

Study of pancytopenia cases in adults at BSTRH- a pilot study (1 year)

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Abstract

INTRODUCTION:

Pancytopenia is relatively common hematological entity. It is a striking feature of many serious & life threatening illness. The severity of pancytopenia & the underlying pathology determine the management & prognosis.

OBJECTIVES :

- 1) To study the incidence & etiological spectrum of pancytopenia in rural population coming to BSTR hospital
- 2) To study the diagnostic approach in patients of pancytopenia in our set up.

MATERIAL & METHODS:

In this cross sectional study 25 pancytopenia patients were evaluated clinically, along with hematological parameters & bone marrow aspiration in Department of Pathology & Department of Medicine of MIMER Medical College, Talegaon Dabhade, during Jan 2010 to Dec 2010.

RESULTS:

Among 25 cases studied, age of patients ranged from 18 to 78 years with male predominance. The commonest physical finding was pallor followed by splenomegaly and hepatomegaly. Macrocytic anemia was the predominant blood picture. The commonest bone marrow finding was megaloblastic erythropoiesis. The commonest cause of pancytopenia was megaloblastic anemia.

CONCLUSION:

The present study concludes that detailed primary hematological investigation along with bone marrow aspiration in pancytopenic patients helps to determine the cause of pancytopenia, which is important for planning further investigation and management.

KEYWORDS: Bone marrow aspiration, megaloblastic anemia, pancytopenia.

Introduction:

Pancytopenia is defined as reduction of all three formed blood elements below the normal range that is simultaneous presence of anemia, leucopenia and thrombocytopenia.¹ Pancytopenia exists in adults when hemoglobin is < 13.5 gm/dl in male and < 11.5 gm/dl in female, WBC count < $4 \times 10^9/L$ and platelet < $150 \times 10^9/L$.^{1,2,3}

The severity of pancytopenia and the underlying pathology determines the management and prognosis of the disease.⁴ Hence the finding of correct aetiopathology in a given case is crucial.

It is not a disease entity but triad of findings that may result from number of processes primarily or secondarily involving the bone marrow.^{1,2} Hence, bone marrow examination is extremely helpful in evaluation of pancytopenia.³

Aims and Objectives:

1. To know the incidence of pancytopenia in BSTRH (1 year).
2. To find out the underlying aetiopathology of pancytopenia cases in BSTRH.
3. To propose the diagnostic approach in a patient of pancytopenia in our set up.

Materials and Methods:

The present study was conducted in department of Pathology, BSTRH for one year.

During this time, a total of 166 patients fulfilled criteria of pancytopenia. Out of them, 25 were subjected for bone marrow examination & we have restricted our study to those patients.

Case selection was based on clinical features & supported by laboratory evidences which included Hemoglobin, leucocyte & platelet count, peripheral blood smear and bone marrow aspiration examination.

After informed consent of patients, bone marrow aspiration was done with Salah needle from posterior superior iliac spine or sternum and bone marrow trephine biopsy will be done with Jamshidi needle from posterior superior iliac spine.

Results :

A total of 166 cases showed evidence of pancytopenia. Out of which 141 cases were of infective origin and the recovered after treatment. 25 cases were subjected to bone marrow aspiration. The male to female ratio 2.6 : 1. The age of patients ranged from 22 to 77 years.

Presenting complaints and physical findings are shown in table 1.

The commonest mode of presentation was generalized weakness; other main symptoms were dyspnea, weight loss. Pallor was noted in all cases.

Hematological parameters in the two subgroups of pancytopenia are shown in table 2.

The predominant blood picture was macrocytic anaemia (72%) followed by dimorphic anaemia (20%); peripheral smear showed macroovalocytes with hypersegmented neutrophils (figure 1, 2)

The predominant bone marrow finding was megaloblastic anaemia (72%) followed by dimorphic anaemia (28%); bone marrow aspiration showed erythroid hyperplasia predominantly of megaloblastic type. (Figure 3, 4)

The causes of pancytopenia and case distribution are shown in table 3. Megaloblasticaemia was observed in 18 patients (72 %) followed by dimorphic anaemia in 7 patients (28%).

