

A Hospital Based Observational Assessment of the Platelet Count in the Pregnant Women

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Conflict of interest: Nil

Abstract:

Aim: To assess the Platelet Count in the Pregnant Women visiting the hospital.

Methodology: The present study was planned in Department of Pathology, Anugrah Narayan Magadh Medical College and Hospital (ANMMCH), Gaya, Bihar for a period of 9 months. In the present study, 120 pregnant females' samples received for the platelet estimation were enrolled in the present study out of which 60 (50%) had thrombocytopenia and 60 (50%) were without thrombocytopenia. The records of pregnant women with proved platelet abnormalities and normal pregnancy at 2nd/3rd trimester. Relevant data were obtained from case files like socio-demographic characteristics of mothers, obstetric history, signs and symptoms in mother at presentation, laboratory data, and maternal and perinatal outcomes. Those cases with pre-existing hypertension, having associated co morbid diseases such as diabetes mellitus, auto immune disorders, ITP, neoplastic diseases, heart diseases and cases on anticoagulants were excluded from the study. All the patients were informed consents. The aim and the objective of the present study were conveyed to them.

Results: The commonest age group in cases as well as controls was 21-25 years (38.3% and 41.7% respectively) followed by less than 20 years of age group (28.3% and 26.7% respectively). Most of the cases belonged to the mild preeclampsia (50%) group followed by cases with severe preeclampsia (25%). The incidence of eclampsia was found 8%.

Conclusion: From this study, it can be concluded that clinically platelet indices can be a useful screening test for early identification of preeclampsia and eclampsia. Also platelet indices can assess the prognosis of this disease in pregnant women and can be used as an effective prognostic marker because it correlates with severity of the disease.

Keywords: Platelets, Thrombocytopenia, Pregnancy, Trimester.

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Introduction

The platelet is one of the key elements of human blood. Platelets play an essential role in the process of thrombogenesis, as well as an important role in atherogenesis and the progression of atherosclerotic lesions [1]. A pregnant woman may face various medical challenges during her

pregnancy and one such challenge is a low platelet count or Thrombocytopenia. Thrombocytopenia, or a low blood platelet count, is encountered in 7-12% of all pregnancies [2]. Women are more commonly diagnosed with platelet disorders during pregnancy since screening

is done as part of the initial clinic evaluation with automated blood counts. Thrombocytopenia can result from a wide range of conditions with several of them being pregnancy related [3].

Normal pregnancy is characterized by physiological fall in platelet count. Platelet count decreases by an average of 10% during pregnancy [4]. Physiological fall in the platelet count occurs as a result of hemodilution and because of rise in physiological strain on endothelium resulting in platelet aggregation in blood vessels and thus decrease in number of platelets in circulation [5]. Thrombocytopenia is defined as the subnormal number of platelets in the circulating blood, usually less than 1,50,000/cu mm [6]. It is classified as mild with platelet count 100-150 x 10⁹ /l, moderate at 50-100 x 10⁹ /l, and severe with less than 50 x 10⁹ /l [7]. Thrombocytopenia complicates up to 10% of all pregnancies [8] and is second most common haematological abnormality during pregnancy following anemia [6].

Documenting the course of platelet counts throughout normal pregnancies is not only important for understanding the mechanism of gestational thrombocytopenia; it is also essential for the accurate evaluation of incidentally discovered thrombocytopenia in pregnant women. Low platelet counts at delivery, which are typically mild but may be as low as 43,000/mL [9, 10], are well described, occurring in 5% of women without other disorders or complications of pregnancy [11]. However the time during pregnancy when thrombocytopenia occurs is not clearly described [10, 12].

The frequency and intensity of maternal thrombocytopenia varies and likely is dependent on the intensity of the disease process, duration of pre eclampsia, and the frequency with which platelet count are performed. Overt thrombocytopenia, defined by a platelet count less than 100,000/mm³ indicates severe disease. In

most cases, delivery is indicated because the platelet count continues to decrease. After delivery, the platelet count increases progressively reach a normal level within 3 to 5 days. Decrease in platelet count is proportional to severity of disease. Assessment of platelet count is a simple, cost effective & sensitive method to know the prognosis & fetomaternal outcome in preeclampsia & eclampsia. The present study was conducted to assess the Platelet Count in the Pregnant Women visiting the hospital.

Methodology

The present study was planned in Department of Pathology, Anugrah Narayan Magadh Medical College and Hospital (ANMMCH), Gaya, Bihar for a period of 9 months. In the present study, 120 pregnant females' samples received for the platelet estimation were enrolled in the present study out of which 60 (50%) had thrombocytopenia and 60 (50%) were without thrombocytopenia. Following were the inclusion and exclusion criteria for the present study.

