Low Platelets Counts as a Predictor of Preeclampsia in High Risk Pregnant Females

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INTRODUCTION

Pregnancy Induced Hypertension (PIH) is one of the most prevalent and potentially life threatening complications of pregnancy. It comprises of gestational hypertension, preeclampsia as well as eclampsia. Preeclampsia is defined as platelet thrombocytopenia which can appear. There are several studies which can have significant role in etiopathogenesis of preeclampsia1. Out of all the hematological fluctuations, which occur in the presence of preeclampsia, the thrombocytopenia or low platelet count is most common. It is classically defined as platelet count <150,000/mm³.8 The extent of thrombocytopenia up surges or in other words platelet count further decreases with the increasing severity of hypertensive disorder of pregnancy, as well as, lower platelet count can rise the rate of feto-maternal morbidity and mortality9. Most of the studies observed significant decrease in platelet count during normal pregnancy. There is a significant decrease in platelet count especially during second and third trimesters. Thrombocytopenia can result from decrease in platelet production or accelerated platelet destruction.10 Thus this study was designed to determine the association of platelet count with pre-eclampsia.

The objective of the study was to find the association of low platelets count with hypertensive pregnancy in patients presenting during second trimester of pregnancy

MATERIAL & METHODS

This was a Case control study was conducted in the Department of Obstetrics & Gynecology, Lahore General Hospital, Lahore during a period 6 months from March to August 2019. Sample size was 200 females, calculated keeping confidence level=95%, margin of error=6.5% and frequency of PIH = 29% among Asian population. Sampling technique used was Non probability, consecutive sampling

Inclusion: Females aged between 15-45 years

Cases: 100 Pregnant Females diagnosed with PIH/preeclampsia beyond 24 weeks gestation of pregnancy were included

Control: 100 healthy pregnant females with no risk factors (normal pregnancy)

Exclusion Criteria: Hemorrhagic disorder before pregnancy, patients taking medicines which cause thrombocytopenia or chronic hypertension were excluded from the study

Procedure: Two hundred females attending the antenatal clinical of Department of Obstetrics & Gynecology were included. Informed consent was obtained. Demographic details of patients were obtained. Patients were divided in
two groups i.e. cases with preeclampsia or PIH and control without hypertensive disorder of pregnancy. Cases were subdivided in to mild or moderate to severe preeclampsia. After a detailed history, lab investigation and clinical examination were done as per hospital protocol. Blood sample was taken and sent to the laboratory for assessment of platelet count. Reports were assessed and platelet count was noted. If level was <1.5lac/mm³, then low platelet count was labeled. All the data was recorded in proforma.

Data Analysis: SPSS version 21.0 was used to enter and analyzed the data. Association of low platelet count with preeclampsia was measured by calculating odds ratio with 95% confidence interval. OR>1 was taken as significant.

RESULTS
In this study, we included 200 patients; 100 cases and 100 controls. The mean age of cases was 24.85±8.03 years and the mean age of controls was 27.56±8.12 years. The mean gestational age of cases was 32.30±7.23 and control was 26.86±6.93. Table 1 shows that 66% cases were primiparous and 34% multiparous. The 68% of multiparous was in control group (Table 1).

The mean platelet count of cases was 1.526 ±0.514 lac/mm³ and controls was 2.10±0.392 lac/mm³. The difference was significant (P = 0.001). Low platelets count was 66% in cases and 32% in controls, which was significantly associated with hypertensive disorder of pregnancy (OR=6.47, 95% CI; 3.36-12.45, p=0.001) (Table 2).

Table 2: Platelets count in cases versus controls

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Case (n=100)</th>
<th>Control (n=100)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platelets count(lac/mm³)</td>
<td>1.526±0.514</td>
<td>2.10±0.392</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Low platelet count</td>
<td>57(77%)</td>
<td>17(23%)</td>
<td>6.47</td>
</tr>
<tr>
<td>Normal platelet count</td>
<td>43(34.1%)</td>
<td>83(65.9%)</td>
<td>(3.36-12.45)</td>
</tr>
</tbody>
</table>

Table 3: Distribution of platelet count in different stage of hypertensive disorder of pregnancy (n=100)

<table>
<thead>
<tr>
<th>Platelets count (cells/mm³)</th>
<th>PIH</th>
<th>Mild preeclampsia</th>
<th>Severe preeclampsia</th>
<th>Eclampsia</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1</td>
<td>4(21.1%)</td>
<td>3(15.8%)</td>
<td>8(42.1%)</td>
<td>4(21.1%)</td>
<td>19</td>
</tr>
<tr>
<td>1-1.5</td>
<td>10(27.8%)</td>
<td>6(16.7%)</td>
<td>18(50%)</td>
<td>2(5.6%)</td>
<td>36</td>
</tr>
<tr>
<td>1.5-2</td>
<td>3(13.6%)</td>
<td>10(45.5%)</td>
<td>7(31.8%)</td>
<td>3(11.1%)</td>
<td>23</td>
</tr>
<tr>
<td>&gt;2</td>
<td>2(9.1%)</td>
<td>9(40.9%)</td>
<td>6(27.3%)</td>
<td>5(22.7%)</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>28</td>
<td>39</td>
<td>13</td>
<td>100</td>
</tr>
</tbody>
</table>

DISCUSSION
Hypertension is one of the most common obstetrics problems, leading in preeclampsia and eclampsia which is turned associated with thrombocytopenia. Preeclampsia is one of the world’s main mortality and morbidity among females, especially in developing countries. Approximately 6% preeclampsia affects in all pregnancies. More often in the 20-30 age group primigravidas. In unites States, Preeclampsia accounts for 17.6% of maternal deaths.

The mean age of the cases in present study was 24.85±8.03 years as compared to 24.75±3.36 years in Prakash J; 25.52±4.38 years in Priyadarshini G et al and 25±3.02 years in Kumar et al study. We observed that there is little or no difference in age between normal healthy pregnant females and patients with severity of pregnancy due to hypertension. Mostly females fall in 25-35 years age group. However, in Chaware et al study the maximum number of patients in mild preeclampsia, severe preeclampsia and eclampsia were in the age group of 20-24 yrs.
Thirty females were taken as control, while among cases, 27 had preeclampsia and 27 females had eclampsia. There was significantly (P < 0.01) less platelet count in females with preeclampsia and highly significant (P < 0.001) in females with eclampsia than females in controls.\(^\text{18}\)

**CONCLUSION**

Platelet count is a very important investigation for the pregnant females having PIH. Our study results showed that reduced platelet count is significantly associated with hypertensive disorder or especially preeclampsia. This information can help to enhance the current data and helps the obstetricians to screen the pregnant females for platelet count in order to predict the risk of pre-eclampsia. So it can be concluded that platelets counts to be used as an optimal screening test for early detection of preeclampsia and prediction of its severity, more study is therefore needed in this field.

**REFERENCES**


