



## Pancytopenia: The Study of Clinical Profile and Aetiology in Tertiary Care Centre

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### Abstract:

**Introduction:** The term pancytopenia denotes simultaneous reduction in all the formed elements of blood i.e. Erythrocytes, leukocytes and platelets. Pancytopenia is not a disease entity but triad of finding that may arise from a number of disease processes.<sup>1</sup>

**Material and Methods:** 48 patients who fulfilled the inclusion & exclusion criteria were taken in the study to access the clinical profile and etiology of pancytopenia.

**Results:** Out of 48 patients, most common cause was megaloblastic (33.3%) followed by aplastic (16.7%) anemia & Kala azar (16.7%). Most common symptom was generalized weakness (70.8%) followed by loss of appetite (62.5%). Most common sign was pallor (100%) followed by hepatomegaly (31.2%).

**Conclusion:** Pancytopenia can be caused by a number of reversible conditions like megaloblastic anemia, infections such as kala azar, dengue. So while evaluating the cases of pancytopenia, we should 1st rule out the reversible conditions as early as possible so that it help in early management which will reduce the morbidity and mortality in patient.

### Introduction

The term pancytopenia denotes simultaneous reduction in all the formed elements of blood i.e. Erythrocytes, leukocytes and platelets. Pancytopenia is not a disease entity but triad of finding that may arise from a number of disease processes.<sup>1</sup> Pancytopenia therefore define as when haemoglobin level is below 13.5 g/dl in males or 11.5 g/dl in females, leukocytes counts below 4 x 10<sup>9</sup>/l and platelet count below 150x10<sup>9</sup>/l.<sup>2</sup> It may result through different mechanism like

destruction of marrow tissues by toxins, radiation (aplastic or hypoplastic marrow), replacement by abnormal or malignant tissues like Hodgkin's and Non-hodgkin's lymphoma, multiple myeloma, myelofibrosis or suppression of normal marrow growth and differentiation like megaloblastic anemia, systemic lupus erythematosus. The presenting clinical symptoms are usually due to anemia, leukocytosis and thrombocytopenia. Fatigue and weakness due to anemia, increased susceptibility to infections because of

leukocytopenia and bleeding tendency due to thrombocytopenia are the usual presenting symptoms.<sup>2</sup>

### Material and Methods

The present study was conducted in the department of medicine SRMS IMS, Bareilly over the period of 1 year from Dec. 2014 to Nov. 2015. A total of 48 patients were subjected to bone marrow aspiration and examination. Consent was taken from all patients. Clinical details like age, sex, exposure to chemical drugs, bone pain, fever, night sweats, malaise and weight loss were inquired. Physical examination was done. Peripheral blood smear were examined for the presence of anisopikilocytosis, circulating erythroblast, hypopigmented and hyperpigmented neutrophils, bone marrow trephine biopsies were performed in cases where it was possible.

### Results

The study was conducted in 48 patients of pancytopenia admitted in our hospital who met the inclusion and exclusion criteria. Out of 48 patients, 28 (58.3%) patients were male and 20 (41.7%) patients were female. The male to female ratio noted in our study was 1.4:1 (Table-1).

**Table-1: Sex Distribution**

Gender	N	%
Male	28	58.3
Female	20	41.7

Age range was 20 to 80 years. The highest number of cases was found in the age group of 21-30 years (31.2%) followed by 31-40 years (18.8%) Table-2.

**Table-2: Age Distribution**

Age	Number	% Age
< 20	6	12.5
21-30	15	31.2
31-40	11	22.9
41-50	9	18.8
51-60	2	4.1
61-70	3	6.4
> 71	2	4.1

The most common presenting symptoms was generalized weakness which was seen in 70.8% of patients. It was followed by loss of appetite seen in 62.5% of patients. Pallor was present in 100% of patients and hepatomegaly and splenomegaly were seen in 31.2% and 25% respectively (Table-3).

**Table-3: Clinical features**

Clinical features	N	% Age
Generalized weakness	34	70.8
Dyspnoea	14	29.1
Fever	10	20.8
Bleeding	15	31.2
Loss of appetite	30	62.5
Pain abdomen	1	2.1
Edema	2	4.2
Headache	1	2.1
Mouth ulcers	4	8.3
Palpitations	2	4.2
Pallor	48	100
Splenomegaly	12	25
Hepatomegaly	15	31.2

The mean hemoglobin was found to be  $7.8 \pm 1.2$  mg/dl. Mean of total leukocyte count was  $2500 \pm 1230 / \mu\text{l}$ . Bone marrow examination was done in 33 patients. It was not done in remaining 15 patients because diagnosis was made by other investigations.

