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Pregnancy specific thrombocytopenia: Etiologies, maternal and neonatal outcome

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Abstract: *Thrombocytopenia is second to anaemia which is encountered during pregnancy. Causes for thrombocytopenia which are pregnancy specific are gestational thrombocytopenia, severe preeclampsia, HELLP syndrome, AFLP. In the present study we have assessed the causes of pregnancy specific thrombocytopenia and its maternal and neonatal outcome. Among all pregnant women attending OBG Outpatient department, those women with thrombocytopenia in complete blood examination were included in this study. Patients were evaluated further to find out the exact cause. The mean age of pregnant women with thrombocytopenia was 26±4.32 and gestational age was 36±3.41. Out of 107 cases, 73 (68.2%) patients were diagnosed with gestational thrombocytopenia, 22 (20.5%) were pre eclampsia and 12 (11.2%) were eclampsia. Out of 107 cases, PROM was observed in 24 patients (22.4%), 18 patients had antepartum haemorrhage, 13 (12.1%) patients had post partum haemorrhage, 6 (5.6%) patients had HELLP syndrome, 3 (2.8%) had DIC. Out of 107 cases neonatal death occurred in one case (0.9%) diagnosed as eclampsia and maternal deaths were observed in 3 patients (2.8%) diagnosed as eclampsia with DIC. Premature births noticed in 27 (25.2%) out of 107 cases. gestational thrombocytopenia is the most common cause of thrombocytopenia in pregnancy, which won't cause major impact on either mother or fetus.*

Key Words: *Pregnancy, Thrombocytopenia.*

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I. Introduction

Anaemia is the foremost clinical presentation in pregnancy among haematological disorders. Thrombocytopenia is second to anaemia which is encountered during pregnancy. Thrombocytopenia is defined as a platelet count <150 x10^9/l, caused by accelerated platelet destruction or decreased production. The normal reference range of platelets in non- pregnant women is 150 -400 x 10^9/l. Thrombocytopenia can be classified as mild with a platelet count of 100–150x 10^9/l, moderate at 50–100 x 10^9/l, and severe with less than 50 x 10^9/l [1].

Exact pathogenesis of thromobocytopenia in pregnancy is not understood, but due to hemodilution of plasma volume, platelet count may decrease by approximately 6.6 – 11.6% occurs during 3rd trimester [2], though absolute platelet count remains within normal reference range in most patients [3,4].

Causes for thrombocytopenia which are pregnancy specific are gestational thrombocytopenia (70-80%), severe preeclampsia (15-20%), HELLP syndrome (<1%), AFLP (<1%). Causes of thromobocytopenia which are not pregnancy specific are primary ITP (1-4%), secondary ITP (<1%), drug induced thrombocytopenia, Type IIB Von Willebrand disease, Congenital thrombocytopenia, TTP/HUS, systemic lupus erythrematosus, antiphospholipid syndrome, viral infections, bone marrow disorders, nutritional deficiency, splenic sequestration [5].

In pregnant women, thrombocytopenia occurs in 7-10% of the population; whereas in hypertensives prevalence of thrombocytopenia is up to 23%. Thrombocytopenia in pregnancy occurs 4 times more frequently than in thrombocytopenia in non pregnant women [6,7].

In severe thrombocytopenia cases, there is difficulty in ensuring adequate hemostasis during labor, c section or during any operational procedure in post partum. During placental separation there is a fast blood flow in maternal vessels, which may manifest as massive bleeding, maintaining good hemostasis in this step is challenging aspect [8,9].

In the present study we have assessed the causes of pregnancy specific thrombocytopenia and its maternal and neonatal outcome.

II. Materials and Methods

A prospective study on pregnant women with thrombocytopenia was carried out at Department of OBG, Fathima Institute of Medical Sciences, Kadapa from January 2018 to June 2019. A total of 107 pregnant women with thrombocytopenia were included as a studied population. Informed consent related to study, took from the studied population after giving an explanation about relevance of this study.

Inclusion Criteria:
All pregnant women irrespective of gestational age

Exclusion Criteria:
Previous pregnancy with thrombocytopenia
Pregnant women diagnosed previously with platelet disorders
Medical diseases associated with pregnancy such as SLE, hypertension, hepatitis, HIV infection, presence of splenomegaly
Patients on steroid, NSAIDS therapy and who underwent splenectomy.

Routine investigations advised for all pregnant women are complete blood examination, Bleeding time, clotting time, renal & liver function tests, HIV, HBV, HCV, VDRL, TSH profile, Vitamin D3, Calcium and routine ultrasonography. Among all pregnant women attending OBG Outpatient department, those women with thrombocytopenia in complete blood examination were included in this study.

