Section: Obstetrics and Gynaecology

Original Research Article

PREGNANCY OUTCOMES IN THROMBOCYTOPENIA

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ABSTRACT

Background: A low platelet count is often an incidental finding in pregnancy. It can be an indicator of a severe systemic disorder requiring emergent maternal and fetal care or can just be unique to pregnancy with no harm to mother or fetus. Physiological decrease in platelet count is seen in pregnancy due to hemodilution and hypercoagulating state, though the exact pathophysiology is still unclear.

Materials and Methods: It is a reterospective observational study done in a tertiary care centre.

Results: In about 16,898 cases 110 patients had thrombocytopenia (0.65%). The commonest etiology is found to be gestational thrombocytopenia (n=47, 42.8%) followed by preeclampsia/ eclampsia/ HELLP (haemolysis, elevated liver enzymes, low platelet count) syndrome (n=33, 30%). Only 2 patients had immune thrombocytopenicpurpura (ITP) and 6 (15.3%) were associated with amplified fragment length polymorphism (AFLP). Maximum of them (n=46, 41.8%) underwent spontaneous vaginal delivery. 2 patients (1.8%) had postpartum haemorrhage, 6 (5.4%) had ceserean section wound infection, 3 (2.7%) had disseminated intravascular coagulation (DIC) and 4 (3.6%) had multiorgan failure. 53 patients (48.2%) had platelet count between 1.5-1 lakh, 42 (38.2%) had between 1 lakh – 50.000, 15(13.6%) had <50,000 and none had their platelet count less than 20,000 per cumm.

Conclusion: Gestational thrombocytopenia is not a preventable condition. It is an incidental finding in pregnancy. With strict vigilance during intrapartum and postpartum period, even without any treatment proper for the same, the maternal and fetal outcome is found to be good.

Keywords: DIC, HELLP, Multiorgan failure.

INTRODUCTION

Megakaryocytes in bone marrow fragment to form thrombocytes also called as platelets. Circulating unactivated platelets are biconvex discoid structures, 2-3 micrometres in largest diameter. They remain in the peripheral circulation for eight to ten days and are cleared by macrophages. Platelets have a key role in primary hemostatic plug formation. Platelet count of less than 15*106 per cumm of blood is termed as thrombocytopenia. It is the second most common haematological abnormality seen in pregnancy next to anemia.[1] Although thrombocytopenia in pregnancy is not uncommon, it is not always severe. A low platelet count is often an incidental finding in pregnancy. Thrombocytopenia in pregnancy is easily detected as complete blood count is the initial evaluation done. It can be an indicator of a severe systemic disorder requiring emergent maternal and fetal care or can just be unique to pregnancy with no harm to mother or fetus.[2] Overall, around 75% of cases are due to gestational thrombocytopenia, 15-20% secondary to hypertensive disorders, 3-4% due to autoimmune process and 1-2% due to infections or malignancies.[3]

Gestational thrombocytopenia is a benign condition, seen in late second or third trimesters. Physiological decrease in platelet count is seen in pregnancy due to hemodilutionand hypercoagulating state, though the exact pathophysiology is still unclear. This is of milder degree and has no significant maternal or fetal adverse outcomes. Gestational thrombocytopenia is usually a diagnosis of exclusion.[4] Immune thrombocytopenic purpura (ITP) is an autoimmune

disorder characterized by destruction of circulating antibody bound platelets by reticuloendothelial system, particularly spleen. These antibodies cross the placenta placing the infant at a risk of thrombocytopenia. Thus ITP has potential risk to both mother and fetus in antenatal and postnatal period.[5]
There is no pathological test to differentiate ITP from GT, hence, history of bleeding, bruising, low platelets prior to pregnancy can help us. Preeclampsia with thrombocytopenia can occur in late second, third trimester, also infrequently seen in first week of postpartum. HELLP (haemolysis, elevated liver enzymes, low platelet count), a variant of preeclampsia is more fulminant. Amplified fragment length polymorphism (AFLP) and HELLP have overlapping features. The approach towards AFLP and HELLP is medical stabilization and expeditious delivery (irrespective of fetal condition) in intensive care unit in collaboration with physician and anaesthetist. Psuedo- thrombocytopenia is seen when anticoagulants like ethylene diaminetetraacetic acid (EDTA) are used when collecting blood, as they induce platelet aggregation and give false low platelet counts. A peripheral smear will establish a diagnosis in such cases (the platelets are arranged in stacks).[6]
Drugs such as aspirin, acetaminophem, heparin, methyldopa, cyclosporine and antibiotics like penicillin may cause thrombocytopenia. Treatment of HIV with thrombocytopenia involves highly active antiretroviral therapy (HAART).[4]
This study is an effort to say, gestational thrombocytopenia is not a matter to panic, unless it is associated with certain pathological conditions where maternal and fetal, morbidity and mortality are high.

