International Journal of Life Sciences, Biotechnology and Pharma Research Vol. 13, No. 8, August 2024 Online ISSN: 2250-3137
Print ISSN: 2977-0122

DOI: 10.69605/ijlbpr_13.8.2024.32

ORIGINAL RESEARCH

Variations in platelet parameters in the geriatric age group in hospital based population of Jammu region

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Received Date: 24 June, 2024 Acceptance Date: 22 July, 2024

ABSTRACT

Background: Aging refers to the natural and inevitable process of growing older over time. The present study was conducted to assess variations in platelet parameters in the geriatric age group. **Materials & Methods:** 500 subjects aged >65 years of both genders were selected. 2 groups were made. Group I were 500 subjects (aged >65 years) and group II was healthy control 505 subjects (aged 20-30 years). 5 ml venous blood was taken in a test tube, and a platelet count and MPV was assessed with a 5-part hematology analyser. **Results:** Out of 500 patients, males were 280 and females were 220. The mean platelets count in males was 184.2 $X10^9$/l and in females was 225.4 $X10^9$/l. The mean MPV was 10.4 Fl in males and 10.9 FL in females. The difference was significant (P< 0.05). The mean platelets count in group I was 206.7 $X10^9$/l, and in group II was 218.4 $X10^9$/l. The mean MPV was 10.3 Fl in group I and 10.8 FL in group II. The difference was non-significant (P< 0.05). **Conclusion:** There is no statistically significant difference between the young adult control group and the healthy old population in terms of platelet volume and count. Therefore, it is not required to have distinct values for mean platelet volume and platelet count in the elderly.

Key words: Aging, platelets, hematology

INTRODUCTION

Aging refers to the natural and inevitable process of growing older over time. It is a complex biological, psychological, and social phenomenon that affects all living organisms, including humans.[1] Biological aging refers to the physical changes that occur as an individual grows older. These changes can include a decrease in organ function, changes in the skin, hair, and vision, a reduction in bone density, and a decline in muscle mass. Biological aging is influenced by genetics, lifestyle factors, and environmental exposures.[2]

Platelets circulate at 150,000 to 450,000/mm3 and have no nucleus. Megakaryocytes, which are larger and polyploid in nature, give rise to platelets, which are smaller in size. Platelets are distributed through a monolayer at 7 to 21 per 100 field on a Wright stained wedge film to determine their average diameter, which is 2.5 m.[3] This equates to a mean platelet volume (MPV) of 8 to 10 Fl. At the time of synthesis in the bone marrow, variations in platelet size are determined, and these differences may lead to cardiac issues. Heterogeneity in platelets develops during thrombopoiesis. It is independent factors that determine platelet function, not aging, that cause platelet size to decline.[4]

Primary thrombocytosis is caused by myeloproliferativeneoplasia and other bone marrow diseases, whereas secondary thrombocytosis can occur due to metabolic disorders (e.g., iron deficiency), infections and chronic inflammation (e.g., tuberculosis, chronic inflammatory bowel disease), posttraumatic disorders (e.g., surgery with considerable blood loss, injuries), or hyposplenism, or in the context of paraneoplastic disease in patients with metastatic cancer, or in regenerative thrombocytosis (e.g., after chemotherapy, hemolytic disease).[5,6] The present study was conducted to assess variations in platelet parameters in the geriatric age group.

MATERIALS & METHODS

The present study consisted of 500 subjects aged >65 years of both genders reporting to hematology department of GMC Jammu. All gave their written consent to participate in the study.

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Data such as name, age, gender, etc. was recorded. 2 groups were made. Group I were 500 subjects (aged >65 years) and group II was healthy control , 505 subjects (aged 20-30 years). 5 ml venous blood was taken in a test tube and assessment of platelet count and MPV was done with 5-part haematology analyser. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 500		
Gender	**Male**	**Female**
Number	280	220

Table I shows that out of 500 patients, males were 280 and females were 220.

Table II Assessment of parameters in males and females

Parameters	Males	Females	P value
Platelets ($X10^9$/l)	184.2	225.4	0.08
MPV (Fl)	10.4	10.9	0.92

