Original article:

Thrombocytopenia in Pregnancy

Neeta Natu, Nootan Chandwaskar, Smriti Sagar, Eshu Dixit

Department of Obstetrics and Gynaecology, Sri Aurobindo Medical College and Post Graduate Institute, Indore, Madhya Pradesh, India

Corresponding Author: Dr Neeta Natu,

Abstract

The aim of the study was tofind the prevalence of thrombocytopenia in pregnancy and correlates them with outcome of pregnancy. A prospective observational study was conducted in tertiary care centre from January 2015 to July 2016.Total 400 antenatal women screened for thrombocytopenia. Prevalence of thrombocytopenia was 11.4% during pregnancy.Women with thrombocytopenia were more likely to deliver preterm (<37 weeks) compared with women without thrombocytopenia. The low platelet counts and declining trend with increasing gestational age predispose pregnant women to risk of thrombocytopenia and a routine platelet count is suggested.

Introduction

Thrombocytopenia is a common problem during pregnancy and it is generally under diagnosed and mismanaged [1]. Thrombocytopenia is classically defined as a platelet count of less than 150,000/µL [2, 3]. Counts from100,000 to 150,000/µL are considered mildly depressed, 50,000 to 100,000/µL are moderately depressed and less than 50,000/µL are severely depressed [4]. Use of automated blood counters in routine prenatal screening has resulted in an increased diagnosis. Thrombocytopenia is second only to anaemia as the most common haematological abnormality during pregnancy [5].

The overall incidence of thrombocytopenia in pregnancy is 8%, but when patients with obstetric or medical conditions are excluded, the incidence drops to 5.1% [5]. Pregnancy is associated with a physiologic fall in the platelet count with a leftward shift in the platelet count distribution. The cause for the physiologic decrease in the platelet count is multifactorial and is related to hemodilution, increased platelet consumption and increased platelet aggregation driven by increased level of thromboxane A2.[6] Gestational thrombocytopenia also known as incidental thrombocytopenia of pregnancy is the most common cause accounting for 75% of all cases. It is characterized by platelet count >70,000l µL. [2] Women are typically asymptomatic. There is usually no history of thrombocytopenia. It commonly occurs in second and third trimester. It is not associated with adverse outcomes to either the mother or fetus.

Gestational thrombocytopenia (GT) or thrombocytopenia during pregnancy (PIT) occurs in late gestation, and its frequency increases during the last few weeks of gestation. PIT is commonly mild (>100,000/µl), and resolves usually completely after delivery; however, severe thrombocytopenia (50000-70,000/µl) rarely occurs [3].During pregnancy, fluid retention occurs because of sodium and water retention under estrogen and progesterone hormone

www.ijbamr.com P ISSN: 2250-284X , E ISSN : 2250-2858

effects, leading to hemodilution. This leads to lower hematocrit (dilution or pseudo-thrombocytopenia).

The criteria to diagnose gestational thrombocytopenia are the degree of thrombocytopeniais usually mild to moderate, usually remaining greater than 70,000 µL (however, the lower level has never been established), patients are asymptomatic with no history of bleeding, there is no preconception history of thrombocytopenia, a nearly gestation or preconception platelet count is normal and the platelet count returns to normal within 2 to 12 weeks postpartum. [5]

The main competing diagnosis is immune thrombocytopenic purpura (ITP), which is usually considered if degree of thrombocytopenia is more significant. There is no laboratory test to differentiate between the two conditions. The existence of pre-pregnancy thrombocytopenia should rule out and response to immune modulation with steroids or immunoglobulins would favor ITP. [7] Gestational thrombocytopenia is self-limited and resolves within 6 weeks of postpartum but may reoccur with subsequent pregnancies. It is not associated with neonatal thrombocytopenia. The aim of present study is to find out the prevalence of thrombocytopenia developed during pregnancy and pregnancy outcome.

Material and Methods

This cross sectional retrospective study was carried out on pregnant women attending Obstetrics and Gynaecology in tertiary care centre.Data from 400 consecutive pregnant women were recorded in per designed proforma which included age, complete hemogram, trimester at the time of booking, gestational age and birth weight. A blood sample (2 mL) was withdrawn from the peripheral vein in EDTA Vial. The results were statistically analysed between groups created on the basis of presence of thrombocytopenia, the p value was kept significant at 0.05 levels.

