Section: Obstetrics and Gynaecology

Original Research Article

PREVALENCE OF THROMBOCYTOPENIA IN PREGNANCY AND ETIOLOGICAL FACTORS ASSOCIATED WITH IT: A CROSS SECTIONAL STUDY FROM KARNATAKA

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Abstract

Background: Gestational thrombocytopenia (GT) is responsible for ~75% of thrombocytopenia in pregnant women.7 GT is usually mild and is not usually associated with fetal thrombocytopenia. **Objectives:** To study the prevalence of thrombocytopenia in pregnancy and to study the various etiological factors associated with thrombocytopenia in pregnancy. **Material & Methods:** The present Hospital based prospective observational study was carried out in Department of OBGY, Karnataka Institute of Medical Sciences, Hubbali involving 241 pregnant women admitted at Department of OBGY, Karnataka Institute of Medical Sciences, Hubbali with thrombocytopenia or diagnosed to have thrombocytopenia in index pregnancy during the study period from December 2018 to May 2020. **Results:** Prevalence of thrombocytopenia in our study was 5.6%. Majority of the women had moderate grade of thrombocytopenia i.e. 94(67.2%) followed by 44(31.4%) with severe grade and 2(14%) had mild grade of thrombocytopenia. The difference in the proportion of cases between different grades of thrombocytopenia was not found to be significant (p>0.05). Etiology of thrombocytopenia revealed Gestation thrombocytopenia in 55(39.3%) followed by preeclampsia in 37(26.4%), eclampsia in 16(11.4%), dengue in 11(7.9%), megaloblastic anaemia in 10 cases (7.1%), ITP in 8(5.7%) and HUS in 3(2.1%) cases. **Conclusion:** Prevalence of thrombocytopenia in our study was 5.6%. Prevalence of moderate grade of thrombocytopenia i.e. 94(67.1%). Gestation thrombocytopenia was the commonest cause in 55(39.3%) followed by preeclampsia in 37(26.4%).

INTRODUCTION

Platelets are nonnucleated blood cells formed by cellular fragments of megakaryocytes, and they have a critical role in maintaining hemostasis.[1] Thrombocytopenia is suspected when a patient's platelet count is <150,000×103/mm.[3] The normal reference range for platelet count in a nonpregnant woman is 150,000–400,000× 103/mm3. Due to hemodilution secondary to expansion of plasma volume, platelet count in normal pregnancies may be decreased by ~10%; most of the decrease in platelet count occurs during the third trimester of pregnancy,[2-5] although the absolute platelet count remains within normal reference range in most patients. 3,6 Thrombocytopenia can be classified as mild (platelet count of 100,000– 150,000× 103/mm3), moderate (platelet count of 50,000–100,000× 103/mm3) or severe (platelet count <50,000×103/mm3).[1]

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, dengue and diseases, such as leukaemia and aplastic anemia.[4] GT is characterized by incidental detection of mild-to-moderate reduction in platelet count during pregnancy in otherwise healthy women with no previous history of ITP or conditions known to be associated with thrombocytopenia. It is not an early manifestation of autoimmune disease, there is no significant fetal or maternal morbidity, and normalization of platelet counts occur in the vast majority of patients postpartum.[7-10]

Gestational thrombocytopenia (GT) is responsible for ~75% of thrombocytopenia in pregnant women.[7] GT is usually mild and is not usually associated with

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fetal thrombocytopenia.[11] Platelet count in patients with GT is usually >110,000×103/mm,[3], whereas counts as low as 70,000×103/mm3 have been reported. In patients with platelet count <70,000×103/mm,[3] an alternative explanation is frequently present. Although the pathogenesis of GT is not well understood, it may involve factors such as hemodilution and/or accelerated platelet clearance.[12,13] It is known that pregnant women with thrombocytopenia have a higher risk of bleeding excessively during or after childbirth, particularly if they need to have a caesarean section or other surgical intervention during pregnancy or labour. Such bleeding complications are more likely when the platelet count is <50×103/mm3.[1]

Objectives

- To study the prevalence of thrombocytopenia in pregnancy
- To study the various etiological factors associated with thrombocytopenia in pregnancy.

MATERIALS AND METHODS

Study setting: Department of OBGY, Karnataka Institute of Medical Sciences, Hubbali

Study population: All pregnant women admitted at Department of OBGY, Karnataka Institute of Medical Sciences, Hubbali with thrombocytopenia or diagnosed to have thrombocytopenia in index pregnancy during the study period from December 2018 to May 2020

Study period: December 2018 to May 2020

Study design: Hospital based prospective observational study

Sample size to be screened for gestational thrombocytopenia is 241

Sampling technique: Simple random sampling

Inclusion Criteria

- All pregnant women admitted at Department of OBGY, Karnataka Institute of Medical Sciences, Hubbali with thrombocytopenia or diagnosed to have thrombocytopenia in index pregnancy during the study period from December 2018 to May 2020
- Those willing to participate in our study after consent

Exclusion Criteria

- Pregnant women with thromboembolic disorder
- Pregnant women with HIV and those on chemotherapy causing thrombocytopenia
- Pregnant women with gestation less than 28 weeks

Methods of data collection

All pregnant women admitted at Department of OBGY, Karnataka Institute of Medical Sciences, Hubbali with thrombocytopenia or diagnosed to have thrombocytopenia in index pregnancy with gestational age of more than 28 weeks during the study period from December 2018 to May 2020.

