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Original Research Article

Thrombocytopenia during pregnancy: an institutional based prospective study of one year

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ABSTRACT

Background: Platelets are non-nucleated cellular fragments of megakaryocytes, they play a critical role in haemostasis. Thrombocytopenia, defined as blood platelet count below 150.000/µL is the second leading cause of blood disorders in pregnancy after anemia. It complicates 7 to 10% of all pregnancies. Gestational thrombocytopenia explains 70-80% of all cases of thrombocytopenia in pregnancy. Hypertensive disorders account for approximately 20% and immune thrombocytopenic purpura for about 3-4%. Other etiologies are considered rare in pregnancy.
Methods: The study was conducted in the tertiary institute over a period of one year, from January 2016 to December 2016. The samples of blood were collected from the Antenatal out-patient department and from indoor patients of the department of gynecology and obstetrics of the J.K. Hospital, Bhopal, Madhya Pradesh India.
Results: Maximum number of patients had moderate degree of anemia around 58%. Most of the cases presented during 30-34 weeks of gestation. The most common etiology was gestational thrombocytopenia.
Conclusions: Thrombocytopenia in pregnancy may occur secondary to a variety of causes. Most of these cases occur during specific periods of gestation. Management of pregnant women with platelet disorders requires a multidisciplinary approach and close collaboration between obstetric and hepatologist.

Keywords: Anemia, Platelets, Pregnancy, Thrombocytopenia

INTRODUCTION

Platelets are non-nucleated cellular fragments of megakaryocytes, they play a critical role in haemostasis.[1] Thrombocytopenia, defined as blood platelet count below 150.000/µL is the second leading cause of blood disorders in pregnancy after anemia. It complicates 7 to 10% of all pregnancies.[2] Due to haemodilution secondary to expansion of plasma volume, platelet count in normal pregnancies may decrease by approximately 10%, most of this decrease occurs during the third trimester.[3-6] Thrombocytopenia can be classified as mild (platelet count of 100,000-150,000 X 10^9/L), moderate (platelet count of 50,000-100,000 X 10^9/L) or severe (platelet count less than 50,000 X 10^9/L).[1] The physiological thrombocytopenia of pregnancy is mild and has no adverse effects for the mother and fetus. By contrast, a significant thrombocytopenia associated with medical conditions can have serious maternal-fetal consequences and requires specific monitoring and appropriate management.

From a practical standpoint, the current guidelines consider that vaginal delivery is safe when platelet count is higher than 30.000/µL. For operative vaginal or cesarean deliveries, the safe platelet count should be at least 50.000 platelets/µL. The exact platelet number needed to achieve a safe epidural anesthesia is debated,

but in most guidelines, the reference value is around 75.000-80.000/µL.[7] There is a theoretical concern over the risk of epidural hematoma with lower platelet values. Spontaneous bleeding may occur with less than 20.000 platelets/µL and the risk of internal bleeding is increased if the platelet count falls below 10.000/µL.[8] Gestational thrombocytopenia explains 70-80% of all cases of thrombocytopenia in pregnancy. Hypertensive disorders account for approximately 20% and immune thrombocytopenic purpura for about 3-4%. Other etiologies are considered rare in pregnancy.

Objectives of the study were to study the incidence of thrombocytopenia in pregnancy and to study the various etiological factors associated with thrombocytopenia in pregnancy and to study the different diseases in which thrombocytopenia manifests in ANC patients.

METHODS

The study was conducted in the tertiary institute over a period of one year, from January 2016 to December 2016. 100 pregnant patients with a platelet count of or less than 100000/mL were included in the study group. Patients from all trimesters of pregnancy were included. On admission, thorough history was taken and a detailed clinical examination was carried out. All the patients were subjected to biochemical investigations, special investigations and ultrasonography.

The samples of blood were collected from the Antenatal Out-Patient Department and from Indoor patients of the Department of Gynecology and Obstetrics of the J.K. Hospital, Bhopal, Madhya Pradesh, India. Ethical committee clearance was obtained as per protocol. Analysis of the data and manuscript preparation were done in the Department of Physiology, L. N. Medical College and J.K. Hospital, Bhopal, Madhya Pradesh, India.

Inclusion criteria

Pregnant women of different trimesters were included in the study.

Exclusion criteria

Any pregnant or non-pregnant woman having diabetes or thrombo-embolic disorders were excluded from the study.

Collection of samples: blood platelet count was done according to method of Brecher and Cronkite as advocated by Dacie and Lewis.[9] Blood samples were collected by aseptic venipuncture with disposable plastic syringes, mixed with EDTA, and then sucked up to 0.5 mark in the WBC pipette. Tip of the pipette was then gently wiped with dry cotton. Diluent fluid (1% ammonium oxalate, which helps in RBC lysis) was then drawn up to mark 11 to obtain a 1 in 20 dilutions. The blood and the fluid were then mixed thoroughly by rotating between fingers for 15 to 20 minutes. The improved Neubauer's chamber was then charged in the usual manner after removal of the diluents in the stem. The platelets were then allowed to settle down for 20 minutes by placing the charged hemocytometer in a Petridis with a piece of wet filter paper (to prevent drying out). The count was done in 1 mm 2 area under high power of light microscope with restricted light entering it.