MATERIAL AND METHODS

The study is conducted in a tertiary care center, in Department of Obstetrics and Gynaecology, from November 2022 to October 2023 being a retrospective observational study.
All the patients attending the out-patient department and admitted in in-patient department are investigated with their complete blood picture in automated blood counter. If thrombocytopenia is seen detailed history, clinical examination, peripheral smear and other related tests such as dengue, coagulation profile, renal and liver functions are done. Further, thrombocytopenia is classified as (1) mild = 1 lakh to 1.5
lakhs per cumm, moderate = 50,000 to 1 lakh per cumm and severe ≤50,000 per cumm.

Inclusion Criteria

All pregnant women in 3rd trimester

Exclusion Criteria

All pregnant women in 3rd trimester with mild thrombocytopenia.
A platelet count of less than 1 lakh is defined as thrombocytopenia by the international working group.[7]

Statistical Analysis

MS excel were used in analyses of the data.

RESULTS

Around 16,898 pregnant women screened, 110 patients were identified to have thrombocytopenia due to various causes. The patients with 19-35 years of age were encountered in our study (mean±SD=23.80±3.46) with a median of hospital stay being median (Q1-Q3) =4 (3-7) days. 58 cases (52.7%) were primigravida and 52 cases
(47.2%) were multigravida. [Table 1]
The most common etiology found in our study is gestational thrombocytopenia (n=47, 42.8%) (Table 1). Preeclampsia/ eclampsia/ HELLP syndrome had second position (n=33,30%). 18 patients (16.3%) had fever, of which 4 had dengue IgM reactive and 2 had widal positive.
6 patients (5.4%) had acute fatty liver of pregnancy (AFLP), all the 2 succumbed due to hepatic encephalopathy and not due to obstetrical causes. Another death was due to acute respiratory distress syndrome (ARDS) who was a patient of HELLP syndrome. 76 patients (69.09%) were successfully discharged whereas 5 patients (4.5%) went against medical advice. In the 33 patients (41.3%) who were associated with preeclampsia/ eclampsia/ HELLP syndrome, 19 had HELLP syndrome, 11 had mild preeclampsia and 2 had eclampsia .1 more patient (0.9%) had chronic hypertension. There is an overlapping of AFLP and HELLP syndrome patients. Maximum of our patients (n=53, 48.2%) had platelet count between 1.5-1lakh at admission. 42 patients (38.2%) had platelet 1 l a k h t o 5 0, 0 0 0 and 15 patients (13.6%) had <50,000. None had countsless than 20,000 in our study population. [Table 2]
46 patients (41.8%) had spontaneous vaginal delivery, 27 (24.6%) had induced vaginal delivery, 31 (23.9%) underwent LSCS for obstetrical indications only and not merely for thrombocytopenia. 4 cases of gestational thrombocytopenia were discharged and had regular follow up, one patient each of ITP and GT went against medical advice and missed their follow ups too. [Table 3]
Focussing on maternal complications (Table 4) 1 patient of HELLP syndrome had vaginal hematoma and underwent vaginal exploration. Postpartum haemorrhage was seen in 1 patient of AFLP and 1 patient of HELLP syndrome, all of the 2 patients (1.8%) underwent intrauterine tamponade to successfully arrest bleeding. 9 patients (8.1%) had caesarean section wound gape of which 2 had gestational thrombocytopenia, 3 wereassociated with fever, 1 had HELLP syndrome and 3 had preeclampsia. 1 patient (8of AFLP landed up in disseminated intravascular coagulation (DIC) and 2 in (MODS) multiorgan dysfunction syndrome. 4 patient's preeclampsia had acute kidney injury (AKI). All the patients with MODS and AKI

succumbed due to hepatitis. One patient of gestational thrombocytopenia and one with HELLP with DIC had paralytic ileus with hypokalaemia. If one patient of HELLP syndrome had ARDS, one more had respiratory failure. 8 patients had mild ascites and 1 patient had mild splenomegaly noted in ultrasound of abdomen. One patient with antepartum eclampsia with HELLP syndrome and one more with hepatic encephalopathy had their CT report showing posterior reversible encephalopathy syndrome (PRES). One patient with hepatic encephalopathy with MODS had CT showing venous thrombosis.