Pregnant women with thrombocytopenia were further evaluated by other investigations to find out the exact cause such as Antiphopholipid antibodies, prothrombin time, activated partial thromboplastin time, fibrinogen, coombs test, anti platelet antibody testing, VWD type IIB testing. Pregnant women with fever have been tested for viral infections.

For study population, platelet count was estimated once in each trimester, and in postpartum period at 1 and 6 weeks. Patients were managed according to their obstetrical presentation. Babies of all cases had been tested for thrombocytopenia and also followed up for any complications.

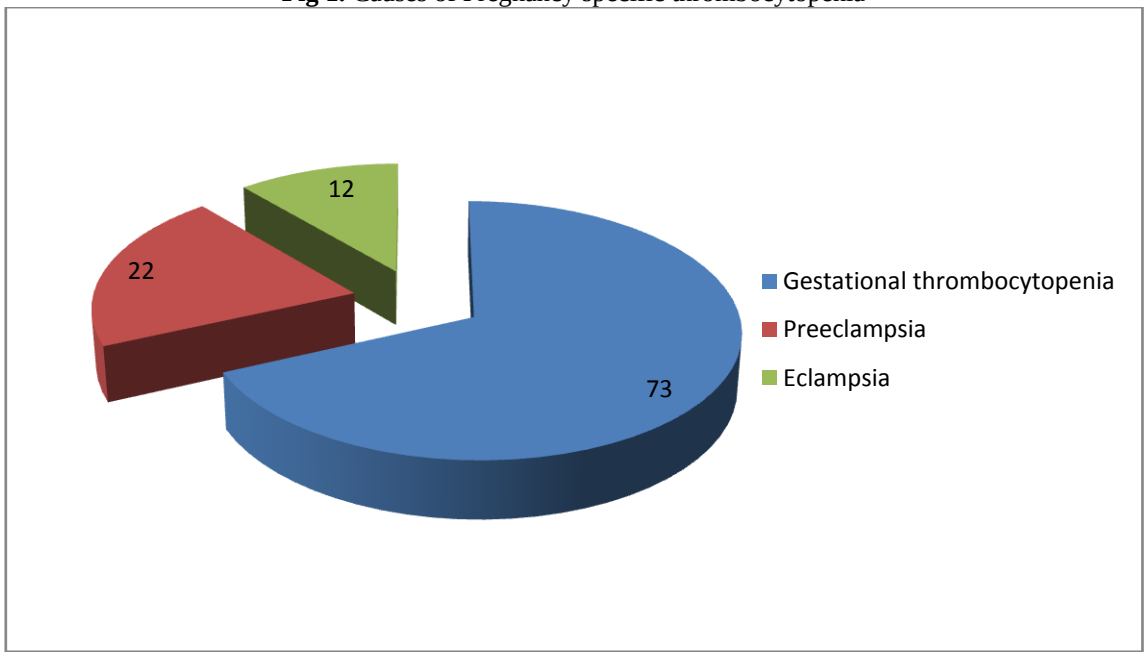
All the data pertaining to study was evaluated and tabulated. Statistical analysis has been done for all qualitative variables in the form of numbers, percentages.

III. Results

A total of 107 pregnant women with thrombocytopenia were assessed further; all these cases are booked. The mean age of pregnant women with thrombocytopenia was 26±4.32 and gestational age was 36±3.41. The parity status of these cases was multigravida 58 (54.2%) and primigravida 49 (45.7%).

Among pregnancy specific thrombocytopenia causes, gestational thrombocytopenia was observed predominantly. Out of 107 cases, 73 (68.2%) patients were diagnosed with gestational thrombocytopenia, 22 (20.5%) were pre eclampsia and 12 (11.2%) were eclampsia.

Fig 1. Causes of Pregnancy specific thrombocytopenia



On assessment of maternal and neonatal outcome, out of 107 cases neonatal death occurred in one case (0.9%) diagnosed as eclampsia and maternal deaths were observed in 3 patients (2.8%) diagnosed as eclampsia with DIC. Premature births noticed in 27 (25.2%) out of 107 cases. . Out of 107 cases, PROM was observed in 24 patients (22.4%), 18 patients had antepartum haemorrhage, 13 (12.1%) patients had post partum haemorrhage, 6 (5.6%) patients had HELLP syndrome, 3 (2.8%) had DIC. Out of 73 gestational thrombocytopenia, 6 cases had premature rupture of membranes, 2 cases had antepartum haemorrhage and no post partum haemorrhage, neonatal and maternal deaths (Table 1). Most common mode of delivery performed in this study was vaginal; out of 107 cases, 63 (58.8%) were vaginal delivery and 44 (41.1%) were underwent caesarean section.

