



Assessment of clinical and etiologic profile of patients with pancytopenia

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ABSTRACT

Background: To assess clinical and etiologic profile of patients with pancytopenia.

Materials & methods: A total of 50 subjects of age above 18 years were found to have pancytopenia during hospital stay. Detailed history was taken. Relevant past and family history was taken. Findings of general and local examination were recorded wherever available. Chi square test was used for assessment of level of significance P value of less than 0.05 were taken as significant.

Results: The age of the 50 patients diagnosed with pancytopenia ranged from 20 to 70 years were included. On physical examination, all patients with pancytopenia exhibited pallor, with almost half of them exhibiting splenomegaly; a few exhibiting hepatomegaly, pigmentation, and lymphadenopathy; and the other few exhibiting icterus, and ascites.

Conclusion: Aplastic anemia is one of the most common causes of pancytopenia.

Keywords: aplastic anemia, pancytopenia, megaloblastic anemia.

leukemia. Some of these causes include aplastic anemia, nutritional deficiencies, myelodysplastic syndrome, leukemias, and autoimmune disorders.³ Several infections including human immunodeficiency virus (HIV), miliary tuberculosis, leishmaniasis, and brucellosis can also cause pancytopenia among children.^{4,5} Furthermore, some other factors like radiotherapy and chemotherapy can cause hypocellular bone marrow that leads to pancytopenia in children.^{6,7} The spectrum of these etiologies is extremely varied and depends upon the geographical location, genetics, patient demographics, and nutritional profiles.⁸ Regarding the clinical manifestations of pancytopenia, it is a manifestation of various prime malignant as well as non-malignant clinical disorders. Decreased production of hematopoietic cells, such as in aplastic anemia, abnormal cells infiltrating the bone marrow, such as in hematological malignancies, autoimmune disorders, hypersplenism, excess cell destruction due to ineffective production such as in megaloblastic anemia, etc. are few of the many possible mechanisms behind the development of pancytopenia.⁹ The majority of the cases of pancytopenia are cured with the specific treatment guided by the cause as well as the extent of severity of the disease or, at times, the cases would require the timely initiation of supportive treatment to reduce morbidity and mortality, thereby improving the quality of life.¹⁰ Hence, this study was conducted to assess clinical and etiologic profile of patients with pancytopenia.

I. INTRODUCTION

Pancytopenia, a clinical-hematological entity, is a bone marrow disorder that is frequently encountered in clinical practice. It is more of a clinical manifestation due to a spectrum of diseases affecting the bone marrow and/or the white blood cells (WBCs), red blood cells (RBCs), as well as platelets, rather than just a disease entity.¹ Depending upon the severity of anemia, leukopenia, and thrombocytopenia, its clinical presentations vary. Generalized weakness, fever, weight loss, abnormal bleeding tendencies, shortness of breath, etc. are the usual manifestations of pancytopenia, and the prognosis depends on the correct and timely diagnosis of the underlying etiology.²

The etiological causes of pancytopenia range from non-malignant disorders to life-threatening malignant diseases like acute lymphoblastic leukemia (ALL) and acute myeloid

II. MATERIALS & METHODS

A total of 50 subjects of age above 18 years were found to have pancytopenia during hospital stay. Detailed history was taken. Relevant past and family history was taken. Findings of general and local examination were recorded wherever available. The results of routine investigations like CBC, RFT, LFT were recorded in all cases. All the results were analysed by SPSS software. Chi square test was used for assessment



of level of significance P value of less than 0.05 were taken as significant.

III. RESULTS

The age of the 50 patients diagnosed with pancytopenia ranged from 20 to 70 years were

included. On physical examination, all patients with pancytopenia exhibited pallor, with almost half of them exhibiting splenomegaly; a few exhibiting hepatomegaly, pigmentation, and lymphadenopathy; and the other few exhibiting icterus, and ascites.