Results

Out of 400 pregnant women recruited for the study 47 (11.7%) develop thrombocytopenia during pregnancy. Out of 47 cases, 37 were having mild thrombocytopenia (Platelet count 100000 to 150000 /µl), 9 were moderate thrombocytopenia (Platelet count 50000 to 1000000/µl). Only 1 patient lies in severe category of thrombocytopenia (Platelet count < 50000/µl).For further analysis thrombocytopenic pregnant women were labelled as case and other pregnant women with normal platelet count were labelled as controls.

The mean age of case was 23.9±2.6 years and that of control was 25.6±5.3 years. The difference in age in both the groups was statistically significant (P = 0.0311).Incidence of thrombocytopeniawas significantly higher in second trimester (Table1). However there was no significant difference in severity of thrombocytopenia in different trimesters(Table 2).Incidence of thrombocytopenia was also significantly higher in nulliparous group than that of primiparous or multiparous group.

Significant number of patients were born preterm in cases as compared to controls however there was no difference in birth weight of neonates born in two groups(Table 3).

Discussion

The present study was aimed to identifying the incidence of thrombocytopenia in pregnancy and to analysehaematological parameters like hemogram, total leucocyte count, RBC count, in cases of thrombocytopenia and correlate them with outcome of pregnancy. In thepresent study, incidence of thrombocytopenia duringpregnancy was 11.4%.Nisha et al screened 1079antenatal women for

thrombocytopenia and reported the prevalence of thrombocytopenia as 8.8% [1]. In a study done by Burrows et al in Canada,Thrombocytopenia was occurred in 513 (7.6%) of 6715 consecutive deliveries over a 3-year interval [3].

Sainio et al conducted a 1-year population-based surveillance study involving 4,382 fullterm women. A total of 317 women (7.3%) had platelet counts of less than 150 x 10^9/l. Thus, the prevalence of thrombocytopenia in Indianpopulation is similar to world literature (5–12%) [8].

Thepresent study found influence of age onprevalence of thrombocytopenia in pregnancy.The mean age of patients in present study was 23.9±2.6 years that of control were 25.6±5.3 years. In contrast to present study Parnas et al also found significantly higher maternal age in cases as compared to controls (30.7±5.9 vs 28.7±5.7 years). The plausible reason for this contraindication of Parnas et al had done the retrospective study and only included moderate to severe thrombocytopenia cases [9]. We have included the mild thrombocytopenia cases also in present study which is more common in younger women as compared to elder pregnant women. Nisha et al and Mathews et al also failed to find any association of age with occurrence of thrombocytopenia in pregnancy [1, 10].

Most of the case in present study was having mild thrombocytopenia. This agrees with the findings of Ajibola et al and Boehlen et al who reported gestational thrombocytopenia is usually mild [11,12]. The most common (42.5%) cause of thrombocytopenia in present study is gestational thrombocytopenia. the other causes included DIC, preclamsia, eclampsia and APH. The prevalence of causes for thrombocytopenia in present study is similar to reported by Parans et al [9].

Similar to Ajibola et al and Oleyemi et al, thrombocytopenia was occurred across the trimesters in present study [11,13]. This was against the report of Crowther et al who reported that gestational thrombocytopenia in pregnancy is a disorder that develops primarily is a disorder that develops primarily in the late second or third trimester [14].

Similar to our study Pranas et al did not observed any significant association of previous gestation and delivery with the occurrence of thrombocytopenia [9].

Present study shows the significant increase in severity as the pregnancy advances. This is also consistent with the study of Ajibola et al and Akingbola et al [11, 14]. 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, though the absolute platelet count remains within normal reference range in patients [15-17].

Women with thrombocytopenia were more likely to deliver preterm (<37 weeks) compared with women without thrombocytopenia. Pranas et al also reported the same [9]. Grzyb et al in a retrospective study reported that Premature labor (<37 week of pregnancy) were observed more often in patients with severe than in moderate thrombocytopenia (6/14-42, 85% vs. 4/31-16, 13%; $p < 0.05$) [18].Similar to study done by Parnas et al we did not observed any significant association of neonatal birth weight and gestational thrombocytopenia [4].

Conclusion

The baseline low platelet counts and declining trend with increasing gestational age predispose Indian women to increased risk of thrombocytopenia in pregnancy. Thus, platelet count estimation should be

www.ijbamr.com P ISSN: 2250-284X , E ISSN : 2250-2858

a routine at first antenatal visit for timely diagnosis and to achieve favourable fetomaternal outcome in all types of thrombocytopenia during pregnancy.