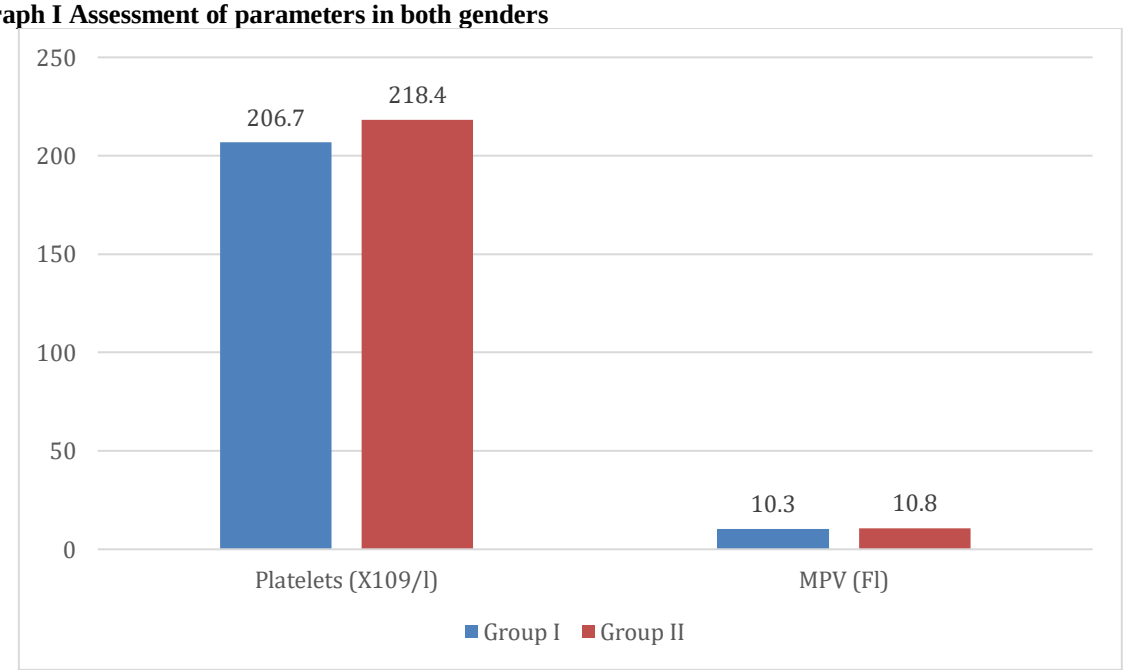
Table II shows that the mean platelets count in males was 184.2 $X10^9$/l and in females was 225.4 $X10^9$/l. The mean MPV was 10.4 Fl in males and 10.9 FL in females. The difference was non- significant (P< 0.05).

Table III Assessment of parameters in both genders

Parameters	Group I	Group II	P value
Platelets ($X10^9$/l)	206.7	218.4	0.09
MPV (Fl)	10.3	10.8	0.85

Table III, graph I shows that the mean platelets count in group I was 206.7 $X10^9$/l, and in group II was 218.4 $X10^9$/l. The mean MPV was 10.3 Fl in group I and 10.8 FL in group II. The difference was non- significant (P< 0.05).

Graph I Assessment of parameters in both genders



DISCUSSION

Platelets, the smallest circulating blood cells, are produced in the bone marrow and play a crucial role in hemostasis, but also have extrahemostatic functions.[7] There are many reasons for altered platelet counts, which can manifest as either thrombocytopenia or thrombocytosis.[8] Thrombocytopenia or thrombocytosis can occur as an imbalance between platelet production in the bone marrow, consumption in the peripheral tissues, and platelet distribution within the organs.[9] Whereas no circumstances are known to increase platelet lifespan (in contrast to, e.g., red blood cells), the lifespan of platelets is shorter in conditions with increased platelet consumption.[10]The present study was conducted to assess variation in platelet parameters in geriatric age group.

We found that out of 500 patients, males were 280 and females were 220. Ojha et al[11] calculated normal range of platelet count to find relationship between

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platelet count and MPV with age and sex in 202 people visiting hematology department, 100 as cases and 102 as controls. Results showed that platelet count is higher in females and young individuals while platelet volume is higher in elderly males. The study shows that there is an insignificant difference between platelet count and MPV between the elderly population and young control.

We observed that the mean platelets count in males was 184.2 $X10^9$/l and in females was 225.4 $X10^9$/l. The mean MPV was 10.4 Fl in males and 10.9 FL in females. We found that the mean platelets count in group I was 206.7 $X10^9$/l, and in group II was 218.4 $X10^9$/l. The mean MPV was 10.3 Fl in group I and 10.8 FL in group II. Biinoet al[12] identified age- and sex-specific reference intervals for platelet count. Platelet count was similar in men and women until the age of 14, but subsequently, women had steadily more platelets than men. The number of platelets decreases quickly in childhood, stabilizes in adulthood, and further decreases in oldness. The final result of this phenomenon is that platelet count in old age was reduced by 35% in men and by 25% in women compared with early infancy. Based on these findings, reference intervals for platelet count ×109/L in children (176–452), adult men (141–362), adult women (156–405), old men (122–350) and, old women (140–379) was estimated.

The limitation of the study is the small sample size.

CONCLUSION

Authors found that there is no statistically significant difference between the young adult control group and the healthy old population in terms of platelet volume and count. Therefore, it is not required to have distinct values for mean platelet volume and platelet count in the elderly.

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