Inclusion Criteria: The records of pregnant women with proved platelet abnormalities and normal pregnancy at 2nd/3rd trimester.

Exclusion criteria: All cases with preexisting hypertension other than PIH. Patients having co morbid conditions such as Severe anaemia, Diabetes mellitus, History of auto immune disorder, History of Idiopathic Thrombocytopenic Purpura, History of receiving drugs like aspirin, anti-coagulants etc.

Relevant data were obtained from case files and compiled by a common proforma that included socio-demographic characteristics of mothers, obstetric history, signs and symptoms in mother at presentation, laboratory data, and maternal and perinatal outcomes. The data collection was followed by analysis of the collected data. Clinical details of all cases were documented. Those cases with pre-existing hypertension, having associated

co morbid diseases such as diabetes mellitus, auto immune disorders, ITP, neoplastic diseases, heart diseases and cases on anticoagulants were excluded from the study. All the patients were informed consents. The aim and the objective of the present study were conveyed to them.

Results

Table 1: Age groups in both the groups

Age	Cases: with thrombocytopenia (n=60)	Control: without thrombocytopenia (n=60)	Total (n=120)
<20 years	17 (28.3%)	16 (26.7%)	33 (27.5%)
21-25 years	23 (38.3%)	25 (41.7%)	48 (40%)
25-30 years	13 (21.7%)	12 (20%)	25 (20.83%)
>30 years	7 (11.7%)	7 (11.7%)	14 (11.67%)

Most of the cases belonged to the mild preeclampsia (50%) group followed by cases with severe preeclampsia (25%). The incidence of eclampsia was found 8%.

Table 2: Mean platelet count in cases and controls

Conditions	Platelet Count ($\times 10^9$ /L)
Cases	27-368
Mild Pre-eclampsia	65-370
Severe Pre-eclampsia	28-263
Controls	27-35

Discussion

The occurrence of mild thrombocytopenia at delivery in women with normal pregnancies is well established. The symmetrical distribution of platelet counts at delivery has led to the common belief that physiologic changes of pregnancy cause lower platelet counts in all women, resulting in some women with platelet counts that fall below the lower limit of normal [13-15].

Pregnancy is associated with complex changes involving blood coagulation, a transient mild thrombocytopenia is seen due to increased platelet consumption [16]. Hypertension is one of the most common obstetric problems resulting in preeclampsia and eclampsia which in turn

The commonest age group in cases as well as controls was 21-25 years (38.3% and 41.7% respectively) followed by less than 20 years of age group (28.3% and 26.7% respectively). From the results it can be said that age was an important criterion and there was difference in the occurrence of thrombocytopenia in different age groups.

associated with thrombocytopenia [17]. The obstetrician nowadays rely increasingly on laboratory test for the management of pregnant women [18]. The most common cause of thrombocytopenia in pregnancy is preeclampsia and eclampsia and also found associated with increased risk of perinatal complications such as abruptio placenta, preterm delivery, low Apgar score and still birth [19-21]. The estimation of platelet indices is a reliable method [22].

In our study, most cases belonged to the mild preeclampsia (50%) group followed by cases with severe preeclampsia (25%). Due to small sample size in the present study, the incidence of eclampsia however was much lower (8%) as compared to the other studies. In a study from Bhopal by

Anand and Kirshnanand et al. [23], majority of the cases had preeclampsia (66.36%) and the rest eclampsia (33.64%). Wolde et al.'s [24] study showed preeclampsia as the most common hypertensive disorder of pregnancy (51.9%); followed by eclampsia (23.4%), HELLP syndrome (8.9%), mild preeclampsia (7.6%), and simple gestational HTN (5.1%). These differences could be due to small sample size of our study and the social ethnic and cultural difference in group of population studied as noted by Wolde et al. [24] who has quoted black race as one of the risk factors for PIH.

Shete AN et al. conducted a study to assess the Physiological stress during Pregnancy Induced Hypertension and observed a significant decrease in platelet count [25]. Vrunda JK et al. [16] (2004) in their study on platelet count in PIH patients observed that thrombocytopenia is directly proportional to the severity of PIH [26]. Mohapatra S et al. [15] (2007) in their study in S.C.B Medical College, Cuttack observed that there is an inverse relationship between the severity of PIH and platelet numbers [26-28].

Conclusion

From this study, it can be concluded that clinically platelet indices can be a useful screening test for early identification of preeclampsia and eclampsia. Also platelet indices can assess the prognosis of this disease in pregnant women and can be used as an effective prognostic marker because it correlates with severity of the disease. Further large scale investigation is needed in this field to prove it.

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