International Journal of Clinical and Diagnostic Pathology

ISSN (P): 2617-7226
ISSN (E): 2617-7234
www.patholjournal.com
2019; 2(2): 457-458
Received: 13-05-2019
Accepted: 17-06-2019

Dr. Neeraj Kumar Arya
Assistant Professor,
Department of Pathology
Glocal Medical College,
Mirzapur pole, Saharanpur,
Uttar Pradesh, India

Dr. Rachna Sharma
Assistant Professor,
Department of Pathology
SMMH Medical College,
Saharanpur, Uttar Pradesh,
India

Corresponding Author:
Dr. Rachna Sharma
Assistant Professor,
Department of Pathology
SMMH Medical College,
Saharanpur, Uttar Pradesh,
India

A cross-sectional study to observe the platelet count correlation using automated vs manual on smear

Dr. Neeraj Kumar Arya and Dr. Rachna Sharma

DOI: https://doi.org/10.33545/pathol.2019.v2.i2g.397

Abstract
Background: There should be correlation between the methods. That means the value of platelet count that is obtained should be more or less same using different methods. The studies related to this are very essential to support the new methods.
Objective: The present study was undertaken to observe the platelet count correlation using automated vs manual on smear.
Methods: The present study involved 100 patients both males and females with age more than 30 years. The selection was done from the outpatient department. Willing participants were included in the study. Those with severe complications were excluded from the study. A thorough clinical evaluation was conducted on all the patients. Voluntary informed consent was obtained from all the patients before the study.
Results: The results were presented in table 1 to table 3. Table 1 presents the age wise distribution of cases. Majority of patients belongs to age group 0f 41-50 years. Table 2 presents the platelet Count assessed by analyzer. Majority of patients count is between 70000-90000 using auto analyzers. Table 3 presents the platelet Count assessed by manual method. Majority of patients count is between 70000-90000 using the manual method. There is correlation between the both the methods.
Conclusion: The study results support that there is correlation between the manual and automated methods. Though there is correlation, the study recommends further detailed studies with higher sample size. Also multi centre studies should be planned in this area.

Keywords: platelet count, manual method, automated method, correlation

Introduction

The blood smear in the pathology has enormous uses. Assessment of blood parameters has immense importance in the diagnosis as well as prognostic values [1]. Blood cell count variation is common in pathological conditions. Assessment of platelet count is common practice in clinical practice. The reference value for platelet count normal value is 1.5 lakhs to 5 lakhs. It was observed that the platelet count when remain less than twenty thousands, there may be mild clinical manifestations [2]. But when it goes less than ten thousands, there is severe risk to life. It may cause severe hemorrhage and also death of the patient. The available methods for assessment of platelet count are manual, automated and peripheral smear. Though the traditional method of platelet assessment is effective and accurate but it takes time [3]. So, there is a need for method which takes less time. However, there should be correlation between the methods. That means the value of platelet count that is obtained should be more or less same using different methods. The studies related to this are very essential to support the new methods. Hence, the present study was undertaken to observe the platelet count correlation using automated vs manual on smear

Materials and Methods

Study design: Cross-sectional study
Sampling method: Convenient sampling
Study population: The present study involved 100 patients both males and females with age more than 30 years. The selection was done from the outpatient department. Willing participants were included in the study. Those with severe complications were excluded from the study. A thorough clinical evaluation was conducted on all the patients. Voluntary informed consent was obtained from all the patients before the study.
Method of data collection: Blood samples of the patients were collected following the standard guidelines and processed using the auto analyzer.

All the procedures were followed standard guidelines issued in the literature. 50 patients samples were assessed manually and 50 were assessed using automated analyzer [4].

Ethical consideration: The study proposal was approved by an institutional human ethical committee. Informed consent was obtained from all the participants. Confidentiality of data was maintained.

Data analysis: Data was analyzed using SPSS 20.0 version. Demographic data were presented as frequency and percentage. Student t-test was used to assess the significance of the difference between the groups.

Results

The results were presented in table 1 to table 3. Table 1 presents the age wise distribution of cases. Majority of patients belongs to age group 0f 41-50 years. Table 2 presents the platelet Count assessed by analyzer. Majority of patients count is between 70000-90000 using auto analyzers. Table 3 presents the platelet Count assessed by manual method. Majority of patients count is between 70000-90000 using the manual method. There is correlation between the both the methods.