Platelet count assessment had been done through automated blood count analyzer with routine antenatal haematological evaluation of the patient. All these women had been subjected to blood test for CBC, bleeding time, clotting time, RFT, LFT, HBsAg, HIV, HCV, VDRL, urine routine and microscopic examination along with urine albumin. Women with fever had been tested for dengue IgM and peripheral smear for malaria parasite. Coagulation tests (PT, APTT, FDP and fibrinogen) had been done in those with signs or symptoms of DIC. Platelet counts were repeated depending on their severity. Obstetrical examination along with obstetrical intervention was done when needed.

Statistical analysis and methods

Data was collected by using a structure proforma. Data thus was entered in MS excel sheet and analysed by using SPSS 24.0 version IBM USA. Qualitative data was expressed in terms of percentages and proportions. Quantitative data was expressed in terms of Mean and Standard deviation. Association between two qualitative variables was seen by using Chi square/ Fischer's exact test. A p value of <0.05 was considered as statistically significant whereas a p value <0.001 was considered as highly significant.

RESULTS

We screened 2500 pregnant women during the period of data collection. Out of 2500 women, thrombocytopenia was present in 140 women. So, the prevalence of thrombocytopenia in our study was 5.6%. [Table 1]

Majority of the women had moderate grade of thrombocytopenia i.e. 94(67.2%) followed by 44(31.4%) with severe grade and 2(14%) had mild grade of thrombocytopenia. [Table 2]

In our study, out of 2 cases of mild grade, all were from 21-30 years age group. Out of 94 cases of moderate grade thrombocytopenia, 74(78.7%) were from 21-30 years age group. Out of 44 cases of severe grade thrombocytopenia, 29(65.9%) were from 21-30 years. The difference in the proportion of cases between different grades of thrombocytopenia was not found to be significant (p>0.05). [Table 3]

In our study, out of 2 cases of mild grade, all were from above 36 weeks of gestation. Out of 94 cases of moderate grade thrombocytopenia, 54(57.4%) were from above 36 weeks of gestation. Out of 44 cases of severe grade thrombocytopenia, 27(61.4%) were from above 36 weeks of gestation. The difference in the proportion of cases between different grades of thrombocytopenia was not found to be significant (p>0.05). [Table 4]

Etiology of thrombocytopenia revealed Gestation thrombocytopenia in 55(39.3%) followed by preeclampsia in 37(26.4%), eclampsia in 16(11.4%), dengue in 11(7.9%), megaloblastic anaemia in 10 cases (7.1%), ITP in 8(5.7%) and HUS in 3(2.1%) cases. [Table 5]

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Table 1: Prevalence of thrombocytopenia

		Frequency	Percent
Thrombocytopenia	Present	140	5.6
	Absent	2360	94.4
	Total	2500	100

Table 2: Distribution according to grades of thrombocytopenia

		Frequency	Percent
Grades of thrombocytopenia	Mild	2	1.4
	Moderate	94	67.2
	Severe	44	31.4
	Total	140	100.0

Table 3: Distribution according to grades of thrombocytopenia and age

		Grades of thrombocytopenia						Total
		Mild		Moderate		Severe		
		No	%	No	%	No	%	
Age group in years	≤ 20	0	0.0	11	11.7	12	27.3	23
	21-30	2	100.0	74	78.7	29	65.9	105
	31-40	0	0.0	9	9.6	3	6.8	12
	Total	2	100.0	94	100.0	44	100.0	140

Chi square test-6.02, p-0.19(>0.05), Not significant

Table 4: Distribution according to grades of thrombocytopenia and gestational age

		Grades of thrombocytopenia						Total
		Mild		Moderate		Severe		
		No	%	No	%	No	%	
Gestational age	≤ 30	0	0.0	18	19.1	2	4.5	20
	31-36	0	0.0	22	23.4	15	34.1	37
	> 36	2	100.0	54	57.4	27	61.4	83
Total		2	100.0	94	100.0	44	100.0	140

Chi square test-7.24, p-0.12(>0.05), Not significant

Table 5: Distribution according to etiology

		Frequency	Percent
Etiology	Eclampsia	16	11.4
	Dengue	11	7.9
	Preeclampsia	37	26.4
	Gestation thrombocytopenia	55	39.3
	ITP	8	5.7
	Megaloblastic anaemia	10	7.1
	HUS	3	2.1
	Total	140	100.0

DISCUSSION

Prevalence of thrombocytopenia

We screened 2500 pregnant women during the period of data collection. Out of 2500 women, thrombocytopenia was present in 140 women. So, the prevalence of thrombocytopenia in our study was 5.6%.