The commonest cause of pancytopenia in our study was megaloblastic anemia (33.3%), followed by aplastic anemia and kala azar (16.7%) each, leukemia (14.6%) (Table-4&5).

**Table-4: Bone Marrow examinations**

Bone Marrow Aspiration	N	%
Megaloblastic anemia	16	33.3
Aplastic anemia	8	16.7
Acute leukemia	7	14.6
Multiple myeloma	1	2.1
Myelodysplastic syndrome	1	2.1

**Table-5: Etiology of Pancytopenia**

Causes	N	%
Megaloblastic anemia	16	33.3
Aplastic anemia	8	16.7
Hypersplenism	3	6.2
Leukemia	7	14.6
Multiple myeloma	1	2.1
Kala azar	8	16.7
Myelodysplastic syndrome	1	2.1
SLE	2	4.2
Malaria	1	2.1
Sepsis	1	2.1

### Discussion

Pancytopenia a decrease in all the three types of cells in the peripheral blood. Commonly presents with symptoms of anemia or thrombocytopenia. The presenting symptoms are usually attributable to anemia or thrombocytopenia. Sometime pancytopenia is detected as an incidental features of a disorder that is capable of depressing the level of all cellular elements in the blood.<sup>3</sup>

In present study generalized (70.8%) was the commonest symptoms followed by loss of appetite seen in (62.5%). Our study well supported by Raziq et al<sup>4</sup> who founded weakness in 68.2% cases.

In our study pallor was the commonest sign seen in all cases followed by hepatomegaly (31.2%) and splenomegaly (25%) cases. Our study was well supported by Khodke et al<sup>5</sup> and raziq et al<sup>4</sup>.

In our study commonest cause of pancytopenia was found megaloblastic anemia (33.3%) followed by aplastic anemia and kala azar. Our study well supported by Tilak and Jain et al<sup>6</sup> Savage et al<sup>7</sup>, Khodke et al<sup>5</sup> and Khunger et al.<sup>8</sup> They found megaloblastic anemia as the commonest cause.

### Conclusion

Pancytopenia can be caused by a number of reversible conditions like megaloblastic anemia, infections such as kala azar, dengue. So while evaluating the cases of pancytopenia, we should 1st rule out the reversible conditions as early as possible so that it help in early management which will reduce the morbidity and mortality in patient.

### References

- Williams DM. Panctopenia, aplastic anemia and pure red cell anemia. In: Richard GL, Bithel TC, John F, John WA and John NL, editors. Wintrobe's clinical haematology. 10th ed. Philadelphia: Lea and Fabiger; 1998. p 1449-1489.
- de Gruchy GC. Pancytopenia, aplastic anemia, In: Firkin F, Chesterman C, Penington D and Rush B, editors. de Gruchy's clinical haematology in medical practice. 5th ed. Berlin, Germany: Blackwell Science; 1989. p119-136.
- Kumar DB, Raghupathi AR; Clinicohematologic analysis of pancytopenia: Study in a tertiary care centre. Basic and Applied Pathology, 2012; 5: 19– 21.
- Niazi M, Raziq F. The incidence of underlying pathology in pancytopenia: an experience of 89 cases. J Postgrad Med Inst 2004; 18: 76–9.
- Khodke K, Marwah S, Buxi G, Yadav RB, Chaturvedi NK. Bone marrow examination in cases of pancytopenia. J Indian Acad Clin Med 2001; 2: 55–9.
- Tilak V, Jain R. Pancytopenia: a clinico-hematologic analysis of 77 cases. Indian J Pathol Microbiol 1999; 42: 399–404.
- Savage DG, Allen RH, Gangaidzo IT et al. Pancytopenia in Zimbabwe. Am J Med Sci 1999; 317: 22–32.
- Khunger JM, Arulselvi S, Sharma U, Ranga S, Talib VH. Pancytopenia: a clinico haematological study of 200 cases. Indian J Pathol Microbiol 2002; 45: 375–9