Original Article

Clinical and Hematological Findings in Pancytopenia Patients in Government Hospital in Sri Ganganagar District

Kesar Singh Kamra[1], Manish Kumar Chhabra[2], Jeevika Kataria[3]

[1]Department of General Medicine, Government District Hospital, Sri Ganganagar, Rajasthan, India,
[2]Department of Respiratory Medicine, Government District Hospital, Sri Ganganagar, Rajasthan, India,
[3]Department of Skin and VD, Government District Hospital, Sri Ganganagar, Rajasthan, India

ABSTRACT

Background: Pancytopenia is a common hematological problem encountered in clinical practice, which has multiple causes and the underlying pathology determines the management and prognosis of the patients. **Aims and Objectives:** To determine the common clinical and hematological findings in patients with pancytopenia. **Materials and Methods:** The age, gender, clinical complaints/findings and hematological findings in patients (n=132) with pancytopenia in a government hospital were evaluated between August 2017 till December 2020. Blood samples were collected with a history of weakness/fatigue and low grade fever and analyzed for hemoglobin, leukocytes and platelets. Patients with lower values of all the three were considered pancytopenia. **Results:** It was found that 57.6% patients were males and 42.4% were females with a male-to-female ratio of 1.36:1. The age of patients ranged from 5 to 70 years (mean age, 45 years). The patient complaints and examination findings in pancytopenia patients revealed that weakness/fatigue (98.48%) was the most common complaint, followed by fever (66.66%), dizziness (50.75%) and weight loss (41.66%). The highest proportion of patients with pancytopenia had megaloblastic anemia (74.24%) followed by aplastic anemia (15.90%), malaria (4.54%), subleukemic leukemia (3.78%) and typhoid (1.52%). **Conclusion:** It was concluded that patients with weakness, low grade fever, weight loss must be suspected for pancytopenia and megaloblastic anemia is the commonest cause of pancytopenia.

Key words: Aplastic anemia, fever, megaloblastic anemia, pancytopenia, weakness, weight loss

INTRODUCTION

Pancytopenia is a frequent hematological condition seen in clinical practice. It can be caused by a variety of factors, and the underlying pathology dictates the patient's care and prognosis.[1,2] Pancytopenia is characterized by the simultaneous presence of anemia, leucopenia, and thrombocytopenia.[3] History, physical examination, and numerous laboratory tests, including basic hematological, biochemical, radiological, and histopathological examinations, are used to determine the etiology of pancytopenia.[4] A common test available in most hospitals is hematology. The care and prognosis of individuals with pancytopenia are determined by the severity of pancytopenia and the underlying condition. Complete blood count with peripheral blood film and reticulocyte count are the fundamental examinations in a suspected case of pancytopenia.[5] In the present study, we report the common clinical

Access this article online	
Website: https://www.themmj.in	Quick Response Code
DOI: 10.15713/ins.mmj.66	

Address for correspondence:
Dr. Kesar Singh Kamra, MD, Department of General Medicine, Government District Hospital, Sri Ganganagar, Rajasthan, India. E-mail: drkskamra123@gmail.com

and hematological findings in patients suffering from pancytopenia in Ganganagar government hospital between August 2017 till December 2021.

MATERIALS AND METHODS

The present study was undertaken for a period of 4 years, from August 2017 to December 2021, at the Government hospital, Ganganagar. Patients of all age groups and both sexes were included. All the clinical complaints, sex, age, and clinical findings were recorded for each patient. Cases were chosen based on clinical observations and confirmed by laboratory data, which included hemoglobin, leukocyte, and platelet counts in the peripheral blood. As previously indicated,[6,7] inclusion criteria were the presence of all three of the following: hemoglobin, <9 g/dL; total leukocyte count (TLC), <4000/μL; and platelet count, <100,000/μL. Chemotherapy patients were not allowed to participate. Hematological parameters such as hemoglobin, red blood cell count, TLC, differential leukocyte count, platelet count, mean corpuscular volume, mean corpuscular hemoglobin (MCH), MCH concentration, and packed cell volume (PCV) were measured in two milliliters of blood collected in sterile vials containing ethylene diamine tetra-acetic acid PCV. Erythrocyte sedimentation rate as per standard methods described previously.[8] Peripheral smears were stained by Leishman stain for all the cases and examined in detail. Blood pictures showing abnormally large, misshapen red blood cells was considered as megaloblastic anemia whereas, blood picture showing low hemoglobin, low reticulocyte counts was considered aplastic anemia, whereas abnormal levels of white blood cells and abnormally low red blood cell or platelet counts were considered subleukemic leukemia as described previously by Mansuri and Thekdi, 2017.[4] A few cases of pancytopenia due to malaria and typhoid confirmed by appropriate tests were also included.

