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Prevalence of thrombocytopenia during pregnancy, and its effect on pregnancy and perinatal outcome

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Abstract
Background: To study the prevalence of thrombocytopenia during pregnancy, its etiology and maternal and perinatal outcome.
Methods: It was a prospective one year study of pregnancy with thrombocytopenia. The prevalence and cause of thrombocytopenia during pregnancy and its effect on maternal and perinatal outcome was studied.
Result: Among 990 deliveries, 104 women were having thrombocytopenia during pregnancy. The commonest etiology was gestational thrombocytopenia (61.53%). Fetal complications were still birth (5.88%), low birth weight (14.7%), and neonatal thrombocytopenia (1.92%). Thrombocytopenia in pregnancy did not affect the mode of delivery and pre-term delivery rate.
Conclusion: Gestational thrombocytopenia, preeclampsia, HELLP syndrome, malaria, ITP and dengue were the common causes of thrombocytopenia in pregnancy. Patients with GT and ITP have better maternal and peri-natal outcomes as compared to preeclampsia and HELLP syndrome.

Keywords: gestational thrombocytopenia, idiopathic thrombocytopenia, maternal and perinatal outcome.

Introduction
Thrombocytopenia is 2nd most common hematological disorder in pregnancy after anemia, and occur approximately 7-10% of pregnancy. There is a physiological decrease in platelet count during normal pregnancy due to haemodilution, increased consumption in peripheral tissue and increased aggregation (higher levels of thromboxane A2).
The physiological thrombocytopenia of pregnancy is mild and has no adverse effects on 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.
Thrombocytopenia is divided according to severity into mild (100,000 to 150,000), moderate (50,000 to100, 000) and severe (less than 50,000) thrombocytopenia [1].
Gestational thrombocytopenia, most common cause of thrombocytopenia during pregnancy (~ 75%), is a diagnosis of exclusion, associated with moderate thrombocytopenia. Platelet count < 70,000/µL exclude the diagnosis of gestational thrombocytopenia [2].
Thrombocytopenia associated with hypertensive disorders (preeclampsia, eclampsia, HELLP syndrome, acute fatty liver of pregnancy) is the second leading cause of thrombocytopenia in pregnancy (15- 20%). The pathophysiologic mechanism of thrombocytopenia in hypertensive disorders is the thrombotic microangiopathy characterized by endothelial injury, followed by platelet aggregation and thrombus formation in small vessels. The markers of thrombotic microangiopathy are the presence of schistocytes on peripheral blood smear and increased bilirubin >1.2 mg/ dL, decreased haptoglobin <25 mg/dl and increased LDH biochemically.
Immune thrombocytopenic purpura (ITP), an autoimmune disorder characterized by the anti-platelet glycoprotein antibodies that stimulate the platelet destruction in the spleen, is a rare cause of thrombocytopenia in pregnancy (3- 4%) [3]. Unlike gestational thrombocytopenia, ITP can occur anytime during pregnancy. Moreover, most pregnant women with ITP may have a history of thrombocytopenia prior to pregnancy or may present with other immune mediated diseases. The platelet count does not spontaneously improve postpartum and the therapeutic response to steroids or IVIG (intravenous immuno globulins) contributes to the diagnosis of ITP.

Material and Method
The present study was a prospective one year study from Jan 2018 to Dec 2018 in obstetrics and

gynecology department of Hind Institute of Medical Science. Total 990 obstetric patients were seen in obstetrics and gynecology department, among them 104 women were diagnosed with thrombocytopenia during pregnancy. These cases were included in the study irrespective of gestational age. Platelet count assessment had been done through automated blood count analyzer with routine antenatal hematological 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. Descriptive statistics were used, and percentages were calculated for qualitative variables like cause of thrombocytopenia, complications, maternal outcome. Babies of all cases had been tested for thrombocytopenia and were followed up for any complications.

