

Thrombocytopenia in Preeclampsia: An Earlier Detector of HELLP Syndrome

Pages with reference to book, From 230 To 232

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Abstract

Platelet count was determined in eighty four pregnant women by direct visual method. Among them thirty normal pregnant women were taken as control. Twenty-seven were preeclamptic and twenty-seven eclamptic women. There was significant ($P < 0.01$) reduction in platelet count of preeclamptic and highly significant ($P < 0.001$) in eclamptic women as compared to controls. It is concluded that there is need to do platelet count in all pregnancy induced hypertensive women, which can be an earlier detector for HELLP syndrome (JPMA 47:230, 1997).

Introduction

Pregnancy induced hypertension is a condition occurring after 20th week of gestation and is diagnosed when two or more of the conditions are present as shown in Table 1¹⁻²

Table I. Signs and symptoms for diagnosis of pregnancy induced hypertension.

1. Blood pressure	>140/90 mm Hg
2. Proteinuria	>5 gm/24 hours
3. Oliguria	<400 ml in 24 hours
4. Oedema	Positive
5. Weight gain	>3.6 kg/week after twentieth week of pregnancy.

Eclampsia is defined as occurrence of convulsions and or Coma in patients with signs and symptoms of preeclampsia³⁻⁵. Patients with preeclampsia may present the composite picture of thrombocytopenia alongwith abnormal liver functions⁶. Thrombocytopenia is a term used to describe low platelet count i.e., platelet count less than 100,000/mm³^{6,7}. Thrombocytopenia in most patients with preeclampsia is moderately severe, the platelet count usually remains above 50,000/mm³⁸.

Calculation

$$\text{Platelet count} = \frac{\text{Number of cells counted} \times \text{dilution} \times 10^6}{\text{Volume coated}}$$

per liter

Thus if N is the number of platelets counted in an area of 1 mm³ (0.1 ul in volume). The number of platelets per liter of blood.

$$\begin{aligned} &= \frac{N \times 20 \times 10^6}{0.1} \\ &= N \times 10 \times 20 \times 10^6 \\ &= N \times 200 \times 10^6 \\ &= N \times 0.2 \times 10^9 \end{aligned}$$

$$\text{Normal range} = 150-400 \times 10^9 / \text{l.}$$

Statistical Analysis

Statistical analysis was done using Chi Square method.

The present study was done to see the alterations in platelet counts in patients suffering from pieeclampsia and eclampsia and compare them with controls.

Patients and Methods

Eighty-four pregnant women admitted in obstetrics and gynaecology departments of Civil Hospital and Jinnah Postgraduate Medical Centre, Karachi were included in this study. Thirty had normal pregnancy and fifty-four had pregnancy induced hypertension. Both groups of women (control and patients) were in third trimester of pregnancy. None of the women had received any blood transfusion previously. About 2 ml of blood was drawn from each woman by an aseptic method from the antecubital vein puncture and was kept in a small capped bottle with anticoagulant for assessing platelet count which was estimated by direct visual method using the following formula:

Results

The height, age and gestational age of pregnancy induced hypertensive women and control groups were comparable (Table II).

Table II. Height, age, parity and gestational age of normal pregnant, pre-eclamptic and eclamptic women.

	Height (cms)	Age	Parity	Gestational age (weeks)
Normal pregnant women (30)	137.86 ±0.95	28.43 ±0.69	2.46 ±0.38	35.00 ±0.48
Preeclamptic women (27)	136.44 ±0.99	28.75 ±0.60	*0.66 ±0.16	35.74 ±0.59
Eclamptic women (27)	138.59 ±1.00	28.07 ±0.92	*0.62 ±0.18	35.66 ±4.74

The values are expressed as mean and standard error of mean. The number of cases are given in parenthesis.

*P<0.001 Highly significant as compared to normal pregnant women.

Weight of eclamptic women was significantly increased (P<0.001) as compared to control group and weight of preeclamptic women was also markedly increased (P<0.01) as compared to normal pregnant women (Table III).

Table III. Weight and blood pressure levels of normal pregnant, preeclamptic and eclamptic women.

	Weight (kg)	Blood pressure Systolic mm Hg	Diastolic mm Hg
Normal pregnant women (30)	58.93±1.16	121.16±1.28	80.66±1.21
Preeclamptic women (27)	61.33 (P<0.01)±1.31	162.22±2.68 (P<0.001)	109.6±1.59 (P<0.001)
Eclamptic women (27)	67.25(P<0.001)±1.39	180.90±2.26 (P<0.001)	116.48±0.99 (P<0.001)

The values are given as mean and standard error of mean. The number of cases are given in parenthesis.

Highly significant (P<0.001) increase in both systolic and diastolic blood pressure was observed in pregnancy induced hypertensive women as compared to controls (Table III). Platelet count of preeclamptic women decreased significantly (P<0.01) as compared to controls while in eclamptic women highly significant (P<0.001) decrease in platelet count was observed as compared to normal pregnant women (Table IV).

Table IV. Platelet count of normal pregnant, preeclamptic and eclamptic women.

	Platelet count ($10^9/L$)
Normal pregnant women (30)	203.40 \pm 25.04
Preeclamptic women (27)	122.96 \pm 7.77 (P<0.01)
Eclamptic women (27)	58.26 \pm 3.68 (P<0.001)

The values are expressed as mean and standard error of mean. Number of cases is given in parenthesis.

Discussion

Thrombocytopenia in pregnancy induced hypertensive women may be due to increased consumption of platelets with increased megakaryocytic activity to compensate. Platelets adhere to areas of damaged vascular endothelium resulting in secondary destruction of platelets^{9,10}. Platelets from severely preeclamptic patients showed less response than normal to a variety of aggregating agents suggesting that platelets may have undergone previous aggregation in the microcirculation. Sonic platelets can aggregate temporarily and after releasing sonic of their active constituents return to the peripheral circulation¹¹. Prostacyclin is an important cicosanoid that exerts strong inhibition of platelet aggregation. There is continuous availability of this cicosanoid from blood vessels which keeps circulating platelets in a dispersed and disaggregated form⁹. Deprivation of this prostacyclin makes the circulating platelets even more vulnerable to aggregation. Removal of aggregated platelets might be responsible for thrombocytopenia often observed in pregnancy induced hypertension¹². Thus it is concluded from the present study that a low platelet count could be present in pregnancy induced hypertensive women with mild illness, indicating the need to do platelet count in all patients with preeclampsia.

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