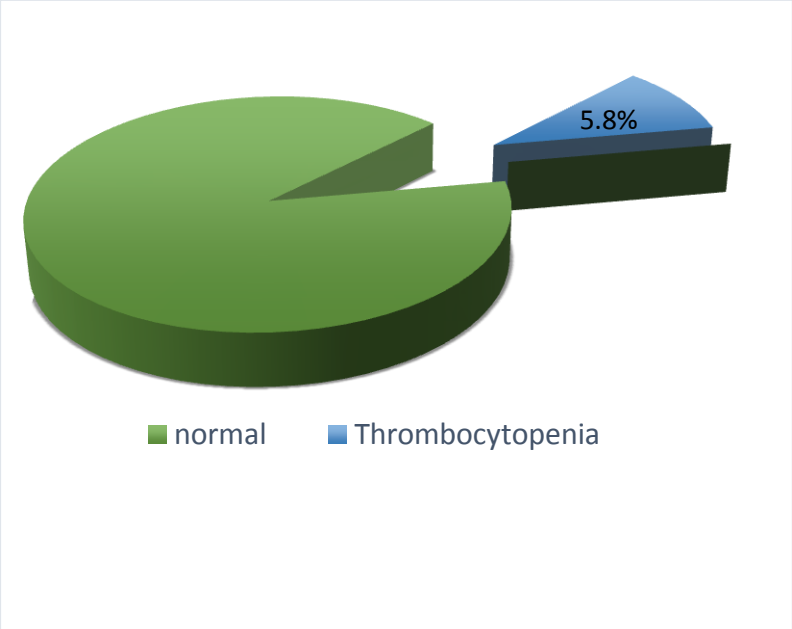


Fig: 1: Incidence of thrombocytopenia

The incidence of thrombocytopenia due to various causes have beentabulated (Table:1).

| | | |
|---|---|---|
| 1. Gestational thrombocytopenia | 13 | 0.32% |
| 2. ITP | 1 | 0.02% |
| 3. Pre eclampsia | 118 | 2.8% |
| 4. Other causes | 108 | 2.6% |
| OTHER CAUSES – includes APLA/ANA, chronic hypertension superimposed on preeclampsia, Chronic renal failure, megaloblastic anemia, dengue hemorrhagic fever, viral infections, sepsis, DIC. | | |

