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Clinico-Hematological Study of Pancytopenia in Adults at a Tertiary Care Center

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Abstract

Background: Pancytopenia is one of the important haematological derangements. Thorough investigation for ascertaining the cause is important. **Subjects and Methods:** The present cross-sectional study was conducted upon 112 patients of pancytopenia. Profile of the patients, clinical features and findings of haematological investigations and bone marrow aspiration were noted. **Results:** Mean age of the patients was 46.7 ± 9.3 years. Pallor was seen in all the patients. Megaloblastic anemia was present in 36.6%, acute leukemia in 11.6%, hypersplenism and lymphoprofilerative disorder each in 10.7%. **Conclusion:** Hematological investigations and bone marrow aspiration in patients suffering from pancytopenia is useful.

Keywords: Adults, Clinical, Hematological, Pancytopenia.

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Introduction

The reduction in all the three formed elements of blood: red blood cells, white blood cells and platelets is known as pancytopenia.[1] It is one of the important haematological derangements seen. It results from either marrow suppression or marrow infiltration and causes may range from transient marrow failure to acute hematological malignancies.[2]

Pallor, prolonged fever and a tendency to bleed must lead to suspicion of marrow failure and it must be investigated thoroughly. In different population groups, the diseases may vary with their differences in age, nutritional status and prevalence of infection and lead to pancytopenia.[3] Thorough physical examination, clinical history and peripheral blood picture are the necessary tools for diagnosing pancytopenia. Bone marrow aspiration is a gold standard for the diagnosis of the cause of pancytopenia.[4]

Aims & objectives

The present study was conducted to identify different underlying causes of pancytopenia and to assess the clinical features.

Subjects and Methods

The present cross-sectional study was conducted at Great Eastern Medical School & Hospital, Srikakulam, Andhra Pradesh. Patients admitted in the department of medicine who were diagnosed to be suffering from pancytopenia were included in the present study. Patients of hematological malignancy, those receiving blood transfusion in last one month and those receiving drugs known to suppress bone marrow were excluded. A total of 112 patients were included in the present study.

Detailed clinical history and thorough physical examination was done for each patient. EDTA anticoagulated blood (2ml) was collected, processed through automated differential cell analyzer and hematological parameters were calculated. Peripheral blood Pancytopenia was defined as hemoglobin (Hb) ≤ 10 g/dL, absolute neutrophil count ≤ 1500/µl, platelet count ≤ 100000/µl. Bone marrow aspiration was done and findings were noted to find the cause of pancytopenia.

Data was recorded in pretested proforma, entered in Microsoft Excel and analyzed by SPSS v 16.0. Appropriate summarization and statistical tests were done. Tests of significance were done and p-value of less than 0.05 was considered to be statistically significant.

Results

A total of 112 patients were included in the present study. Mean age of the patients was 46.7 ± 9.3 years. There was male preponderance. Table-1 shows the clinical features of the patients of pancytopenia. Pallor was seen in all the

patients. 73.2% patients suffered from fever, weakness in 44.6%, splenomegaly in 28.6% and bleeding manifestation in 13.4%.

Table 1: Clinical features seen

Clinical features*	Frequency (n=112)	%	95% CI
Pallor	112	100	96.7-100
Fever	82	73.2	64.3-80.5
Weakness	50	44.6	35.8-53.9
Splenomegaly	32	28.6	21-37.5
Bleeding Manifestation	15	13.4	8.3-20.9
Loss of Apetite	47	42	33.2-51.2

*- multiple response

[Table 2] shows the hematological disorders causing pancytopenia. Megaloblastic anemia was present in 36.6%, acute leukemia in 11.6%, hypersplenism and lymphoprofilerative disorder each in 10.7%, Myelodysplastic syndrome in 6.3% and haemolytic anemia in 2.7%.

Table 2: Hematological Disorders Causing Pancytopenia.

Hematological Disorders	Frequency (n=112)	%	95% CI
Megaloblastic anemia	41	36.6	28.3-45.8
Acute leukemia	13	11.6	6.9-18.9
Aplastic anemia	10	8.9	4.9-15.7
Lymphoproliferative disorder	10	8.9	4.9-15.7
Myelodysplastic syndrome	7	6.3	3.1-12.3
Hypersplenism	12	10.7	6.2-17.8
Hemolytic anemias	3	2.7	0.9-7.6
Drug induced	2	1.8	0.5-6.3
Others	12	10.7	6.2-17.8

Discussion

A total of 112 patients of pancytopenia were studied. Mean age of the patients was 46.7 ± 9.3 years. There was male preponderance. Ghartimagar et al found that patients' age ranged from 2 to 82 years with a mean age of 43.95 years, and there was male predominance.[5] Mansuri et al found that age of the patients ranged from 1 to 70 years with a slight male predominance. Most common age group was 11-20 years.[6] Patel et al observed that the age of the patients ranged from 15-85 years with male preponderance.[7] Momin et al noted that the age of patients ranged from 2 to 85 years with a mean age of 43 years. There was male preponderance.[8] Thakkar et al found that age of the patients ranged from 13 to 86 years with a mean age of 42.9 years and slight male predominance.[9]

The patients presented with pallor (100%), fever (73.2%), weakness (44.6%), splenomegaly (28.6%) and bleeding manifestation (13.4%). Ghartimagar et al found that most of the patients presented with generalized weakness, pallor, dypnoea and fever.[5] Mansuri et al found that most of the patients presented with generalized weakness and fever. The commonest physical finding was pallor, followed by splenomegaly and hepatomegaly.[6] Patel et al observed that the most common clinical features were weakness (80%), fever (72.1%), pallor (100%) and hepatomegaly (62.8%).[7] Momin et al noted that fever and generalized weakness were common clinical presentations. The commonest physical finding was pallor and splenomegaly on systemic examination.[8] Thakkar et al found that most of the patients presented with generalized weakness and fever. The commonest physical finding was pallor, followed by splenomegaly and hepatomegaly.[9]

Megaloblastic anemia (36.6%), acute leukemia (11.6%), hypersplenism and lymphoprofilerative disorder (10.7%), Myelodysplastic syndrome (6.3%) and haemolytic anemia (2.7%) were the major causes of pancytopenia. Ghartimagar et al found hypoplastic marrow in 27.5% cases, followed by 18.8% cases of megaloblastic anemia and 13.76% cases of acute leukemia. Other findings included one case each of hemophagocyosis, leishmaniasis, plasmodium vivex malaria and metastatic carcinoma.[5] The commonest marrow finding of Mansuri et al was hyper cellularity with megaloblastic erythropoiesis. The commonest cause for pancytopenia was megaloblastic anemia.[6] Normocytic normochromic was the predominant blood picture in the study done by Patel et al who found that common causes of pancytopenia were malaria (50%), megaloblastic anemia (18.6%) and dengue (18.1%) followed by hypersplenism (7.1%) & iron deficiency anemia(2.7%).[7] Momin et al found that the commonest peripheral smear was dimorphic picture & commonest bone marrow finding was hypercellular marrow with megaloblastic erythroid hyperplasia. The commonest cause for pancytopenia was Megaloblastic anemia (34%) followed by Hematolymphoid malignancy (26.6%).[8] The commonest marrow finding of Thakkar et al was hypercellularity with megaloblastic erythropoiesis. The commonest cause for pancytopenia was megaloblastic anemia followed by malaria.[9]

Conclusion

It is concluded from the present study that detailed hematological investigations along with bone marrow aspiration in patients suffering from pancytopenia can be helpful in identifying the underlying cause.

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