Table No 1. Presenting complaints & physical findings in pancytopenia

Sr. NO	Presenting complaints & signs	No of cases	Percentage
1	Generalized weakness	25	100%
2	Dyspnea	10	40%
3	Fever	01	04%
4	Weight loss	02	08%
5	Pallor	25	100%
6	Splenomegaly	01	04%
7	Hepatomegaly	01	04%

Table No 2. Haematological parameters in the two subgroups of pancytopenia:

Parameters	Megaloblasticaemia	Dimorphic anaemia (Nutritional)
Hb(gm/dL)	2.9 – 10.9	4 – 9.8
TLC (μ L)	1600 - 3900	1800 - 3300
Platelets (μ L)	48000 – 1,10,000	25000 - 90000

Table No 3. Causes of pancytopenia on bone marrow examination

CAUSE OF PANCYTOPENIA	TOTAL NO OF CASES	PERCENTAGE
Megaloblastic anemia	18	72%
Dimorphic anemia (Nutritional)	7	28%
Total	25	100%

DISCUSSION

Table No 4. Comparison with other studies published in the literature

STUDY	COUNTRY	YEAR	CASES	COMMONEST CAUSE
Khunger et al	India	2002	200	Megaloblastic anemia (72%)
Jha et al	Nepal	2007	148	Aplastic anemia (29%)
Gayathri BN et al	India	2011	104	Megaloblastic anemia (74%)
Present study	India	2010	25	Megaloblastic anemia (72%)

A total of 25 cases of pancytopenia were studied. Age, gender-wise incidence, presenting complaints, peripheral blood picture, bone marrow aspiration smears and various causes of pancytopenia were studied in all cases, and observations were compared with those in studies published in the literature as shown in table 4.

The commonest cause of pancytopenia reported in various studies throughout the world has been aplastic anaemia. This is in sharp contrast with the results of our study, where the commonest cause of pancytopenia was found to be megaloblasticanaemia. Similar findings were observed in other studies conducted in India.

Incidence of megaloblasticanaemia was 72% in our study. Incidence of 72 % was reported by Khunger et al. and 74 % by Gayathri BN et al. In a study by Jha et al in Nepal commonest cause was aplastic anaemia(29%) followed by megaloblasticanaemia (24%). All the above studies have been done in India and they stress the importance of megaloblasticanaemia being the major cause of pancytopenia.

Conclusion

The commonest cause of pancytopenia in our study and studies done in India is megaloblasticanaemia. All these studies seem to reflect the higher prevalence of nutritional anaemia in Indian subjects.

The present study concludes that detailed primary haematological investigation along with bone marrow aspiration in pancytopenic patients are helpful for understanding the disease process; to diagnose, or to rule out the cause of pancytopenia and in planning further investigations and management of patients

Bibliography

1. Ferkin Frank, Chestermancolin, PeningtonDavidetalPancytopenia; aplastic anaemia. Chapter 6. In: de gruchy's clinical Haematology in medical practice .5th edition; 1996. Delhi: Oxford university Press. 119- 136.

2. Khunger J M , Arulselvi S, Sharma V, RangaS,Talib V H.Pancytopenia – A Clinico- hematological study of 200 cases. Indian J Pathol, Microbiol 2002; 45 (3): 375 – 379
3. Jha A, Sayami G, Adhikari R C, Panta A D,Jha R, Bone marrow examination in cases of pancytopenia. J Nepal Med Assoc. 2008; 47(169):12-7.
4. Gayathri B N, KadamSatyanarayan Rao. Pancytopenia: A ClinicoHaematological Study. Journal of Laboratory Physicians 2011; 3(1):15-20.

