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PANCYTOPENIA: CLINICO-HAEMATOLOGICAL EVALUATION. A PROSPECTIVE HOSPITAL BASED STUDY OF 49 CASES

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ABSTRACT

Introduction: Pancytopenia is a common clinical entity that refers to the simultaneous presence of anaemia, leucopenia and thrombocytopenia. Bone marrow studies are necessary to evaluate the etiology of pancytopenia and also to provide the adequate treatment.

Material and method: The present prospective study of 49 cases was conducted in the post graduate department of pathology in Government Medical College, Jammu over the period of 8 months from February 2019 to September 2019.

Results: among the total 49 cases, majority of the cases were in the age group of 11 to 20 years with male preponderance. The most common cause of pancytopenia in our study was megaloblastic anaemia.

Conclusion: Bone marrow studies along with clinical and haematological parameters form an important tool to evaluate the cause of pancytopenia in order to provide adequate management.

Keywords: pancytopenia, megaloblastic anaemia, bone marrow

1. INTRODUCTION

Pancytopenia is a clinical condition that refers to simultaneous presence of anaemia, leucopenia and thrombocytopenia.[1] The clinical presentations in this common haematological entity are usually due to anaemia, leucopenia and thrombocytopenia. The criteria for defining a case of pancytopenia are haemoglobin(Hb) < 9g/dl, total leucocyte count (TLC)< 4000/ul and platelet count< 100000/ul. The pathogenesis of pancytopenia is suppression of bone marrow growth factors, resulting in decreased hematopoietic cell production causing suppression of cells of erythroid, myeloid and megakaryocytic series. The various etiological factors that cause pancytopenia include megaloblastic anaemia, aplastic anaemia, subleukemic leukemia, myelodysplasia, storage disorders, marrow fibrosis, infections like tuberculosis, typhoid, malaria, HIV etc. In pancytopenia, the cellularity and composition of bone marrow varies

depending upon the underlying etiology. Clinical details, physical findings and preliminary haematological investigations provide relevant information in the work of pancytopenic patients and also help in planning further investigations.

The aim of the present study was to evaluate the etiology and clinical presentation of pancytopenia and also to find the bone marrow morphology.

2. MATERIAL & METHODS:

The present was prospective study carried out in the post graduate department of pathology, Govt. Medical College & Hospital, Jammu J&K over the period of 8 months from February 2019 to September 2019. The cases were selected based upon the laboratory details. Patients with Hb < 9g/dl, TLC < 4000/ul and platelets < 100000/ul were included in the study. A total of 49 cases were included. A detailed history was taken and complete physical examination was done. All relevant clinical details were noted and detailes haematological investigations like Hb, TLC, platelet count, peripheral blood smear examination were performed in all the cases. Bone marrow evaluation was also done whenever and wherever needed. Informed consent was taken before bone marrow evaluation.

3. RESULTS

A total of 49 cases were studied. Out of 49 cases, 29 were males and 20 were females with male to female ratio of 1.45:1 (Table 1). The age of the patients ranged from 1 to 70 years with majority of the cases in the age group of 11 to 20 years.

Table 1: age and sex wise distribution of pancytopenia cases

	Sex			
Age (in years)	**Males**	**Females**	**Total**	**Percentage (%)**
0-10	5	7	12	24.48
11-20	10	6	16	32.65
21-30	1	3	4	8.16
31-40	3	0	3	6.12
41-50	3	1	4	8.16
51-60	5	2	7	14.28
61-70	2	1	3	6.12
>70	0	0	0	00
Total	29	20	49	100

The common clinical complaints were generalised weakness, pallor, loss of weight, hepatomegaly and spleenomegaly. The most common complaints were generalised weakness and pallor seen in 100% of the patients respectively followed by loss of weight in 77.5% cases (Table 2).

Table 2: clinical presentation of pancytopenia cases

Clinical findings	**No. of cases**	**Percentage (%)**
Generalised weakness	49	100
Pallor	49	100
Loss of weight	38	77.55
Hepatomegaly	13	26.53
Spleenomegaly	12	24.48

The Hb of the cases ranged from <6.9g/dl to 9 g/dl. Majority of the cases (n=33) had severe anaemia with Hb ≤ 6.9g/dl. (Table 3)

Table 3: Haemoglobin levels in pancytopenia cases

Hb (g/dl)	**Males**	**Females**	**Total**	**Percentage (%)**
≤ 6.9	21	14	35	71.42
7-7.9	2	5	7	14.28
8-10	2	5	7	14.28
Total	25	24	49	100

The most common cause of pancytopenia in the present study was megaloblastic anamia in 67.3% cases followed by acute leukemia in 14.28% cases. Dual deficiency anaemia and leishmania was present in single case each.

Table 4: etiology of pancytopenia cases

Causes	Males	Females	Total	Percentage(%)
Iron deficiency anaemia	2	0	2	4.08
Megaloblastic anaemia	16	17	33	67.34
Dual deficiency anaemia	1	0	1	2.04
Normoblastic anaemia	1	1	2	4.08
Hypoplastic marrow	1	2	3	6.12
Leishmaniasis	0	1	1	2.04
Acute leukemias	5	2	7	14.28
Total	26	23	49	100

4. DISCUSSION

In the present study, a total of 49 cases were studied. The age of the patients ranged from 1 to 70 years with majority of the cases in the age group of 11 to 20 years. The results were in accordance with the study done by Mansuri B and Thekdi KP. Tilak V et al and Kumar R et al also found the same results in their study.in the present study, there was male preponderance with M:F ratio of 1.45:1. The findings were similar with the study by Sangwan S and Kansal D. Other studies also found the same results.[1,2]

In our study, the most common complaints were generalised weakness and pallor which involved 100% cases. The results were comparable with the studies done by other authors.[4,5,6] Hepatomegaly and spleenomegaly was observed in 26.5% & 24.4% cases respectively. The findings were similar with other studies.[1,4,7,8]

In this study, majority of the cases had severe anaemia (n=33) and these results were similar with the results in the study by Kulkarni NS et al.

Megaloblastic anaemia was the most common cause of pancytopenia in our study which involved 67.3% cases. This was followed by acute leukemia in 14.28% cases. The results were comparable with the study by other authors.[7,10,11] Tilak V etal and Khunger JM etal also found similar results with the incidence of megaloblastic anaemia of 72% and 68% respectively.

The incidence of subleukemic leukemia in our study was 14.28%. The incidence of the same in other studY by Mansuri B et al was 6%. Incidence was 5% and 12% respectively in the studies by Khunger JM et al and Kumar R et al

5. CONCLUSION

Megaloblastic anaemia is a common amasemia in the developing countries like India with the common clinical presentation of pancytopenia. The detailed clinical and haematological investigations along with bone marrow evaluation arte the important parameters to evaluate the cause of pancytopenia inorder to reach the diagnosis and provide the early treatment to the patient to reduce the mortality and morbidity related to pancytopenia.

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