

ORIGINAL ARTICLE



OPEN ACCESS

Received: 11-01-2025

Accepted: 29-08-2025

Published: 30-12-2025

Citation: K Sneha, SJ Parvati. A Clinico-Pathological Study of Platelet Count in Geriatric Age Group. 2025; 15(4):246-250. <https://doi.org/10.58739/jcbs/v15i4.25.22>

* Corresponding author.

snehark93@gmail.com

Funding: None

Competing Interests: None

Copyright: This is an open access article distributed under the terms of the [Creative Commons Attribution License](https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Published By Sri Devaraj Urs Academy of Higher Education, Kolar, Karnataka

ISSN

Print: 2231-4180

Electronic: 2319-2453



1 Background

Platelets play a major function in sealing the openings in the vascular tree by forming the primary hemostatic plug ¹. There are clear age-related changes in platelet count and function, driven by changes in hematopoietic tissue, the composition of the blood and vascular health ².

Platelets play a key role in primary hemostasis and mediate immune defense. Platelet count decreases

during aging, is higher in women than in men ³.

The normal platelet count (defined as the values between percentiles 2.5 to 97.5 in normal individuals) is given as 150 to 400 × 10⁹/L; classically, thrombocytopenia is defined as a platelet count of less than 150 × 10⁹/L. Thrombocytopenia can be classified as severe (platelet count less than 20 × 10⁹/L), moderate (platelet count 20 to 70 × 10⁹/L), or mild (above 70 × 10⁹/L) ⁴.

A Clinico-Pathological Study of Platelet Count in Geriatric Age Group

Sneha K^{1*}, Parvati S Jigalur²

1 Postgraduate student, Department of Pathology, KIMS, Hubballi, Karnataka, India.

2 Professor, Department of Pathology, KIMS, Hubballi, Karnataka, India.

Abstract

Background: Platelets play a major function in sealing the openings in the vascular tree by forming the primary hemostatic plug. There are clear age-related changes in platelet count and function, driven by changes in hematopoietic tissue, the composition of the blood and vascular health. **Objectives:** 1. To study the variation of platelet count in Geriatric age group of both sexes. 2. To study the grading of variation in platelet count in geriatrics with clinicopathological correlation. **Materials and Methods:** It is a Prospective study of 2 years from May 2018 to April 2020 carried out in KIMS, Hubballi. A statistically significant sample size was 400. **Results:** the present study found that the majority of the geriatric cases showed normal platelet count 75.25%. Thrombocytopenia noted in 72 cases and were of mild degree. Thrombocytopenia was common in males and majority belonged to 6th decade. Reactive thrombocytosis was common in females. One case of Idiopathic thrombocytopenic purpura was found on bone marrow examination. **Conclusion:** Platelet count significantly showed the variation as aging progress. Diagnosis and Grading of thrombocytopenia in geriatrics play a crucial impact on the treating clinician, for the further systemic and therapeutic approach towards the patients.

Keywords: Geriatrics; Platelet count; Thrombocytopenia

Idiopathic thrombocytopenic purpura (ITP) platelets get coated by antibodies and those platelets are destroyed by the cells of mononuclear phagocytic system in the spleen⁵.

Chronic ITP is a disease of adults due to the synthesis of antibodies against GP IIb /IIIa or GP Ib/IX antigens on platelet surface. Bleeding time (BT) is prolonged and PT, APTT are normal. Bone marrow examination is not diagnostic of ITP. Bizzoni et al. retrospective study, concluded that, in elderly patients, ITP is a relatively benign disease⁶.

1.1 Aims and Objectives

1. To study the variation of platelet count in Geriatric age group of both sex.
2. To study the grading of variation in platelet count in geriatrics with clinicopathological correlation.

2 Materials and Methods

Inclusion criteria: All men and women aged 60 years and above.

Exclusion criteria:

1. Clotted blood sample and inadequate blood sample.
2. All men and women aged less than 60 years.

Type of Study and Period: Prospective two years study (from May 2018 to April 2020).