RESULTS

A total of 132 patients with pancytopenia were recorded. Out of total cases recorded 76 (57.6%) were males and 56 (42.4%) were females with a male-to-female ratio of 1.36:1. The age of patients ranged from 5 to 70 years (mean age, 45 years). Out of 132 cases, pancytopenia was observed in 31 (23.48%) young patients (5–20 years); they consisted of 13 males and 18 females. The patient complaints and examination findings in pancytopenia patients revealed that weakness/fatigue was the most common complaint, followed by fever, dizziness, and weight loss [Table 1]. A small proportion of patients had jaundice and complaints of headache. Many patients had multiple of these complaints and only one patient had dyspnea that was later diagnosed as severe pneumonia and hence excluded from the study.

Hematologic findings revealed that the highest proportion of patients with pancytopenia had megaloblastic anemia followed by aplastic anemia and subleukemic leukemia. A small proportion of patients were found to have malaria and typhoid respectively [Table 2].

DISCUSSION

In the present study, the age of patients varied from 5 to 70 years. Similar to the present study previous studies have recorded similar age of patients with pancytopenia.[4,8-10] A predominant occurrence of pancytopenia in males with a male: female ratio of 1.36:1 is similar to that observed in many previous studies.[7,9,11] A study by Kumar *et al*.,[9] evaluating 6 years data found still higher incidence of 2.1:1.

The most common presenting complaint in current study was generalized weakness and low-grade fever; followed by dizziness, weight loss, anorexia, edema, headache, vomiting, night sweats, jaundice, and uncontrolled bleeding. Similar findings have been observed in many previous studies.[3,7,12,13]

Table 1: Patient complaints and clinical findings in patients (*n*=132) with pancytopenia

S. No.	Patient complaint and clinical findings	Number of patients	Percentage
1	Weakness/Fatigue	130	98.48
2	Fever	88	66.66
3	Weight Loss	55	41.66
4	Dizziness	67	50.75
5	Vomiting	15	11.36
6	Edema	23	17.24
7	Anorexia	26	19.69
8	Night sweats	15	11.36
9	Epistaxis	11	8.33
10	Jaundice	08	6.06
11	Headache	22	16.66
12	Uncontrolled bleeding	07	5.30

Table 2: Hematological findings in patients with pancytopenia

S. No.	Cause	No of cases	Percent
1	Megaloblastic anemia	98	74.24
2	Aplastic anemia	21	15.90
3	Subleukemic leukemia	05	3.78
4	Malaria	06	4.54
5	Typhoid	02	1.52
Total		132	

A few previous studies noticed aplastic anemia[9] and Vitamin B12 deficiency[14] as the commonest cause of pancytopenia. However, in the present study, the commonest cause of pancytopenia was found to be megaloblastic anemia. Similar findings were also observed in other studies conducted in India and Pakistan.[1,3,4,6,7,11] This seems to reflect the higher prevalence of nutritional anemia in India and Pakistan patients.[4]

