Thrombocytopenia in Pregnancy: An Observational Study

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Abstract

Objective: To determine the etiology, and outcome of thrombocytopenia in pregnancy.

Study design, settings and duration: An Observational hospital based study was conducted at Isra University hospital Hyderabad for three years from 1st January 2009 to 31st December 2011.

Patients and Methods: Total 3576 obstetric patients were admitted in Obstetrics & Gynecology department during this period of whom 71(1.9%) had thrombocytopenia in pregnancy. Depending on the number of platelets; thrombocytopenia was divided into four groups, i.e. those having platelets below 20,000, between 20-50,000, between 50-100,000 and more than 100,000. Patients with chronic liver disease and drug induced thrombocytopenia were excluded from the study. A pre-designed structured proforma was used. All results were analyzed on statistical software SPSS version 16 Frequencies and percentages were calculated, the final outcome was recorded.

Results: The most common cause of thrombocytopenia was gestational thrombocytopenia seen in 24(33.8%) patients followed by HELLP syndrome (26.7%) and hepatitis E in 10(16.3%) patients. There were 11 cases who had platelets below 20,000, 18 had levels between 20-50,000 and 19 had between 50-100,000. The common symptoms were bleeding seen in 30(42.2%) cases and purpura or easy bruising seen in 11(15.4%) cases while, 30 cases were asymptomatic. Of 11 cases that had platelets below 20,000, 10 mothers died along with their 7 babies while, only 3 surviving babies were those of mothers dying of post partum hemorrhage. Eighteen mothers had platelets between 20-50,000 and out of these 9 mothers and 11 neonates died. Nineteen mothers had platelets between 50-100,000 and out of these one mother and 3 neonates died. Overall maternal mortality was 20(28.1%). Maternal and fetal deaths occurred in almost all cases with DIC, HEV and malaria while, in PPH mothers died but their newborns survived irrespective of platelet count.

Conclusion: Diseases causing platelets below 50,000 in pregnancy should be rated as high risk pregnancies and dealt with accordingly to reduce high fetal or maternal mortality.

Key words: Pregnancy, fulminant hepatic failure, HELLP syndrome.

Introduction

Thrombocytopenia is defined as a platelet count of less than 150,000/Ul¹. It is mild if the platelet count is between 100-150,000, moderate when it is at 50-100x10⁹/L and severe with less than 50x10⁹/L². Thrombocytopenia is second only to anemia as the most common hematologic abnormality during pregnancy³. Some causes are unique to pregnancy, whereas others can be serious systemic medical conditions that have been previously undiagnosed and may have serious bleeding consequences at delivery or for which thrombocytopenia may be an indicator of a more severe systemic disorder requiring emergent maternal and fetal care⁴. The incidence of thrombocytopenia in pregnancy is 8% with gestational thrombocytopenia being the most leading cause accounting for almost 70% of all cases. Thrombocytopenia is most pronounced in the third trimester⁵, where the platelet count usually remains above 110x10⁹/L and rarely goes as low as 70x10⁹/L in otherwise healthy pregnant cases⁶. Hypertensive disorders like pre-eclampsia and HELLP (Hemolysis, elevated liver enzymes and low platelets count) syndrome accounts for 21% cases. Maternal platelet count returns to normal values usually within 3-5 days of delivery⁷. Low platelets are responsible for maternal deaths and still births due to placental abruption and preterm delivery⁸. Immune mediated thrombocytopenia including idiopathic thrombocytopenia purpura and neonatal autoimmune thrombocytopenia are responsible for 4.1% cases. Other less common causes include systemic lupus erythmatosis, antiphospholipid syndrome, disseminated intravascular coagulation, thrombotic thrombocytopenia purpura, fatty liver, human immune deficiency virus (HIV) infection and medications⁹. The cause of gestational
Thrombocytopenia is unclear although it might be increased plasma volume seen in pregnancy. Idiopathic thrombocytopenic purpura (ITP) is an autoimmune disorder characterized by destruction of circulating antibody bound platelets by reticuloendothelial system, particularly in the spleen. In the pregnant cases the antibody crosses the placenta placing the infant at risk of thrombocytopenia. Thus treatment of women with ITP during pregnancy is a complex problem, especially to the potential risk of hemorrhage in both mother and fetus during the antenatal and peripartum periods.

The present study was done to study the different causes of low platelets in pregnancy in our setup and see its relation to the outcome in mother and child.

**Patients and Methods**

This was a hospital based case record analysis conducted at Isra University hospital, Hyderabad from 1st January 2009 to 31st December 2011. Total 3576 obstetric patients were admitted in the obstetrics & gynecology department during this period and among them 71(1.9%) had thrombocytopenia along with pregnancy and these case records were included in the study.

Thrombocytopenia was classified based on the severity into four main groups which were (i) mild if the platelet count was between 100-150x10³ cells/µl, (ii) moderate when the platelet count was between 50-100x10³ cells/µl, (iii) severe when the platelet count was between 20-50x10³ cells/µl and (iv) very severe when platelets were less than 20x10³ cells/µl. Patients with chronic liver disease, drug induced thrombocytopenia and discharged on request due to non affordability were excluded from this study. A pre designed structured proforma was used to collect information about patient’s demography, socioeconomic status and complete obstetrical history including previous antenatal record if present. All patients underwent clinical examination, routine laboratory tests (complete blood count, peripheral smear, LFTs, coagulation profile, antinuclear antibodies) while, viral serology were performed in selected cases when needed. Obstetrical examination along with obstetrical intervention was done when needed. Patients with fulminant hepatic failure or those with severe disseminated intravascular coagulation were managed with supportive care in the intensive care unit in collaboration with the departments of medicine and gastroenterology & hepatology respectively.

