A STUDY TO EVALUATE THE PREVALENCE AND CLINIC-ETIOLOGIC PROFILE OF THROMBOCYTOPENIA IN PREGNANCY: AN OBSERVATIONAL STUDY.

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Abstract

Objective: To evaluate the prevalence and clinic-etiological profile of thrombocytopenia in pregnancy:

Materials and Methods: The present hospital based observational study was conducted in the Department of Obstetrics and Gynecology, Patna Medical College and Hospital, Patna, Bihar from July 2016 to January 2017. A detailed obstetrics history was obtained and maternal high risk factors like preeclampsia, eclampsia, DIC, HELLP syndromes etc were noted. Medical history like anemia, malaria, dengue, liver disorder, current or previous bleeding problems, family history of bleeding & transfusion history were noted. Clinical findings suggestive of thrombocytopenia like petechiae, ecchymoses etc. were noted.

Results: Out of total 74 patients, Gestational thrombocytopenia was the most common etiological factor with 41.9% cases followed by 35.1% for hypertensive disorders including HELLP syndrome followed by 6.8% for Malaria and dengue. The most common hemorrhagic presentation was petechiae, ecchymosis & purpura in 33.8% cases. Among the thrombocytopenic pregnant women in our study, 60.8% had mild thrombocytopenia, 24.3% had moderate thrombocytopenia and 14.9% had severe thrombocytopenia

Conclusion: The study demonstrated that thrombocytopenia is a frequent finding in pregnancy. It has many potential causes but gestational thrombocytopenia (GT) predominates. Degree of thrombocytopenia was mild to moderate.

Keywords: Pregnancy, Thrombocytopenia, Petechiae, Ecchymosis

Introduction

Thrombocytopenia during pregnancy has become a cause for unnecessary, often invasive, additional testing and cesarean deliveries. The evaluation and treatment of this condition can be expensive and distressing to the patient and can result in an adverse outcome.

Thrombocytopenia is suspected when a patient's platelet count is $<150,000 \times 10^3/\text{mm}^3$. The normal reference range for platelet count in a non-pregnant woman is $150,000\text{--}400,000 \times 10^3/\text{mm}^3$. Due to hemodilution secondary to expansion of plasma volume, platelet count in normal pregnancies may be decreased by $\sim 10\%$; most of the decrease in platelet count occurs during the third trimester of pregnancy¹⁻³, although the absolute platelet count remains within normal reference range in most patients.^{4,5}

Thrombocytopenia can be classified as mild (platelet count of $100,000\text{--}150,000 \times 10^3/\text{mm}^3$), moderate (platelet count of $50,000\text{--}100,000 \times 10^3/\text{mm}^3$) or severe (platelet count $<50,000 \times 10^3/\text{mm}^3$).⁶

During pregnancy, most cases of low platelet count are due to gestational thrombocytopenia (GT), idiopathic

thrombocytopenic purpura (ITP) or preeclampsia.⁷ Other causes include infection, such as malaria or folate deficiency, and diseases, such as leukemia and aplastic anemia.²

Obstetricians especially in the developing countries have no comprehensible guide for managing pregnant women with thrombocytopenia due to a lack of data about the frequency, severity and causes of this condition. As there is paucity and wide variations in data regarding prevalence and causes in Indian women; so the present study was planned out to evaluate the prevalence and clinic-etiological profile of thrombocytopenia in pregnancy

Materials and Methods

The present hospital based observational study was conducted in the Department of Obstetrics and Gynecology, Patna Medical College and Hospital, Patna, Bihar, from July 2016 to January 2017.

Inclusion Criteria

1. Pregnant women with platelet count $<1 \text{ lakh}/\text{mm}^3$

2. Patients with or without clinical Bleeding in third trimester.
3. Patients who have provided the informed consent

Exclusion Criteria

1. Patients with normal platelet count
2. Patients having malignancy with thrombocytopenia
3. Patients who have not signed the informed consent

Ethical approval and Informed consent

The study protocol was reviewed by the Ethical Committee of the Hospital and granted ethical clearance. After explaining the purpose and details of the study, a written informed consent was obtained.

Sample selection

The sample size was calculated using a prior type of power analysis by G* Power Software Version 3.0.1.0 (Franz Faul, Universitat Kiel, Germany). The minimum sample size was calculated, following these input conditions: power of 0.80 and $P \leq 0.05$ and sample size arrived were 684 participants.