Sample Size and Statistical Analysis: Considering 95% confidence limit with 5% of confidence interval, minimum sample size is 340. Present study included 400 as a sample size.

Statistical analysis: Data was entered into Microsoft excel data sheet and analyzed using SPSS 22 version software. One sample or two sample t test with mean and standard deviation was done for the significance of the data

Graphical representation of data: MS Excel and MS word was used to obtain various graphs. P value (probability that the result is true) of <0.05 was considered as statistically significant after considering all the rules of the tests.

Collection of Data: After the informed consent, under aseptic precaution blood sample was taken into EDTA tube, then sample were analyzed for CBC by using SYSMEX XN-350 series hematology autoanalyzer later peripheral smears were made and

stained with Leishman stain. Brief clinical details collected

3 Results

The present study includes 400 elderly patients aged 60 years and above conducted in the department of Pathology, Karnataka institute of medical sciences, Hubballi.

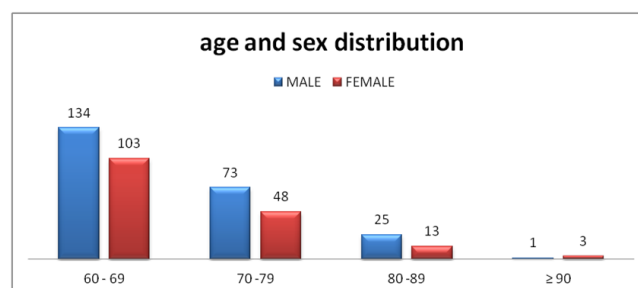


Fig. 1: Graph depicting combined age and sex distribution of cases

The present study showed male predominance of about 58.25% (233) cases majority of cases between age group 60-69 years (237 cases) with, and females population comprised around 41.75% (167) cases Fig. 1.

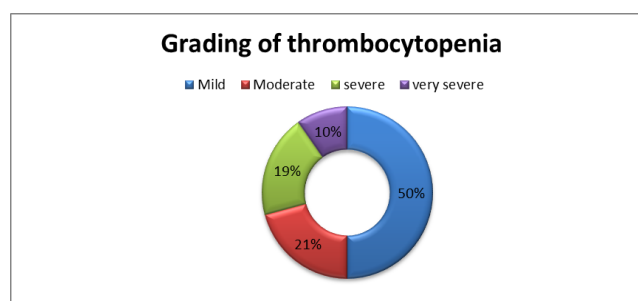


Fig. 2: Summary of grading of thrombocytopenia

The study found that out of 72 cases of thrombocytopenia, half of the cases were having mild decrease in the platelet count 50 % (36) cases ,moderate and severe grade of thrombocytopenia was seen in 21% (15) cases and 19% (14) cases. very severe thrombocytopenia was seen in 10% (7) cases Fig. 2.

The present study Table. 1 found that 75.25% (301) of cases were having normal levels of platelet count, 18

(72) cases showed thrombocytopenia and 6.75% (27) cases showed reactive thrombocytosis Fig. 3.

One case of ITP (Immune thrombocytopenic purpura) was diagnosed after the bone marrow studies. Microscopy of bone marrow studies showed increase the number of megakaryocytes.

Table 1: Summarizes Age wise and Sex wise distribution of platelet count among geriatrics

	60-69	70-79	80-89	≥90	total cases	percentage
Thrombocytopenia						
Males	33	13	4	0	50	12.5
Females	16	6	0	0	22	5.5
Normal platelet count						
Males	92	58	20	1	171	42.75
Females	78	38	11	3	130	32.5
Thrombocytosis						
Males	9	2	1	0	12	3
Females	9	4	2	0	15	3.75
Total	237	121	38	4	400	100