Descriptive statistics were used and percentages were calculated for qualitative variables like cause of thrombocytopenia, complications, maternal and fetal outcome. Mean±Standard deviation were calculated for age of the patient and gestational age. SPSS version 16 was used for statistical analysis.

**Results**

The mean age of patients was 30.8(±5.594) years. The youngest patient was 17 years old and oldest was 39 years old. The mean gestational age was 33.26(±5.9) weeks. The parity status of these cases was multigravida 38(53.5%), primigravida 29(40.8%) and grand multipara 4(5.6%). Majority of the patients 47(60.1%) did not receive antenatal care. The time of diagnosis and clinical characteristics of these patients is given in Table-1.

<table>
<thead>
<tr>
<th>Diagnosis of thrombocytopenia</th>
<th>Before pregnancy</th>
<th>During pregnancy</th>
<th>During labour</th>
<th>Symptoms of haemostatic impairment</th>
</tr>
</thead>
<tbody>
<tr>
<td>No symptoms</td>
<td>30(42.2%)</td>
<td>11(15.4%)</td>
<td>30(42.2%)</td>
<td></td>
</tr>
<tr>
<td>Purpura or Easy bruising</td>
<td>1(1.4%)</td>
<td>55(77.4%)</td>
<td>15(21.1%)</td>
<td></td>
</tr>
</tbody>
</table>

**Table 1: Diagnosis and clinical characteristics of thrombocytopenia cases. (n=71)**

**Complications of thrombocytopenia**

- Post partum haemorrhage: 35(49.2%)
- Renal failure: 4(5.6%)
- None: 32(45%)
- Women needs transfusions: 42(59.1%)
- Whole blood: 27(38%)
- Fresh frozen plasma (FFPS): 21(29.5%)

**Results**

The common cause of thrombocytopenia was gestational thrombocytopenia 24(33.8%) followed by HELLP syndrome comprising 19(26.7%). Acute hepatitis...
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Of the 71 cases, 59 (83%) patients delivered while, 12 (16.9%) were undelivered. Out of 12 undelivered cases, 5(41.6) were in very critical condition due hepatitis E and died undelivered while, 7(58.3%) were diagnosed as gestational thrombocytopenia in second trimester and treated conservatively. Out of 59 delivered cases, 17(23.9%) had uterine packing due to severe postpartum hemorrhage, 6(8.4%) required total abdominal hysterectomy and in 1(1.4%) case, B-Lynch brace suture was applied. Overall maternal mortality was 20(28.1%) (Table-3). Fetal and perinatal outcome of delivered patients showed miscarriage 1(1.4%), preterm delivery 15(21.1), stillborn 20(28.1%), and 23(32.3%) new born remained alive (Table-4).

Table 4: Fetal Outcome. (n=59)

<table>
<thead>
<tr>
<th>Variables</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miscarriage</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>Preterm delivery</td>
<td>15</td>
<td>21.1</td>
</tr>
<tr>
<td>IUD</td>
<td>23</td>
<td>32.3</td>
</tr>
<tr>
<td>Remain alive</td>
<td>23</td>
<td>32.3</td>
</tr>
<tr>
<td>Causes of IUDs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis E</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td>Prematurity due help syndrome</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Malaria</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Abruptio placenta due to severe pre clampsiaHELPP syndrome</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Intrauterine death due to unknown cause</td>
<td>7</td>
<td>20</td>
</tr>
<tr>
<td>Neonates needs hospitalization</td>
<td>27</td>
<td>38</td>
</tr>
</tbody>
</table>

Discussion

In the present study the frequency of thrombocytopenia was 1.9% which, is much higher than the prevalence of 2-3/10,000 in other studies. Thrombocytopenia in pregnancy is caused due to accelerated platelet consumption or haemodilution, anti platelet antibodies but neither their presence nor absence can be used to diagnose the disorder or differentiate it from immune thrombocytopenic purpura. Often one has to wait till the postpartum period to differentiate between gestational thrombocytopenia of pregnancy which, resolves itself following delivery or immune thrombocytopenia which does not subside after delivery. The most common cause of thrombocytopenia in our study was gestation which has a favorable pregnancy outcome even in the third trimester of pregnancy. Idiopathic thrombocytopenic purpura (ITP) was found in two patients out of which one patient died due to severe post partum haemorrhage, while infants of both case survived and did not require any treatment. Other workers have also reported that thrombocytopenia in the neonates is rare and does not cause bleeding complications.

Thrombocytopenia due to HELLP syndrome and severe preeclampsia were the 2nd common cause (42.6%) in our study. Majority of our patients were referred from secondary care hospitals who remained unbooked throughout the pregnancy and came in emergency in critical condition. Activation of both the coagulation and fibrinolytic systems leads to the development of severe thrombocytopenia and disseminated intravascular coagulation (DIC) which occurs in some patients with preeclampsia, and plays a role in stimulating platelet activation and accelerated clearance. We observed that HELLP syndrome caused hemolysis, altered liver functions, lowering of platelets and severe hypertension in our patients and was associated with high maternal and fetal morbidity and mortality due to placental abruption, preterm deliveries, low APGAR scores, intrauterine growth retardation, stillbirths and maternal deaths. Similar complications were reported by other workers. In mothers we observed severe postpartum hemorrhage in those having HELLP syndrome, coagulopathy associated with dead fetus and acute viral hepatitis and same was reported by others. We observed hepatitis E associated severe thrombocytopenia and coagulopathy in 10(14%) patients, while Khuroo reported disseminated intravascular coagulation in 21.3% cases. Malaria related thrombocytopenia was associated with maternal and fetal deaths in our study and, same findings were reported other authors. Abnormalities in platelet structure and function or invasion of platelets by malarial parasites have been described as a consequence of malaria.

References