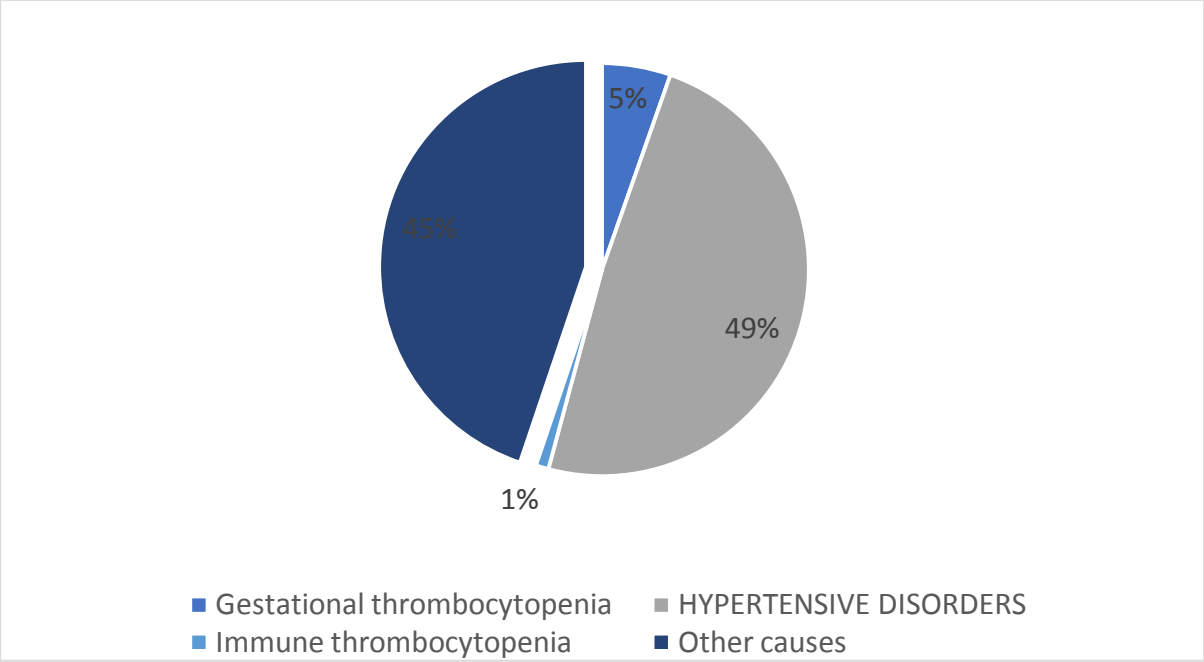


Fig:2 : Incidence of various causes of thrombocytopenia in pregnancy

Of the 240 patients included in the study, preeclampsia was the leading cause of thrombocytopenia in pregnancy, contributing to 49% of the total cases. 5.4% of the cases were due to gestational thrombocytopenia and only one case of immune thrombocytopenia was diagnosed as a cause of thrombocytopenia in pregnancy.

The thrombocytopenia severity was graded with the serum platelet count. Mild thrombocytopenia for platelet count 100000-1,50000 cells/ cu.mm, moderate for 50000cells/cu.mm to 1,00,000cells/ cu.mm and severe in case of platelet count <50,000cells/cu,mm. For all the severe cases of thrombocytopenia, ANA /APLA testing was done and was found to be negative.

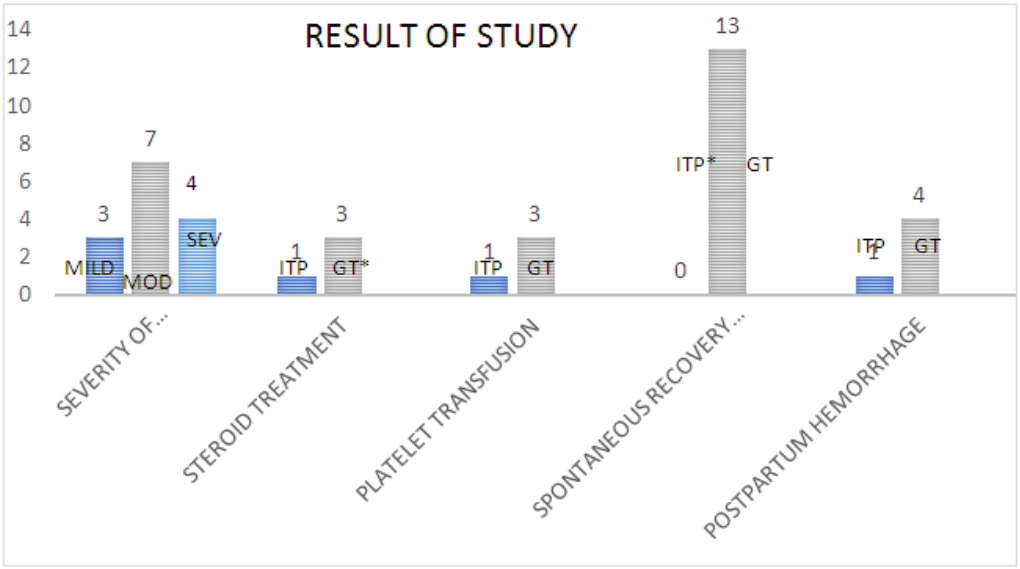


**FIG:4:** Comparison of outcome measures

By the grading of thrombocytopenia discussed earlier, 3 patients had a milder form, 7 had moderate platelet count and 4 of the patients had severe thrombocytopenia, who were tested for APLA/ANA and were negative.

Of the 4 patients who had severe thrombocytopenia, all were given steroid treatment. And all the patients with severe thrombocytopenia required platelet transfusion despite steroid treatment. Spontaneous recovery was noted in all the patients who had gestational thrombocytopenia and one patient with immune thrombocytopenia required steroid treatment. Postpartum hemorrhage occurred in 4 out of 13 patients with gestational thrombocytopenia. And the one patient diagnosed with immune thrombocytopenia had steroid treatment, required platelet transfusion and had postpartum hemorrhage.