Table 1: Cause of thrombocytopenia

Cause	No. of patients	Percentage(%)
Gestational thrombocytopenia (GT)	47	42.8
Preeclampsia/eclampsia/ HELLP	33	30
Chronic hypertension	4	3.6
AFLP (acute fatty liver ofpregnancy)	6	5.4
Fever	18	16.4
Idiopathic thrombocytopenic purpura(ITP)	2	1.8
Total	110	100

Table 2: Platelet count (on admission)

Platelet count	No. of patients	Percentage (%)
1.5lakh – 1 lakh	53	48.2
1 lakh – 50,000	42	38.2
<50,000	15	13.6
	110	100

Table 3: Mode of delivery

Mode of delivery	No of patients	Percentage (%)
Spontaneous vaginal delivery	46	41.8
Induced vaginal delivery	27	24.6
LSCS	31	37.2
Instrumental vaginal delivery	1	0.9
Total	110	100

Table 4: Maternal complications

Maternal complications	Gestational thrombocytopenia	Preeclampsia/eclampsia/ HELLP	AFLP	Fever
Vaginal hematoma	0	1	0	0
Postpartumhemorrhage	0	2	3	0
LSCS wound gape	2	4	0	3
DIC	0	1	1	1
Multiorgan dysfunction syndrome	0	1	2	1
Acute kidney injury	0	4		1
Mortality		1		1

DIC- disseminated intravascular coagulation.

Table 5: Fetal outcome

Fetal outcome	Gestational thrombocytopenia	Preeclampsia/eclampisa/ HELLP	AFLP	Fever
Preterm live	6	4	1	6
Preterm still	41	27	1	9
Term live	0	1	1	1
Term still	0	1	3	2
	47	33	6	18

Table 6: Birth weight

Birth weight	No. of babies	Percentage (%)
Normal weight	44	40
Low birth weight	29	26.4
Very low birth weight	20	18.2
Extremely low birth weight	17	15.4
Total	110	100

DISCUSSION

The prevalence of thrombocytopenia in our study is 0.45% i.e. 46 cases in 11,258 cases which is much higher than the prevalence of 2-3 cases per 10,000 in studies like Nisaratanaporn.[8] The mean age in our study is 23.80±3.46 years (19-35 years), a maximum case were seen between 21-24 years age group which is similar to the study by Sumathy et al.9, 58 cases (52.7%) were primigravida and 52 cases(47.2%) were multigravida. comparable to 55.6% primi and 44.4% multi in the same study by Sumathy et al.[9] The most common etiology found in our study is gestational thrombocytopenia (42.8%),

similar results are found in study by Begum et al (49%), Vyas et al (44.6%) and Pallavi et al.[4,10,11] 41.3% of cases had hypertensive disorder of which,[14] had HELLP syndrome and 1 had chronic hypertension, comparable to study by Begum A et al where 36.5% cases of hypertension with 2 cases of chronic hypertension and 7 cases of HELLPwere seen,[4] 7 cases (15.3%) of AFLP are seen in our study similar to that by Zahida Parveen et al (n=7, 35%).53 cases of dengue and 2 cases of typhoid of which onehad sepsis and no cases of malaria are seen in our study. Sumathy et al study reported 10 patients of dengue, 5 patients of typhoid, 2 cases of intrauterine sepsis and 13 patients of malaria.[9] Only one case of ITP is found in our study who went against medical advice, follow up wasnot available.