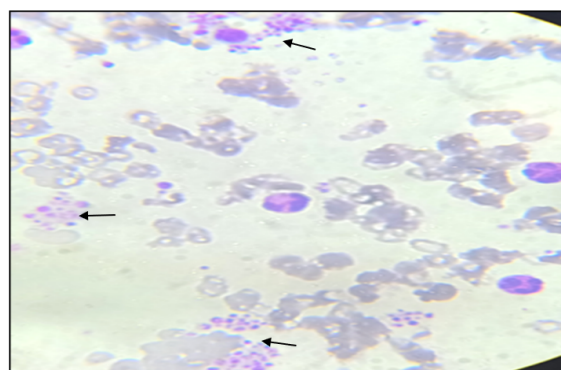


Fig. 3: Peripheral smear showing platelet clumps (black arrows)- case of Reactive Thrombocytosis, Leishman stain (40X)

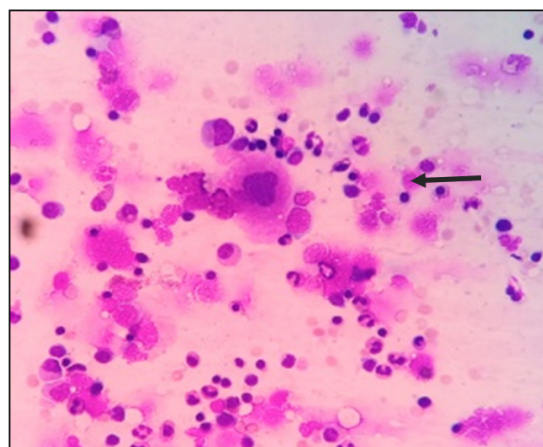


Fig. 4: Bone marrow aspirate showing hypolobated megakaryocyte (black arrow)- case of Idiopathic thrombocytopenic purpura, Leishman stain (100X)

4 Discussion

Platelets are the one's which play a major role in acute bleeding manifestation by forming a primary haemostatic plug and also shows age related variations in its value.

In the present study 171 males and 130 females had normal platelet count.

Among these 50 males and 22 females showed platelet count less than 1.5 lakhs/cumm. Both males (30 cases) and females (13 cases) presented with thrombocytopenia predominantly in 6th decade. Almost the values were within the normal limit in both 8th and 9th decade Table. 2.

Table 2: Comparative study of platelet count among geriatrics

Platelet count (lakh)	Raina et al. ⁷ (N=168)	Present study (N=400)
<1.5	19.1%	18%
1.5- 4	60.7%	75.25%
>4	20.2%	6.75%

Table 3: Comparative study of mean platelet count with respect to sex

Present study	Males (platelet count: mean \pm SD)	Females (platelet count: mean \pm SD)
Toryila et al. ⁸	N=210 (1.61 \pm 3)	N=190 (2.14 \pm 3.1)
Present study	N=233 (2.23 \pm 1.06)	N=167 (2.45 \pm 1.17)

The present study found that gender dependent variation with high platelet count in the elderly females and many other studies also found the same inference. Butkiewicz et al. ⁹ study also showed that females having the high variation of platelet count with respect to age Table. 3.

Present study showed majority of geriatric patients with mild degree of thrombocytopenia, which was consistent with the Sampat Kumar et al. ¹⁰, but other studies as shown in Table. 4 of comparison had moderate degree of thrombocytopenia.

Table 4: Comparative study of degree of thrombocytopenia

Degree	Dc lye et al. ¹¹	Sampat et al. ¹⁰	Present study
Mild	-	52%	50%
Moderate	81%	36%	21%
severe	19%	12%	19%
Very severe	-	-	10%