Table 1: physical findings

Findings	n	%
Pigmentation	6	12
Pallor	50	100
Icterus	4	8
Hepatomegaly	14	28
Splenomegaly	18	36
Ascites	3	6
Lymphadenopathy	6	12

Table 2: etiology for pancytopenia

Etiology	n	%
Aplastic anemia	20	40
Megaloblastic anemia	14	28
Chronic liver disease	3	6
Acute leukemia	4	8
Myelodysplastic syndrome	4	8
Typhoid fever	3	6
Dengue fever	2	4

Among all the etiological factors for pancytopenia, aplastic anemia was the most common (40%), followed by megaloblastic anemia (28%), acute leukemia (8%), myelodysplastic syndrome (8%), and chronic liver disease (6%).

IV. DISCUSSION

Pancytopenia is a prevalent pathological finding that is frequently encountered in the pediatric age group. It has a multitude of underlying causes that determine the management and prognosis.¹¹ An appropriate clinical history, physical examination, laboratory investigations, and bone marrow examination are some necessary prerequisites for the assessment of the underlying

etiology of pancytopenia.¹² Hence, this study was conducted to assess clinical and etiologic profile of patients with pancytopenia.

In the present study, the age of the 50 patients diagnosed with pancytopenia ranged from 20 to 70 years were included. On physical examination, all patients with pancytopenia exhibited pallor, with almost half of them exhibiting splenomegaly; a few exhibiting hepatomegaly, pigmentation, and lymphadenopathy; and the other few exhibiting icterus, and ascites. A study by Gayathri BN et al, studied the clinical presentations in pancytopenia due to various causes; and to evaluate hematological parameters, including bone marrow



aspiration. Among 104 cases studied, age of patients ranged from 2 to 80 years with a mean age of 41 years, and male predominance. Most of the patients presented with generalized weakness and fever. The commonest physical finding was pallor, followed by splenomegaly and hepatomegaly. Dimorphic anemia was the predominant blood picture. Bone marrow aspiration was conclusive in all cases. The commonest marrow finding was hypercellularity with megaloblastic erythropoiesis. The commonest cause for pancytopenia was megaloblastic anemia (74.04%), followed by aplastic anemia (18.26%).¹³

In the present study, among all the etiological factors for pancytopenia, aplastic anemia was the most common (40%), followed by megaloblastic anemia (28%), acute leukemia (8%), myelodysplastic syndrome (8%), and chronic liver disease (6%). Another study by Gajbhiye SS et al, Fifty patients more than 13 years of age with pancytopenia who reported to a tertiary care hospital were included in the study. Thorough clinical examination, hematological investigation, and bone marrow biopsies were performed, and relevant data were recorded and analyzed statistically. Pancytopenia was most common in the age group of 25-34 years, with a male preponderance. The most common presenting complaints were fatigue and fever, with pallor present in all patients, followed by splenomegaly and hepatomegaly in a few patients. Aplastic anemia is the most common cause of pancytopenia, followed by megaloblastic anemia and leukemia. While fatigue and fever are the most usual symptoms of pancytopenia, clinical pallor, hepatomegaly, and splenomegaly may be evident. Among the several etiologies, aplastic anemia is one of the most common causes of pancytopenia.¹⁴ Incidence of 72% was reported by Khunger JM et al.; and 68%, by Tilak V et al.^{15,16} All the above studies have been done in India, and they stress the importance of megaloblastic anemia being the major cause of pancytopenia. It is a rapidly correctable disorder and should be promptly notified.¹⁶ Although bone marrow aspiration studies are uncommon in suspected cases of megaloblastic anemia, if the diagnosis does not appear straightforward or if the patient requires urgent treatment and hematological assays are not available, bone marrow aspiration is indicated. As facilities for estimating folic acid and vitamin B12 levels are not routinely available in most centers in India, the exact deficiency is usually not identified.¹⁷

V. CONCLUSION

A plastic anemia is one of the most common causes of pancytopenia.

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