Fig No.1 Classification of anemias in pancytopenic patients

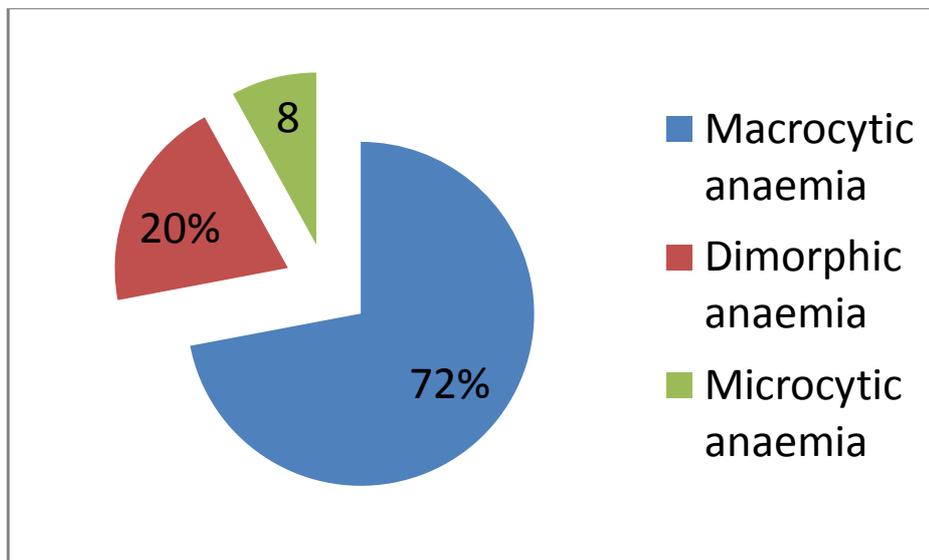


Fig.No.2 Macrocytic blood picture with hypersegmented neutrophils

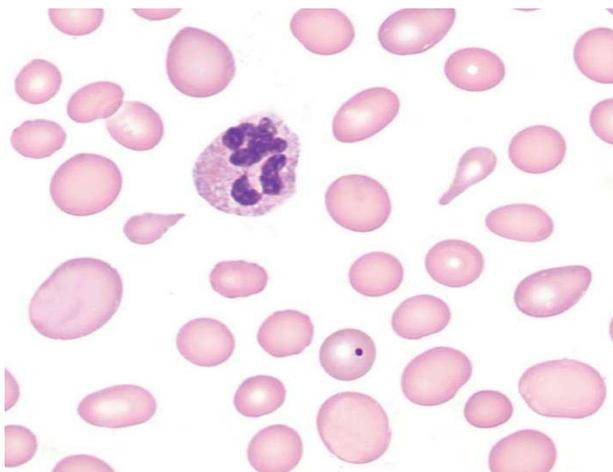


Figure 3-Bone marrow findings in cases of pancytopenia

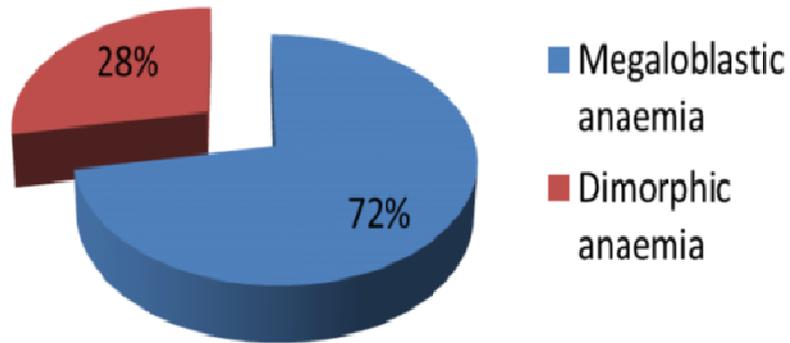


Figure 4-Bone marrow showing erythroid hyperplasia with megaloblasts