Chandi N et al,[14] conducted the study to find out the prevalence of thrombocytopenia during pregnancy, its etiology and maternal and perinatal outcome. Prevalence of thrombocytopenia in pregnancy was 10.5% which is higher compared to our study findings.

Zutshi V et al,[15] reported prevalence of GT was 12.82% which is higher compared to our study findings. Higher prevalence was also reported by Olayemi and Akuffo et al,[16] (15.3%), Nisha et al,[17] (8.8%), Myers et al,[18] (8%), Chauhan V et al,[19] (8.4%), Asrie F et al,[20] (8.8%), Saeed HD et al,[21] (7.2%), Zutshi V et al,[22] (12.8%)

Demographic information

Out of 140 women having thrombocytopenia, majority were from 21-30 years age group i.e., 105(75%) followed by 23(16.4%) from below 20 years and least i.e., 12(8.6%) from 31-40 years. Mean age of the study population was 24.46±4.1 years.

The mean age of patients reported by Chauhan V et al,[19] in his study was 25.74±3.86 years.

In study by Borna et al,[23] Turgot et al,[24] Jaleel et al,[25] mean age of patient was 28, 27.6±5.7 and 28.43 respectively. Where as in a study by Ruggri et al,[26] the mean age was higher i.e., 32.

The mean age was also higher in the study of Parnas et al,[27] i.e., 30 years. This might be due to fact that these studies were conducted in European countries where general age of marriage is high.

In our study, majority of the women were primigravida i.e., 40% and remaining 60% were multigravida. Mean gravidity in our study was 2.05±0.6

In study by Chauhan V et al,[19] the enrolled women's gravidity was 1.6±0.78. In the study by Dwivedi et

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al,[28] the mean gravidity was 2.15±0.99 which was higher than our study.

Chauhan V et al,[19] reported that 53.8% of patients were primigravida and 46.02% were multigravida.

Similar distribution of patient was seen in study by Bhatet et al,[29] (65%) and Won et al,[30] (51.6%), whereas in the study by Brohi et al,[31] 40.8% women were primigravida, which was slightly lower than our study.

Grades of thrombocytopenia

In our study, majority of the women had moderate grade of thrombocytopenia i.e. 94(67.1%) followed by 44(31.4%) with severe grade and 2(14%) had mild grade of thrombocytopenia.

Singh et al32 reported prevalence of 74.7% 17.9% and 7.4% of mild, moderate and severe thrombocytopenia in their study.

Borna et al,[23] reported prevalence of 54% 30% and 16% of mild, moderate and severe thrombocytopenia in their study.

Chauhan V et al,[19] found that 63% of the women had mild thrombocytopenia while 35.4% and 1.5% of women were moderate and severe thrombocytopenic respectively.

Pandey A et al,[33] reported that maximum number of patients had moderate degree of thrombocytopenia of around 58%.

Our findings are almost consistent with the findings of above-mentioned authors.

The most common cause of thrombocytopenia in preg¬nancy is gestational thrombocytopenia, which accounts for almost 75% of all cases. The exact cause of gestational thrombocytopenia remains unclear, although it might be secondary to accelerated platelet consumption and increased plasma volume associated with pregnancy.

Causes of thrombocytopenia

In our study, etiology of thrombocytopenia revealed Gestation thrombocytopenia in 55(39.3%) followed by preeclampsia in 37(26.4%), eclampsia in 16(11.4%), dengue in 11(7.9%), megaloblastic anaemia in 10 cases (7.1%), ITP in 8(5.7%) and HUS in 3(2.1%) cases.

Pandey A et al33 found that 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.

Saeed HD et al,[15] found that common cause of thrombocytopenia was gestational thrombocytopenia seen in 19(47.5%) patients and PE & HELLP syndrome 9 (22.5%) patients.

Asrie F et al,[20] reported that the majority of the women had platelet count above 100×109/L, 251 (87.45%) and gestational thrombocytopenia was the most common cause of thrombocytopenia, 275 (95.8%).

Chandi N et al,[14] observed that the commonest etiology was gestational thrombocytopenia (61.53%).

CONCLUSION

- Prevalence of thrombocytopenia in our study was 5.6%.
- Prevalence of moderate grade of thrombocytopenia i.e. 94(67.1%) followed by 44(31.4%) with severe grade and 2(14%) had mild grade of thrombocytopenia
- Gestational thrombocytopenia was the commonest cause in 55(39.3%) followed by preeclampsia in 37(26.4%), eclampsia in 16(11.4%), dengue in 11(7.9%), megaloblastic anaemia in 10 cases (7.1%), ITP in 8(5.7%) and HUS in 3(2.1%) cases.

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