Table 1: Age and clinical profile of cases and controls

	Cases(n=47)	**Controls(n=353)**	**P Value**
Age	23.9±2.6	25.6±5.3	0.0311
Parity			
0	31	176	0.0435
≥1	16	177	
Trimester			
I	8	106	0.0235
II	27	131	
III	12	116	

Table 2: Severity of Thrombocytopenia in different trimester

Trimester	**Severity**		
	Mild	**Moderate**	**Severe**
I	7	1	0
II	21	5	1
III	9	3	0

www.ijbamr.com P ISSN: 2250-284X , E ISSN : 2250-2858

Table 3: gestational age and birth weight of the child born

Gestational Age			
	Cases	Control	P value
<37 weeks	20(42.5)	80(22.6)	0.0086
37-40 weeks	17(36.1)	145(41.0)	
>40 weeks	10(21.2)	128(36.2)	
Birth weight(In kg)			
<1.5	2(4.3)	60(16.9)	0.0561
1.5-2.5	17(36.1)	128(36.2)	
>2.5	28(59.5)	165(46.74)	

References

1. Nisha S, Amita D, Uma S, Tripathi AK, Pushplata S. Prevalence and characterization of thrombocytopenia in pregnancy in Indian women. Indian J Hematol Blood Transfus. 2012; 28(2):77-81.
2. Shehata N, Burrows R, Kelton JG. Gestational thrombocytopenia. ClinObstetGynecol 1999;42: 327–34.
3. Burrows RF, Kelton JG. Thrombocytopenia at delivery: a prospective survey of 6,715 deliveries. Am J ObstetGynecol 1990;162:731– 4.
4. Magann EF, Martin JN Jr. Twelve steps to optimal management of HELLP syndrome. ClinObstetGynecol1999;42:532–50.
5. Sullivan CA, Martin JN Jr. Management of the obstetric patient with thrombocytopenia. ClinObstetGynecol 1995;38:521–34.
6. Silver R, Berkowitz R, Bussel J. Thrombocytopenia in pregnancy. Practice bulletin, No 6. Chicago: American College of Obstetrics and Gynecology, 1999.
7. George JN, Woolf SH, Raskob GE, Wasser JS, Aledort LM, Ballem PJ et al. Idiopathic thrombocytopenic purpura: A practice guideline developed by explicit methods for the American society of haematology. Blood. 1996; 88:3–10
8. Sainio S, Kekomäki R, Riikonen S, Teramo K.Maternal thrombocytopenia at term: a population-based study. ActaObstetGynecol Scand. 2000; 79(9):744-9.
9. Parnas M, Sheiner E, Shoham-Vardi I, Burstein E, Yermiahu T, Levi I, et al. Moderate to severe thrombocytopenia during pregnancy. Eur J ObstetGynecolReprod Biol. 2006; 128(1-2):163-8.
10. Mathews JH, Benjamin S, Gill DS, Smith NA. Pregnancy associated thrombocytopenia definition, incidence and natural history. Acta Hematol.1990; 84:24-29.
11. Ajibola SO, Akinbami A, Rabiu K, Adewunmi A, Dosunmu A, Adewumi A, et al. Gestational thrombocytopenia among pregnant women in Lagos, Nigeria. Niger Med J. 2014;55(2):139-43

12. Boehlen F, Hohlfeld P, Extermann P, Perneger TV, de Moerloose P. Platelet count at term pregnancy: a reappraisal of the threshold. Obstet Gynecol. 2000; 95(1):29-33.
13. Olayemi E, Akuffo FW.Gestational thrombocytopenia among pregnant Ghanaian women Pan Afr Med J. 2012; 12:34.
14. Akingbola TS, Adewole IF, Adesina OA, Afolabi KA, Fehintola FA, Bamgboye EA et al.Haematological profile of healthy pregnant women in Ibadan, south-western Nigeria.J ObstetGynaecol. 2006; 26(8):763-9.
15. Shehata N, Burrows R, Kelton JG.Gestational thrombocytopenia.ClinObstet Gynecol. 1999; 42(2):327-34.
16. McCrae KR.Thrombocytopenia in pregnancy: differential diagnosis, pathogenesis, and management. Blood Rev. 2003;17(1):7-14.
17. Ballem PJ.Hematological problems of pregnancy. Can Fam Physician. 1988; 34:2531-7.
18. Grzyb A, Rytlewski K, Domanska A, Tomaszczyk J, Basta A. Pregnancy complicated with thrombocytopenia.Ginekol Pol. 2006 ;77(9):712-9.