Result

In this study, prevalence of thrombocytopenia in pregnancy was 10.5%. Among them 64 patients (61.53%) are of gestational thrombocytopenia, 34 cases (32.69%) were diagnosed as hypertensive disorder, 3 cases (2.88%) are of ITP and 2 patients (1.92%) was diagnosed dengue IgM positive and 1 patient (0.96%) was malaria positive.

Both Maternal complication (abruption 14.7% and PPH 8.8%) and fetal complication (still birth 5.88% and IUGR 14.7%) were found most commonly with hypertensive disorders with severe thrombocytopenia (<50,000/µL)

Table 1: Distribution of Cases According to Etiology of Thrombocytopenia

Causes of Thrombocytopenia	Total No. of Cases (104 patients)	Prevalence (%)
1. Gestational thrombocytopenia	64	61.53%
2. Hypertensive disorder of pregnancy	34	32.69%
Preeclampsia	24	23.07%
Eclampsia	8	7.69%
HELLP	1	0.96%
AFLP	1	0.96%
3. ITP	3	2.88%
4. Dengue	2	1.92%
5. Malaria	1	0.96%

Table 2: Maternal and Perinatal outcome in relation to etiology of Thrombocytopenia

Adverse outcome	Etiology of Thrombocytopenia					
	Gestational Thrombocytopenia (64 cases)	Preeclampsia/ Eclampsia (34 cases)	HELLP (1 case)	AFLP (1 case)	ITP (3 case)	Dengue/malaria (3 case)
Maternal Complication						
Abrutio placentae	1 (1.56%)	5 (14.7%)	1	-	-	-
Post partum hemorrhage	1 (1.56%)	3 (8.8%)	1	1	1	-
Incision site hematoma / oozing	4 (6.25%)	-	-	-	1	1
Fetal outcome						
Still birth	-	2 (5.88%)	-	-	-	-
Low birth weight / IUGR	2	5 (14.7%)	1	1	1	-
Neonatal Thrombo -cytopenia	-	-	-	-	2 (1.92%)	-

Discussion

The prevalence of thrombocytopenia in pregnant women is approximately 7 - 10% (4). Higher incidence of hypertensive disorder and infections justify the higher prevalence (10.5%) in this present study. In this study Overall, about 61.53% of cases are due to gestational thrombocytopenia, 32.69% secondary to hypertensive disorders; 2.88% due to an immune process, and the remaining 1–2% made up of rare immune thrombocytopenia, infections and malignancies.

Gestational thrombocytopenia was the most common cause of thrombocytopenia during pregnancy. The condition was asymptomatic, usually occurs in the second half of pregnancy, in the absence of a history of thrombocytopenia outside the pregnancy and the platelet counts falls upto 70,000/µL, spontaneously returns to normal levels within the first two months postpartum. Gestational thrombocytopenia was not associated with significant maternal or fetal risks exept for incision site oozing and does not require further investigation, only periodical monitoring of the blood count is enough.

Hypertensive disorders were the 2nd most common cause of thrombocytopenia during pregnancy in this study. Most of the patients were referred from primary and secondary care centres so they were not thoroughly investigated or treated so eventually developed into eclampsia and HELLP syndrome with moderate to severe thrombocytopenia (rarely upto 20,000/ µL) which were treated by early delivery with platelet transfusion after fetal lung maturity resulting in higher incidence of IUGR and still birth in this group. Abruptio placentae and PPH were significantly found in this group.

Early neonatal thrombocytopenia was present in 1.92% of study group in present study, which is slightly lower than figure quoted by Parnas *et al*. (2006) [5] (3.51%) neonates had moderate to severe thrombocytopenia.

Conclusion

In our study we concluded that early interdisciplinary evaluation of thrombocytopenia in pregnancy is required for optimal care of mother and the neonate as risk varies greatly depending on cause

of thrombocytopenia. Thus, platelet count estimation should be a routine at first antenatal visit for timely diagnosis and to achieve favourable fetomaternal outcome in all types of thrombocytopenia during pregnancy.

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