Thus, if N be the number of platelets counted in an area of 1 mm 2 (0.1µL in volume), the number of platelet per liter of blood

= N X 10 X 20 (dilution) X 106
= N X 200 X 106 / L
= N X 200 per µL

The course of pregnancy was studied and the investigation profile was monitored.

RESULTS

In the present study, a total of 856 pregnant women were recruited, among them 100 (11.68%) pregnant women were thrombocytopenic. Thrombocytopenia can be classified as mild (platelet count of 100,000-150,000 X 109/L), moderate (platelet count of 50,000-100,000 X 109/L) or severe (platelet count less than 50,000 X 109/L). Table-1 illustrates the severity of thrombocytopenia among pregnant women. Out of the 100 pregnant women who were thrombocytopenic most of them 58% had moderate thrombocytopenia.

Table 1: Severity of thrombocytopenia among pregnant women.

Thrombocytopenia (platelet count)	No. of cases	Percentage
Mild (>100,000)	22	22
Moderate (50000-100,000)	58	58
Severe (< 50000)	20	20
Total	100	100

Table 2: Distribution of cases according to weeks of gestation.

Weeks of gestation	No. of cases	Percentage
<20	12	12
20 to 24	07	7
25 to 29	17	17
30 to 34	41	41
35 to 39	20	20
≥40	03	3
Total	100	100.0

Table 2 shows the distribution of thrombocytopenia among pregnant women at different trimesters. No pregnant woman in the first trimester had severe

thrombocytopenia. Majority of cases of thrombocytopenia were seen in third trimester.

Table 3: Distribution of thrombocytopenia cases according to etiology.

Etiology	No. of cases	Percentage
Gestational thrombocytopenia	44	44
Pregnancy induced hypertension	13	13
Eclampsia	05	5
HELLP (syndrome of haemolysis, elevated liver enzymes, low platelets)	05	5
Malaria	21	21
Dengue	07	7
Idiopathic thrombocytopenic purpura	02	2
Multiorgan failure	01	1
Septicaemia	02	2
Total	100	100

Out of 100 pregnant women with thrombocytopenia the diagnosis included: 44 women with Gestational thrombocytopenia, 13 cases with preeclampsia, 05 cases with HELLP syndrome. Infections such as malaria and dengue comprised of 21 and 07 cases respectively. Table-3 shows distributions of thrombocytopenia cases according to etiology.

DISCUSSION

Thrombocytopenia is a widespread problem during pregnancy, often under diagnosed and mismanaged. This study was a prospective study of one year which included 856 pregnant women, among them 100 cases of pregnant patients had thrombocytopenia. The present work was designed to determine the incidence of gestational thrombocytopenia in pregnant women attending antenatal care at J. K. hospital and research centre. The incidence of thrombocytopenia in this study was 11.68%. This figure was higher than figures of 11.6% reported by Boehlen et al in and 7.2% reported by Sainio et al.[2,3] The higher prevalence in this study may be because of malaria and dengue infections. The present study found no influence of age and religion on prevalence of thrombocytopenia in pregnancy like Mathews et al.[10]

From our findings, gestational thrombocytopenia occurred across the three trimesters. No case of severe thrombocytopenia was seen in first trimester. In the study, maximum cases (41%) of thrombocytopenia were seen in 30-34 weeks of gestation followed by 20% cases in 35-39 weeks of gestation. This was in accordance with the report of Crowther et al who reported that gestational thrombocytopenia in pregnancy develops primarily in the late second or third trimester.[11] This contrasted with the study done by Parnas et al in which maximum cases 74.4 % were in the gestational age 37-40 weeks.[12]

Out of 100 cases of thrombocytopenia in this study, moderate and severe degree of thrombocytopenia was seen in 58% and 20% cases respectively. Gestational thrombocytopenia was the most common etiological factor with 44% cases followed by 23% for hypertensive disorders including HELLP syndrome followed by 21% for Malaria followed by 7% for dengue. In a study by Parnas M et al the most important etiological factors for thrombocytopenia are gestational thrombocytopenia accounting for 59.3% followed by hypertensive disorders 21.1%.[12]

CONCLUSION

Thrombocytopenia in pregnancy may occur secondary to a variety of causes. Most of these cases occur during specific periods of gestation. On occasion patients may present with constellation of symptoms. The challenge to the clinician is to weigh the risks of maternal and fetal bleeding complications against the benefits of diagnostic tests and intervention. Management of pregnant women with platelet disorders requires a multidisciplinary approach and close collaboration between obstetric and hematologist.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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