Methodology

A detailed obstetrics history was obtained and maternal high risk factors like preeclampsia, eclampsia, DIC, HELLP syndromes etc were noted. Medical history like anemia, malaria, dengue, liver disorder, current or previous bleeding problems, family history of bleeding & transfusion history were noted. Clinical findings suggestive of thrombocytopenia like petechiae, ecchymoses etc. were noted.

Routine Investigation in form of complete blood count, peripheral smear & platelet count by automated method, renal profile, liver profile, coagulation profile etc. were carried out.

The special investigations like widal, dengue Serology, HIV, Coomb's test, fibrinogen, FDP, D-dimers, RA Factor etc. were done as and when required. Mode of delivery was decided depending on state of mother and fetus. Platelet transfusion was given as per indication.

Statistical analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2010) and then exported to data editor page of SPSS version 19 (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics included computation of percentages and means.

Table 1: prevalence of thrombocytopenia in the study population

Variables	N (%)
Present	74 (10.8%)
Absent	610 (89.2%)
Total	684 (100.0%)

Table 2: demographic profile of the study population

Variables	N (%)
Age (years)	
≤20	7 (9.5%)
21-25	43 (58.1%)
25-30	15 (20.3%)
>30	9 (12.2%)
(Mean±SD)	23.51±2.93
Parity	
Primipara	26 (35.1%)
Multipara	48 (64.9%)
Booking status	
Booked	29 (39.2%)
Un-booked	45 (60.8%)
Total	74 (100.0%)

Table 3: degree of thrombocytopenia

Degree of Thrombocytopenia	N (%)
Mild	45 (60.8%)
Moderate	18 (24.3%)
Severe	11 (14.9%)
Total	74 (100.0%)

Table 4: distribution of bleeding sites

Bleeding sites	N (%)
Petechiae, ecchymosis & purpura	25 (33.8%)
Vaginal bleeding	11 (14.9%)
Gum bleeding	8 (10.8%)
Epistaxis	3 (4.0%)
Others	4 (5.4%)

Table 5: distribution of etiologic profile

Etiology	N (%)
Gestational	31 (41.9%)
Hypertensive disorder	26 (35.1%)
DIC	5 (6.8%)
Malaria(Vivax & Falciparum) & Dengue	5 (6.8%)
ITP	2 (2.7%)
Megaloblastic Anemia	2 (2.7%)
Others	3 (4.0%)

Discussion

The incidence of thrombocytopenia in this study was 10.2%. In this study, the prevalence of thrombocytopenia among pregnant women was 8.8%, which was almost comparable to the results of studies conducted by Vyas et al.⁸ (7.67%), Nisha et al.⁹ (8.8%), Dwivedi¹⁰ (8.17%), Shamoon et al.¹¹ (8%), Myers¹² literature review (8%–10%), Jeffrey et al.¹³ clinical review (8%), and Jodkowska et al.¹⁴ (7%–10%). However, the result of this study was lower than in studies conducted in Switzerland (11.6%), Ethiopia (13.5%), Ghana (15.3%), Israel (21.8%), and Nigeria (13.5%).^{4,15-18} The difference may be due to socio-demographic differences of the study subjects and differences in the study design.

Among the thrombocytopenic pregnant women in our study, 60.8% had mild thrombocytopenia, 24.3% had

moderate thrombocytopenia and 14.9% had severe thrombocytopenia. These results are in line with studies conducted in Ethiopia, Ghana, India and Nigeria^{8,15,16,18} which showed a high frequency presence of mild type thrombocytopenia.

Gestational thrombocytopenia was the most common etiological factor with 41.9% cases followed by 35.1% for hypertensive disorders including HELLP syndrome followed by 6.8% for Malaria and 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%.¹⁷ The cause of thrombocytopenia in malaria is direct lysis of platelets by plasmodium, increased oxidative stress causing destruction of the platelets. The cause of thrombocytopenia in dengue fever is impaired thrombopoiesis, platelet sequestration, activation of the complement system⁵ and autoantibodies against blood-coagulation-related molecules and antiplatelet antibodies mediated platelet lysis.

The study was a cross-sectional study and it did not include control groups. Since this study is not a follow-up study, it may lack many independent factors of thrombocytopenia assessment.

Conclusion

The present study was done to identify the clinical presentation and the cause of thrombocytopenia. The study demonstrated that thrombocytopenia is a frequent finding in pregnancy. It has many potential causes but gestational thrombocytopenia (GT) predominates. GT was seen to develop in late gestation with normal early gestational counts. Degree of thrombocytopenia was mild to moderate.

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