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The Common Causes of Pancytopenia in Adult Patients

KEYWORDS: pancytopenia, megaloblastic anaemia, dimorphic anaemia.

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ABSTRACT *The present study was designed to determine the frequency of common causes leading to pancytopenia in adult patients. All the cases of pancytopenia from December 2014 to February 2015 were examined in the Department of Medicine, SKN Medical College, Narhe, Pune. Bone marrow aspirations were performed in most of the cases. The commonest cause of pancytopenia in our hospital was megaloblastic anaemia (45%) followed by dimorphic anaemia (22.5%), hypersplenism (10%) and others.*

INTRODUCTION

Pancytopenia is a disorder in which all three major formed elements of blood (red blood cells, white blood cells & platelets) are decreased in number. Peripheral pancytopenia may be a manifestation of a wide variety of disorders which primarily or secondarily affect the bone marrow. The presenting symptoms are usually attributable to the anaemia or the thrombocytopenia. Leucopenia is an uncommon cause of the initial presentation of the patient, can become the most serious threat to life during the subsequent course of the disorder.[1] The frequency of the underlying pathology causing pancytopenia varies considerably depending upon various factors including geographic distribution. The severity of pancytopenia & underlying pathology determine the management & prognosis of these patients.[1, 4] We report analysis of 40 pancytopenic patients along with their salient clinicohematological features.

MATERIAL & METHODS

The present study was conducted in the Department of Medicine, SKN Medical College, Narhe, Pune between December 2014 to February 2015. We included adult patients of both sexes, aged 13 years & above. During this time, a total of 40 patients fulfilled criteria for pancytopenia. Inclusion criteria for analysis were taken as Hemoglobin concentration < 10 gm%, leucocyte count < 4000/cu mm, platelets count < 150,000/cu mm. Bone marrow aspiration was performed using Salah needle. A detailed clinical history & physical examination was also performed on each case.

RESULTS

Out of 40 patients, 23 were males 17 were females, with male to female ratio 1.35: 1. The cases had ages ranging from 18 to 85 years. The maximum number of patients 15(37.5%) were seen in the age group of 21 to 40 years. (Table 1).

The commonest mode of presentation was generalized weakness; other main symptoms were dyspnea, decreased appetite, and weight loss. Pallor was noted in all cases. Splenomegaly was seen in hypersplenism & dimorphic anaemia. Hepatosplenomegaly was seen in non-Hodgkin's lymphoma. Lymphadenopathy was noted in malignant cases. (Table 2).

The commonest cause of pancytopenia was megaloblastic anaemia 18 (45%) followed by dimorphic anaemia 9 (22.5%), hypersplenism 4 (10%). Malignant pancytopenia was seen in 4(10%) patients – acute myeloid leukemia 2 (5%), Hodgkin's lymphoma 1 (2.5%) & non-Hodgkin's lymphoma 1 (2.5%).

The uncommon causes of pancytopenia were aplastic anaemia 1 (2.5%), myelodysplastic syndrome 1 (2.5%), AIDS 1 (2.5%), iron deficiency anaemia 1 (2.5) & anaemia of chronic disorder 1 (2.5%). (Table 3).

DISCUSSION

There is a wide range of disorders that manifest as pancytopenia. The variation in frequency of various diagnostic entities causing pancytopenia has been attributed to differences in methodology & stringency of diagnostic criteria, geographic area, period of observation, genetic differences & varying exposure to myelotoxic agents etc.[1, 4]

Incidence of megaloblastic anaemia was 45% in our study. Incidence of 41.9% was reported by Kripal Das Makheja et al.[3] Incidence of dimorphic anaemia was 22.5% in our study. Incidence of 8.69% was reported by Shazia Memon et al.[5]

Incidence of iron deficiency anaemia was 2.5% & anaemia of chronic disorder was 2.5% in our study. Incidence of iron deficiency anaemia 4.4% & anaemia of chronic disorder 1.95% were reported by Anwar Zeb Jan et al.[6] Incidence of dimorphic anaemia & iron deficiency anaemia was also reported by Melina Desalphine et al.[7]

The incidence of aplastic anaemia varies from 10 to 52.7% of all pancytopenic patients.[1] Our incidence of aplastic anaemia was 2.5%. The commonest cause of pancytopenia reported from various studies throughout the world has been aplastic anaemia.[1, 4] This is in sharp contrast with the results of our study where the commonest cause of pancytopenia was megaloblastic anaemia. This seems to reflect higher prevalence of nutritional anaemias in Indian subjects.[1, 4] It is a rapidly correctable disorder & should be promptly notified.

Incidence of hypersplenism was 10% in our study. Incidence of 29.2% was reported by Arvind Jain et al.[8] Incidence of hypersplenism varies from 3 to 68%. [8] We think that this may be due to increasing trend of chronic alcoholism in today's society; hence more and more patients present with chronic liver disease and decompensated liver cirrhosis, hypersplenism being one of the consequences. [8]

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Incidence of AIDS 1 (2.5%) and myelodysplastic syndrome 1 (2.5%) were reported in our study. Incidence of AIDS 12% and myelodysplastic syndrome 0.4% were reported by Arvind Jain et al.[8]

In this study 4 cases (10%) presented with malignant etiology-acute myeloid leukemia 2 (5%), Hodgkin's lymphoma 1(2.5%) and Non-Hodgkin's lymphoma 1 (2.5%). Incidence of leukemia 2.8% and Non-Hodgkin's lymphoma 0.8% were reported by Arvind Jain et at.[8]

The importance of bone marrow examination in pancytopenic patients has been well established in earlier studies.[1] However, the significant information gained by the examining the physical and peripheral blood findings of such patients was highlighted by earlier studies.[1] Hypersegmented neutrophils and circulating megaloblasts were important clues to the presence of megaloblastosis.[1]

Bone marrow examination can be deferred in those cases presenting with hepatosplenomegaly and having hypersegmented neutrophils and or circulating megaloblasts in the peripheral blood. These patients can be put on a trial of hematinics with a close hematologic follow up.[1]

CONCLUSION

Physical findings and peripheral blood picture provide valuable information in the work up of pancytopenic patients and help in planning investigations on bone marrow samples.

Megaloblastic anaemia, dimorphic anaemia and hypersplenism are major causes of pancytopenia. However uncommon causes of pancytopenia like leukemia, lymphoma, aplastic anaemia and myelodysplastic syndrome should be kept in mind while planning investigations for the complete work up of pancytopenic patients.

Table 1. Age and Sex Distribution of Cases

Age	Male	Female	**Total**
0-20	1	2	3
21-40	7	8	15
41-60	7	5	12
61- 80	7	2	9
> 80	1	0	1
Total	23	17	40

Table 2. Clinical Features In Pancytopenia

Clinical features	No. of Cases	**Percentage**
Generalized weakness	40	100
Dyspnea on exertion	32	80
Decreased Appetite	32	80
Weight loss	20	50
Pallor	40	100
Splenomegaly	9	22.5
Lymphadenopathy	4	10
Hepatomegaly	1	2.5

Table 3. Causes of Pancytopenia

Type	No. of Cases	**Percentage**
Megaloblastic anaemia	18	45
Dimorphic anaemia	9	22.5
Hypersplenism	4	10
Iron deficiency anaemia	1	2.5
Anaemia of chronic disorder	1	2.5
Aplastic anaemia	1	2.5
Myelodysplastic syndrome	1	2.5
AIDS	1	2.5
Acute myeloid leukemia	2	5
Hodgkin's lymphoma	1	2.5
Non-Hodgkin's lymphoma	1	2.5

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