We encountered 4 cases (8.6%) of PPH, all were atonic and intrauterine tamponade worked well in arresting bleeding. The studies by Sumathy et al had 8 cases of atonic PPH all managed medically; Pallavi et al showed 5.3% PPH, Arora et al showed 6 cases of PPH. 6 cases of caesarean section wound gape where one underwent exploratory laparotomy is seen in our study.[9,11,12] Thestudy by Pallavi et al showed 1% cases and that of Sumathy et al shows that 0.5% case of incisional site oozing,[9,11] 1 case of vaginal hematoma (2.17%) is seen which is similar to study by Pallavi et al having 1 case (2.5%) of episiotomy hematoma and Arora et al reported 5 (3.6%) cases of wound hematoma.[11,12] Audibert et al says 15% had cerebral bleeding, whereas our study has one patient with intracranial venous thrombosis and two patients with PRES (posterior reversible encephalopathy syndrome).[13] 4 patients had DIC (8.6%) and 1 patient hadARDS in our study whereas 4 cases of DIC and 1 case of ARDS are showed by Sumathy et al and 13.6% cases of DIC showed by Sibai et al.[9,14] 5 cases (2.7%) of placental abruption and 9.4% cases of abruption was reported by Sumathy et al and Pallavi et al respectively, but no cases of abruption were seen in our study.[9,11] None of our patients had hemoperitoneum similar to study by Arora et al.[12]

According to the British committee for standards in hematology the mode of delivery in women with thrombocytopenia should be decided primarily by obstetrical indications. There is no evidence to support the routine use of caesarean section.9 27 underwent vaginal delivery i.e. 19 (41.3%) had spontaneous and 8 (17.4%) had induced vaginal labour, 11 cases (23.9%) had caesarean section done for obstetrical indications only, and none underwent instrumental delivery in our study. 61.54% (n=80) had vaginal delivery and 36.26% (n=47) had caesarean section and 2.2% (n=3) had instrumental delivery in the study by Pallavi et al,[11] 7 patients were undelivered in our study of which 1 expired due to hepatic encephalopathy before delivering, 4 cases of gestational thrombocytopenia were discharged and had regular follow up, one patient each of ITP and GT went against medical advice and missed their follow ups too. One case of twin pregnancy was seen in our study. The study by Zahida Parveen et al had 12 cases undelivered, 5(41.6%) died due to hepatitis E, 7 (58.3%) hadgestational thrombocytopenia treated conservatively. Inour study, 16 patients out of 46 received platelets concentrations and 24 received blood transfusion,[5] 10 patients with HELLP syndrome, 3 with gestational thrombocytopenia, 2 with dengue fever and 1 with chronic hypertension with thrombocytopenia received platelets. Platelet transfusion was mostly done when platelet count was less than 50,000 per cumm. Due to the non-availability of platelets and unaffordability of the platelets, they were judiciously used to the critical patients. The current recommendation for safe vaginal delivery as reported by Provan et al is platelet count should be more than 30,000/cumm, for operative vaginal or caesarean section should be higher than 50,000/cumm and for epidural anaesthesia should be higher than 80,000/cumm.[15] Similarly, the study by Gernsheimer, spontaneous bleeding occurs when platelet count is less than 20,000/cumm and internal bleeding when less than 10,000/cumm.,[16] No patients in our study received IvIg (Immunoglobulins), or underwent splenectomy or plasmapheresis.

13 neonates (28.2%) had preterm birth and 25 (54.3%) had term birth. 11 (23.9%) of these had 11 still birth (8- preterm still and 3- term still birth). 23 babies had low birth weight in our study. The study by Pallavi S V et al showed 6% still birth and 19% intrauterine growth restriction, Arora M et al showed 14 cases of low birth weight and 11 cases of still birth.[11,12] Though HELLP is a severe condition, the fetal outcome was found to be good, whereas AFLP had the worst fetal outcome.

The mortality rate in our study is found to be 17.4%(n=8). Mortality rate in study by Zaheda Parveen et al is 28.1% (n=20) and 3.8% (n= 7) by Sumathy et al.5,9 Except for 8 deaths and 8 who went against medical advice, the rest had their platelet count in an increasing trend from day 3 onwards (few cases of HELLP had day 5 onwards). Their platelet count was monitored periodically. The study by Burrows et al showed normalizing platelet count by seventh postpartum day.[3]

CONCLUSION

Gestational thrombocytopenia is found to be the most common etiological factor for thrombocytopenia in pregnancy followed by preeclampsia/ HELLP syndrome.

Though many studies say Gestational thrombocytopenia is not seen below 1 lakh platelet count, our study had platelet count upto but not less than 50,000/ cumm. The worst maternal and fetal outcome (mortality) in thrombocytopenia in pregnancy is seen in AFLP (acute fatty liver of pregnancy). Hence, further research is required to conquer this dark side of obstetrics.

Gestational thrombocytopenia is not a preventable condition. It is an incidental finding in pregnancy.

With strict vigilance during intrapartum and postpartum period, even without any treatment proper for the same, the maternal and fetal outcome is found to be good.

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