The incidence of megaloblastic anemia was 74.24% in the current study. An incidence of 72% was reported by Tilak and Jain,[9] and Khunger *et al*.,[10] whereas Mansuri and Thekdi,[4] reported an incidence of 74%. All the above studies were conducted in India, and they stress the importance of megaloblastic anemia being the major cause of pancytopenia. A study in Pakistan by Farooque *et al*., 2020[2] also recorded that the largest cause of pancytopenia was megaloblastic anemia. It is a rapidly correctable disorder and should be promptly notified.[10] Knodke *et al*.,[11] found that the incidence of aplastic anemia varies from 10% to 52% among pancytopenic patients and thus the incidence recorded in the present study is in agreement with previous studies. In the present study we found an incidence of 3.78% for subleukemic leukemia which is lower than that recorded previously (5–12%).[6,10] Similar to the present study a study evaluating 104 cases in Karnataka by Gayathri and Rao[7] found an incidence of 3.85%. We also recorded 4.54% cases of malaria and 1.52% cases of typhoid in the present study and this is similar to previous studies by Gayathri and Rao,[7] and Chandra *et al*.,[13] It was concluded that patients with weakness, low-grade fever, weight loss must be suspected for pancytopenia and megaloblastic anemia is the commonest cause of pancytopenia.

CONCLUSION

It was concluded that patients with weakness, low grade fever, weight loss must be suspected for pancytopenia and megaloblastic anemia is the commonest cause of pancytopenia.

REFERENCES

1. Goli N, Koguru S, Wadia RS, Agarwal S, Patel P, Reddy P, *et al*. Etiological profile of pancytopenia in a tertiary care hospital. Int J Adv Med 2016;3:533-7.
2. Farooque R, Iftikhar S, Herekar F, Patel MJ. Frequency and etiology of pancytopenia in patients admitted to a tertiary care hospital in Karachi. Cureus 2020;12:e11057.
3. Makheja KD, Maheshwari BK, Arain S, Kumar S, Kumari S, Vikash. The common causes leading to pancytopenia in patients presenting to tertiary care hospital. Pak J Med Sci 2013;29:1108-11.
4. Mansuri B, Thekdi KP. A prospective study among cases of the pancytopenia on the basis of clinic-hematological analysis and bone marrow aspiration. Int J Res Med Sci 2017;5:3545-9.
5. Rani PS, Sureshkumar K. To evaluate the clinical and etiological profile of patients presenting with pancytopenia in Government Dharmapuri Medical College Hospital, Dharmapuri. IAIM 2017;4:125-31.
6. Kumar R, Kalra SP, Kumar H, Anand AC, Madan M. Pancytopenia-A six year study. J Assoc Physicians India 2001;49:1079-81.
7. Gayathri BN, Rao KS. Pancytopenia: A clinico hematological study. J Lab Physicians 2011;3:15-20.
8. Hoffman R, Benz EJ, Shattil SJ, Furie B, Cohen HJ, Silberstein LE, *et al*. Hematology Basic Principles and Practice. 3rd ed. Philadelphia, PA: Churchill Livingstone; 2000.
9. Tilak V, Jain R. Pancytopenia-a clinico-hematologic analysis of 77 cases. Indian J Pathol Microbiol 1992;42:399-404.
10. Khunger JM, Arculselvi S, Sharma U, Ranga S, Talib VH. Pancytopenia-a clinico- hematological study of 200 cases. Indian J Pathol Microbiol 2002;45:375-9.
11. Knodke K, Marwah S, Buxi G, Vadav RB, Chaturvedi NK. Bone marrow examination in cases of pancytopenia. J Acad Clin Med 2001;2:55-9.
12. Gudina KE, Amare H, Benti K, Ibrahim S, Mekonnen. Pancytopenia of unknown cause in adult patients admitted to a tertiary Hospital in Ethiopia: Case series. Ethiop J Health Sci 2018;28:375-82.
13. Chandra H, Gupta AK, Nath UK, Singh N, Kumar U, Kishore S. Clinico-hematological study of pancytopenia: A single-center experience from north Himalayan Region of India. J Fam Med Prim Care 2019;8:3944-8.
14. Yokuş O, Gedik H. Etiological causes of pancytopenia: A report of 137 cases. Avicenna J Med 2016;6:109-12.

How to cite: Kamra KS, Chhabra MK, Kataria J. Clinical and Hematological Findings in Pancytopenia Patients in Government Hospital in Sri Ganganagar District. MIMER Med J 2021;5(2):44-46.

Source of Support: Nil. **Conflicts of Interest:** None declared.