

PLATELET PARAMETERS IN BLOOD DONORS : AN OBSERVATIONAL STUDY IN A TERTIARY CENTRE IN NORTH-EAST INDIA

Pathology

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ABSTRACT

Introduction Platelets are responsible for maintaining the haemostatic physiology and vascular integrity in humans. Clinical manifestations may be due to both quantitative and qualitative abnormalities related to platelets. A low platelet count and high mean platelet volume is observed in north-east India. **Aim** To determine the platelet count, Mean Platelet Volume (MPV), and Platelet Distribution Width (PDW) in blood donors and correlate platelet count with Mean Platelet Volume and Platelet Distribution Width. **Results And Observations** In the study, the mean age of the donors was 31.4 ± 7.0 years. The mean of platelet count, MPV and PDW was found to be 2.2 ± 0.7 lacs, 11.8 ± 1.5 fl and 15.9 ± 4.2 fl respectively. A significant negative correlation was found between platelet count and MPV with correlation coefficient of -0.713 ($p < 0.001$). There is also negative correlation between platelet count and PDW with correlation coefficient of -0.670 ($p < 0.001$). **Conclusion** As per the present study, there is an inverse correlation between platelet count and MPV and PDW.

KEYWORDS

Platelet count, Mean Platelet Volume, Platelet Distribution Width

INTRODUCTION

Platelets are responsible for maintaining the haemostatic physiology and vascular integrity in humans. Clinical manifestations may be due to both quantitative and qualitative abnormalities related to platelets. The reference interval for platelet count varies as per the geographical location of the population. As per previous studies, Harris Platelet Syndrome (HPS) is the commonest inherited giant platelet disorder reported among the blood donors of north-eastern India, where significantly low platelet count with raised Mean platelet volume (MPV) is observed¹. MPV and Platelet distribution width (PDW) are platelet indices which can be routinely obtained as a part of automated blood count.

AIM

To determine the platelet count, Mean Platelet Volume (MPV), and Platelet Distribution Width (PDW) in blood donors and correlate platelet count with mean platelet volume and platelet distribution width.

MATERIALS AND METHODS

The study was conducted in the State-of-the-Art Model Blood Centre, Assam Medical College and Hospital, Dibrugarh, Assam and included 100 blood donors who were found to be eligible for blood donation after undergoing routine donor screening. The blood samples for the study were collected in EDTA vials and were analysed in Sysmex XN-550 haematology analyser. Sysmex analysers use the DC sheath flow detection method to count platelets as well as red blood cells. After obtaining the platelet count, MPV, PDW, the data was analysed using Microsoft Excel and IBM SPSS.

RESULTS AND OBSERVATIONS

The study was carried out in 100 blood donors with a mean age 31.4 ± 7.0 years. The Mean platelet count was 2.2 ± 0.7 lacs/mm³, mean of Mean Platelet Volume was 11.8 ± 1.5 fL and mean of Platelet distribution width was 15.9 ± 4.2 fL. A significant negative correlation was found between platelet count and MPV with correlation coefficient of -0.713 ($p < 0.001$).

There is also negative correlation between platelet count and PDW with correlation coefficient of -0.670 ($p < 0.001$). In the study, maximum blood donors (47) had platelet count in the range of 1.5 to 2.4 lacs/mm³. Most of the blood donors had mean platelet volume in the range of 10 to 14.9 fL and platelet distribution width in the range of 10 to 14.9 fL. Table 2 and table 3 shows the distribution of mean platelet volume and platelet distribution width. Table 4 and Figure 1 shows the correlation of platelet count with MPV and PDW.

Table 1: Platelet Count Distribution

Platelet count (in lacs/mm ³)	No. of donors
< 1.5	12
1.5 – 2.4	47

2.5 – 3.4	34
3.5 – 4.5	7

Table 2: Mean Platelet Volume Distribution

MPV (in fL)	No. of donors
< 10	7
10 – 11.9	47
12 – 13.9	34
14 – 16.0	12

Table 3: Platelet Distribution Width

PDW (in fL)	No. of Donors
< 10	2
10 – 14.9	47
15 – 19.9	32
20 – 24.5	17
≥ 25	2

Table 4: Correlation of Platelet count with MPV and PDW

Variable	Correlation Coefficient	p-value
MPV	-0.713	<0.001
PDW	-0.670	<0.001

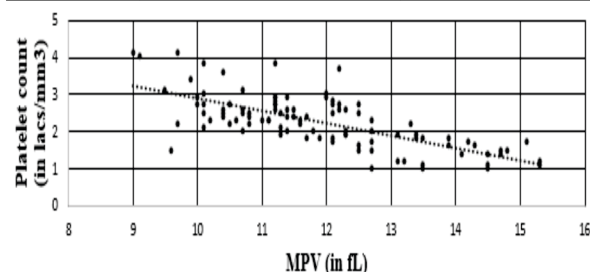


Figure 1: Correlation of Platelet count with MPV

DISCUSSION

In the present study, the Mean platelet count was 2.2 ± 0.7 lacs/mm³ and the mean of MPV was found to be 11.8 ± 1.5 fL. In a study in blood donors of West Bengal by Naina et al², the mean platelet count was found to be 1.38 ± 5.6 lacs/mm³ and the MPV was 11.6 ± 2.0 fL. Our study found significant negative correlation between platelet count and mean platelet count with correlation coefficient of -0.713 and $p < 0.001$. Similar results were found in studies by Sultan et al³ and Giovanetti et al⁴.

CONCLUSION

The present study analyzed the platelet count and platelet indices of healthy blood donors and found negative correlation of platelet count with mean platelet volume and platelet distribution width which was in concordance with similar studies in the past. Further studies including

greater number of study subjects from diverse ethnic groups residing in the north eastern part of India will provide greater information regarding platelet count and platelet indices in the community.

Conflict Of Interest

None

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