References

- Ruggeri ZM. Platelets in atherothrombosis. *Nature Medicine*. 2002;8(11):1227-1234. Available from: [10.1038/nm1102-1227](https://doi.org/10.1038/nm1102-1227)
- Holme S, Heaton A, Konchuba A, Hartman P. Light scatter and total protein signal distribution of platelets by flow cytometry as parameters of size. *The Journal of laboratory and clinical medicine*. 1988; 112(2):223-231.
- Thyagaraj V, Kulkarni A, Anil Kumar T, Ashwini NG. The study of clinico-aetiological profile of pancytopenia in elderly population. *Journal of Evidence-Based Medicine and Healthcare*. 2017;4(45):2727-2729. Available from: [10.18410/jebmh/2017/542](https://doi.org/10.18410/jebmh/2017/542)
- Buckley MF, James JW, Brown DE, Whyte GS, Dean MG, Chesterman CN, et al. A Novel Approach to the Assessment of Variations in the Human Platelet Count. *Thrombosis and Haemostasis*. 2000;83(03):480-484. Available from: [10.1055/s-0037-1613840](https://doi.org/10.1055/s-0037-1613840)
- Schoonen WM, Kucera G, Coalson J, Li L, Rutstein M, Mowat F, et al. Epidemiology of immune thrombocytopenic purpura in the General Practice Research Database. *British Journal of*

In the present study gastrointestinal causes like liver disease, anemia of chronic disease were the common causes for the blood loss. One case of endometrial cancer was seen in the elderly female presented with vaginal bleeding Table. 5.

Table 5: Comparative study of blood loss among thrombocytopenia cases

Symptom	Sampat et al. ¹⁰ N=100	Present study N=72
Present	33(33%)	19(26.39%)
Absent	67(67%)	53(73.61%)

The present study had one case of ITP found in the male (6th decade) with normocytic and neutrophilic leucocytosis picture on the peripheral smear with 42,000 platelet count. Bone marrow shows Hypercellularity. Patient had history of chronic kidney disease on treatment Fig. 4.

5 Conclusion

Platelet count significantly showed the variation as the aging progress. Diagnosis and Grading of thrombocytopenia in geriatrics play a crucial impact on the treating clinician, for the further systemic and therapeutic approach towards the patients.

Haematology. 2009;145(2):235-244. Available from: [10.1111/j.1365-2141.2009.07615.x](https://doi.org/10.1111/j.1365-2141.2009.07615.x)

- Bizzoni L, Mazzucconi MG, Gentile M, Santoro C, Bernasconi S, Chiarotti F, et al. Idiopathic thrombocytopenic purpura (ITP) in the elderly: clinical course in 178 patients. *European Journal of Haematology*. 2006;76(3):210-216. Available from: [10.1111/j.1600-0609.2005.00602.x](https://doi.org/10.1111/j.1600-0609.2005.00602.x)
- Raina A, Kumar A, Singh A, Gupta G, Malhotra P, Raina SK. A clinicohaematological profile of elderly patients being investigated for anaemia in a tertiary care centre in north-west India. *The Egyptian Journal of Haematology*. 2014;39(4):190-194. Available from: [10.4103/1110-1067.153943](https://doi.org/10.4103/1110-1067.153943)
- Toryila JE, Amadi K, Adelaiye AB. Platelet counts and mean platelet volume amongst elderly Nigerians. *Science World Journal*. 2010;4(1):15-18. Available from: [10.4314/swj.v4i1.51831](https://doi.org/10.4314/swj.v4i1.51831)
- Butkiewicz AM, Kemona H, Dymicka-Piekarska V, Matowicka-Karna J, Radziwon P, Lipska A. Platelet count, mean platelet volume and thrombocytopenic indices in healthy women and men. *Thrombosis Research*. 2006;118(2):199-204. Available from: [10.1016/j.thromres.2005.06.021](https://doi.org/10.1016/j.thromres.2005.06.021)

10. Sampat K, Anushree CN , Divya N. The prevalence, etiology and patterns of thrombocytopenia among geriatric age group. *International Journal of Clinical and Diagnostic Pathology*. 2019;2(1):361-364. Available from: [10.33545/pathol.2019.v2.i1f.94](https://doi.org/10.33545/pathol.2019.v2.i1f.94)
11. Lye DC, Lee VJ, Sun Y, Leo YS. The benign nature of acute dengue infection in hospitalized older adults in Singapore. *International Journal of Infectious Diseases*. 2010;14(5):e410-e413. Available from: [10.1016/j.ijid.2009.06.026](https://doi.org/10.1016/j.ijid.2009.06.026)