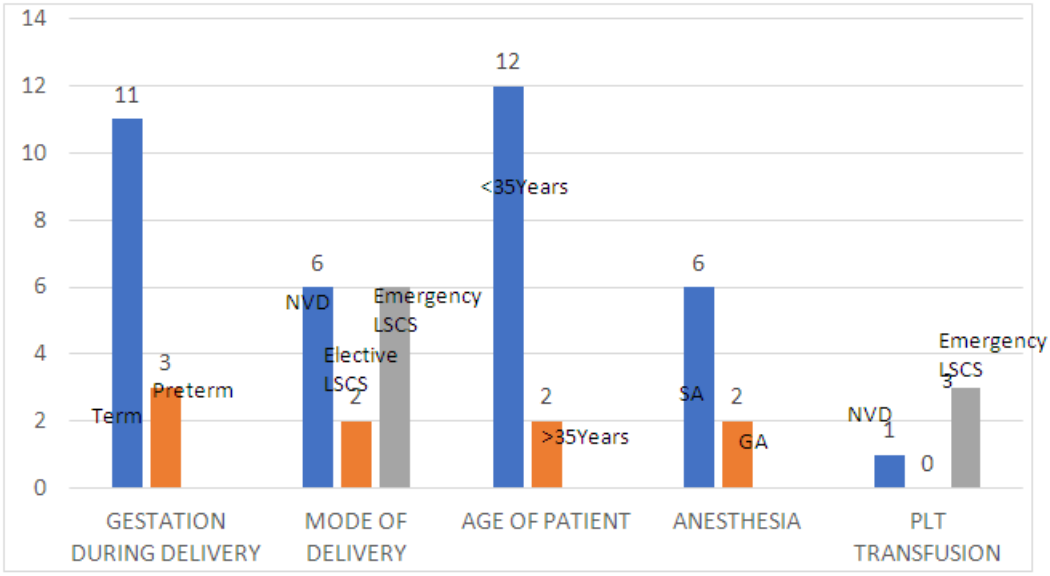


**FIG: 3:** Comparison of outcome measures

Of all the patients, 11 patients (i.e.) 78% were delivered at term, whereas 22% delivered as preterm. Analysis of the mode of delivery, 6 patients delivered by labour naturalis, 6 patients delivered by emergency lower segment caesarean section. Of the 8 patients who underwent caesarean section, 6 patients were given spinal anaesthesia and 2 patients needed general anaesthesia. Of the patients who needed platelet transfusion, 1 patient had delivered by normal vaginal delivery and 3 patients had undergone caesarean section.

2 patients had an atypical presentation, with severe thrombocytopenia in 3rd trimester who also had a steroid response which directed the diagnosis to immune thrombocytopenia. Both patients had spontaneous recovery postpartum and a normal interpregnancy period like in gestational thrombocytopenia.

## IV. Discussion:

As thrombocytopenia is the second most common hematological disorder in pregnancy which has to be recognised earlier and appropriately managed to avoid maternal and neonatal mortality and morbidity. Our work is to emphasise on the incidence of thrombocytopenia in pregnancy and the various etiology. We have highlighted the importance of recognising gestational thrombocytopenia and immune thrombocytopenia and its atypical presentation. The incidence of thrombocytopenia in this study is5.8% lower than 7.2% reported by Sainio et al[6]. It is also lower than 11.6% reported by Pandey et al and Boehlen et al[5].

The most common cause of thrombocytopenia in pregnancy is hypertensive disorders in pregnancy which constituted 49% of the total patients and the incidence of gestational thrombocytopenia was 5.4%. This contrasted with Pandey et al who reported that the most common cause of thrombocytopenia in pregnancy is gestational thrombocytopenia which was 44% followed by hypertensive disorders of pregnancy which was 21%[8]. Parnas M et al, has reported that the most common cause is gestational thrombocytopenia constituting 59.3% and the second most important cause is the hypertensive disorders of pregnancy, 21.1%[9]. This change in incidence could be due to various social factors which increases the incidence of hypertensive disorders like obesity, late childbearing, infertility, artificial reproductive techniques. Thrombocytopenia in pregnancy requires a multidisciplinary approach with physician, haematologist, pathologist, blood bank officer, obstetrician and paediatrician[8]. Spontaneous recovery postpartum does not exclude ITP and gestational thrombocytopenia may also have an atypical presentation. The need for active intervention was 23% for gestational thrombocytopenia and 100% for Immune thrombocytopenia.

## V. Conclusion:

Thrombocytopenia in pregnancy occurs due to a variety of secondary causes which are distributed across trimesters. The prompt diagnosis and appropriate management by a multidisciplinary approach in a tertiary care hospital is necessary to prevent the maternal, neonatal mortality and morbidity.

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