Table no 1: Maternal and Neonatal outcome assessment

Maternal Outcome			Neonatal Outcome		
Outcome	No. of patients	Percentage	Outcome	No. of patients	Percentage
PROM	24	22.4%	Prematurity	27	25.2%
APH	18	16.8%	Neonatal deaths	1	0.9%
PPH	13	12.1%			
HELLP syndrome	6	5.6%			
DIC	3	2.8%			
Maternal deaths	3	2.8%			

IV. Discussion

Gestational thrombocytopenia in pregnancy accounts for 70-80% of cases and usually occurs in mid-second to third trimester. Though the pathogenesis behind this is not clear, but hemodilution and accelerated clearance are postulated. It will resolve within six weeks of post partum period, but may recur with subsequent pregnancies. Usually gestational thrombocytopenia is not associated with neonatal thrombocytopenia [10].

Gestational thrombocytopenia is also known as incidental thrombocytopenia of pregnancy. Thrombocytopenia is the second most common hematologic abnormality during pregnancy and is usually a benign condition [11]. The prevalence of thrombocytopenia in pregnancy ranges from 6% to 10% [12,13,14].

Among pregnancy specific thrombocytopenia causes, gestational thrombocytopenia was observed predominantly. Out of 107 cases, 73 (68.2%) patients were diagnosed with gestational thrombocytopenia, 22 (20.5%) were pre eclampsia and 12 (11.2%) were eclampsia. Out of 107 cases, PROM was observed in 24 patients (22.4%), 18 patients had antepartum haemorrhage, 13 (12.1%) patients had post partum haemorrhage, 6 (5.6%) patients had HELLP syndrome, 3 (2.8%) had DIC as per this study.

Michal Parnas et al [15] did a study by comparing 199 pregnant women with moderate to severe thrombocytopenia (platelet count below 100 _ 109/l) with 201 pregnant women without thrombocytopenia, found that the main causes of thrombocytopenia were gestational thrombocytopenia (GT) (59.3%), immune thrombocytopenic purpura (ITP) (11.05%), preeclampsia (10.05%), and HELLP (Hemolysis, elevated liver enzymes and low platelet count) syndrome (12.06%).

Nadine Ajzenberg et al [16] did a study on 50 pregnant women with associated thrombocytopenia. it was found that an autoimmune disorder in 48% of the women, and chronic thrombocytopenia in 55%. A familial thrombocytopenia was evidenced in 1 case. These 50 women gave birth to 63 neonates, among whom 24 were thrombocytopenic, either at birth or during the first week of life.

Shital N Kapadiya et al [14] observed 64.16% patients with gestational thrombocytopenia, 15% PIH and preeclampsia, 3% eclampsia and DIC each among obstetric related cause for thrombocytopenia in pregnancy. Medical cause was also reported as 2.5% hypersplenism, 1.67% hepatic disorders, 5.83% malaria, 2.5% megaloblastic anemia and 1.67% ITP.

Xiaoyue Wang et al [17] did a retrospective study among thrombocytopenia in pregnancy found that 117 (60.0%), 55 (28.2%), and 23 cases (11.8%) of pregnancy-associated thrombocytopenia (PAT), idiopathic thrombocytopenia (ITP), and hypertensive disorder in pregnancy (PIH), respectively. Patients with PIH had a higher percentage of premature delivery and of lower birth weight infants than patients in the other 2 groups. They have reported postpartum hemorrhage in 7 women due to obstetric factors, including 4 cases of uterine inertia, 2 cases of placental abruption, and 1 of placenta previa.

Vijay Zutshi et al [18] noticed as the prevalence of gestational thrombocytopenia was 12.82%. Fetomaternal outcome was favorable. A total of five (2.5%) patients suffered from abruption. Postpartum hemorrhage was present in about 7 cases (3.5%). Blood transfusion including platelet transfusion was needed in around 13 cases (6.5%). There was no maternal mortality. Only 6 (3%) neonates were having thrombocytopenia (platelet count $< 150 \times 10^9$/L) regardless of degree of maternal thrombocytopenia. Twenty-six (13%) neonates were admitted in nursery for monitoring; among these, 11 (5.5%) neonates' ventilation was needed. There was no neonatal death.

Women with gestational thrombocytopenia can treat same as pregnant women without thrombocytopenia, they don't require any alteration of regular care and treatment other than platelet screening. If thrombocytopenia is detected unexpectedly at term, there is no necessary to do fetal blood sampling [2].

V. Conclusion

We conclude that gestational thrombocytopenia is the most common cause of thrombocytopenia in pregnancy, which won't cause major impact on either mother or fetus. Patients with moderate to severe thrombocytopenia with varied etiology, pointing to higher degree of severity of the primary disease, can lead to increase in perinatal complications. Pregnant women with thrombocytopenia have to investigate further to find out the exact cause, patient can be managed accurately.

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