Table 1: Age wise distribution of cases

Age group in years	Number of patients (n=100)	percentage
30-40	10	10
41-50	28	28
51-60	35	35
61-70	25	25
71-80	2	2

Data was presented as frequency and percentage

Table 2: Platelet Count assessed by analyzer

Disease	Number of patients (n=100)	percentage
< 10000	20	20
10000-40000	15	15
40000-70000	10	10
70000-90000	25	25
90000-100000	10	10
>100000	20	20

Data was presented as frequency and percentage

Table 3: Platelet Count assessed by manual method

Disease	Number of patients (n=100)	percentage
< 10000	18	18
10000-40000	12	12
40000-70000	8	8
70000-90000	30	30
90000-100000	8	8
>100000	24	24

Discussion

The present study was undertaken to observe the platelet count correlation using automated vs manual on smear. Table 1 presents the age wise distribution of cases. Majority of patients belongs to age group 0f 41-50 years. Table 2 presents the platelet Count assessed by analyzer. Majority of patients count is between 70000-90000 using auto analyzers. Table 3 presents the platelet Count assessed by manual method. Majority of patients count is between 70000-90000 using the manual method. There is correlation between the both the methods. The study results support that there is correlation between the manual and automated methods. Though there is correlation, the study recommends further detailed studies with higher sample size. Also multi centre studies should be planned in this area.

Though the manual method is effective and gives accurate values, it is time consuming method. So that in emergency situations, it cannot be included. Hence, there is a strong need for quick method [5]. Using auto analyzer was reported to have very beneficial in the diagnostic point of view [6]. Increasing the accuracy and decreasing the time are two important features in the auto analyzer. This is very essential to take a decision regarding the management of diseases like thrombocytopenia, neutropenia [7]. Platelet and platelet count based indices are most important for both diagnosis and prognosis of thrombocytopenic patients [8-10]. The study support earlier studies to include the use of auto analyzer in spite f manual method. However, being a study at single centre, the study recommends more sample size and also multi centre studies in this area.

Conclusion

The study results support that there is correlation between the manual and automated methods. Though there is correlation, the study recommends further detailed studies with higher sample size. Also multi centre studies should be planned in this area.

Source of funding: Self-funding

Conflicts of interest: None-declared

References

1. Giles C. The platelet count and mean platelet volume. Br J Haematol 1981;48(1):31-7.
2. Oliveira RA, Takadachi MM, Nonoyama K, Barretto OC. Is automated platelet counting still a problem in thrombocytopenic blood? Sao Paulo Med J 2003;121:19-23.
3. Zandecki M, Genevieve F, Gerard J, Godon A. Spurious counts and spurious results on hematology analyzers: A review. Part I: platelets. Int J Lab Hematol 2007;29(1):4-20.
4. Bell A, Neely CL. Smear platelet counts. South Med J 1980;73(7):899-901.
5. Momani A, Khasawneh R, Hyari M, Zgoul B, Sokhnee H, Drous N *et al*. Platelet count; automated vs manual estimation on blood smear Prince Rashid Hospital, RMS. Int J Biol Med Res 2015;6(3):5148-50.
6. Rodgers GM, Means Jr RT. Thrombocytosis and essential thrombocythemia. In: Greer JP, Arber DA, Glader B, List AF, Means Jr RT, Paraskevas F (editors). Wintrobe's Clinical Hematology. 13th edition, Wolters Kluwer, Lippincott Williams and Wilkins 2014, 1122-1127.
7. Berkman N, Michaeli Y, Or R, Eldor A. EDTA-dependent pseudothrombocytopenia: A clinical study of 18 patients and a review of the literature. Am J Hematol 1991;36(3):195-201.
8. Lawrence JB, Yomtovian RA, Dillman C, Masarik S, Chongkolwatana V, Creger RJ *et al*. Reliability of automated platelet counts: comparison with manual method and utility for prediction of clinical bleeding. Am J Hematol 1995;48:244-50.
9. Bakhubaira S. Automated Versus Manual Platelet Count in Aden. J Clin Exp Pathol 2013;3(3):149.
10. Ike SO, Nubila T, Ukaejiofo EO, Nubila IN, Shu EN, Ezema I. Comparison of haematological parameters determined by the Sysmex KX - 2IN automated hematology analyzer and the manual counts. BMC Clin Pathol 2010;10:3.