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RESEARCH ARTICLE

A CLINICHAEMATOLOGICAL STUDY IN PANCYTOPENIA

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Key words:-

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Abstract

Objectives:

1. To study the causes and clinical presentations of pancytopenia.
2. To evaluate Haematological parameters in pancytopenia along with Bone Marrow Examination.

Methods:

A retrospective study was conducted at department of Pathology from July 2017 to Feb 2020. 20 cases of pancytopenia were evaluated clinically, along with haematological parameters.

Results: Among 20 cases studied, Maximum number of cases was in the age group of 21 -30 years (40%) with male predominance (1.2%). Most patients present with generalized weakness. The commonest bone marrow finding was megaloblastic erythroid hyperplasia. The commonest cause for pancytopenia was megaloblastic anaemia (60%) followed by aplastic anaemia (25%). Other causes of pancytopenia were hypersplenism, subleukemic leukemia, multiple myeloma.

Conclusion: After studying these cases in present study we have come on the conclusion that the commonest cause of pancytopenia is megaloblastic anaemia. The detailed primary haematological investigation of patients with pancytopenia helped to determine the cause of the same, which is important for planning further investigation and crucial for treatment purpose.

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Introduction:-

Pancytopenia is an important clinicohematological entity encountered in our daily clinical practice. It is defined as reduction of all three formed blood components below the normal range that is simultaneous presence of anemia, leucopenia and thrombocytopenia.

It is not a disease entity but a triad of findings that may result from a number of disease processes primarily or secondarily involving the bone marrow.

The severity of pancytopenia and the underlying pathology determine the management and prognosis of the patients.^[1]

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Hence the finding of correct etiopathology in a given case is crucial for proper treatment of patient. Peripheral pancytopenia is a manifestation of disorders which primarily or secondarily affect the bone marrow. [2,3,4] Hence, bone marrow examination is extremely helpful for evaluation of pancytopenia. [5]

Objectives:-

1. To study the causes and clinical presentations of pancytopenia.
2. To evaluate Haematological parameters in pancytopenia along with Bone Marrow Examination.

Methods:-

A retrospective study was conducted in department of pathology from July 2017 to February 2020.

Patients of all age groups and both sexes were included.

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

Inclusion criteria were presence of all 3 of the following: hemoglobin,

<10 g/dL; total leukocyte count (TLC), <4,000/ μ L; platelet count, <150,000/ μ L.

Patients taking mytoxic drugs were excluded.

Peripheral smear was stained by May-Grunwald Giemsa stain for all the cases and examined in detail. Bone marrow aspiration was subsequently carried out under aseptic precaution after obtaining written consent from the patient or guardian.

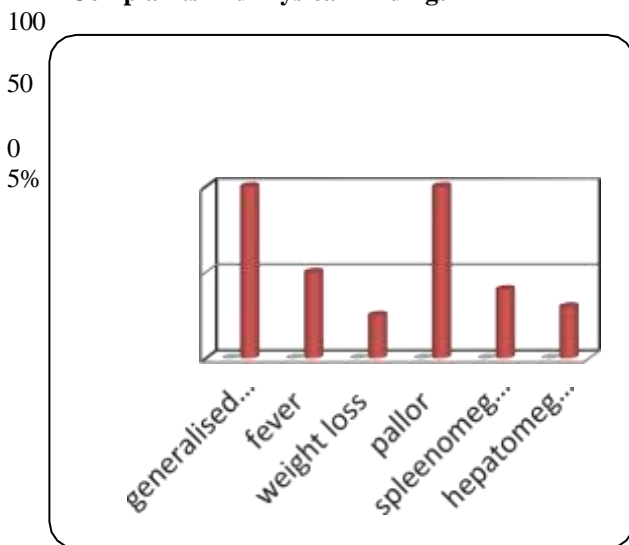
Results:-

Among 20 cases studied, maximum number of cases was in the age group of 21-40 years (40%) with male predominance and male to female ratio was 1.2:1.

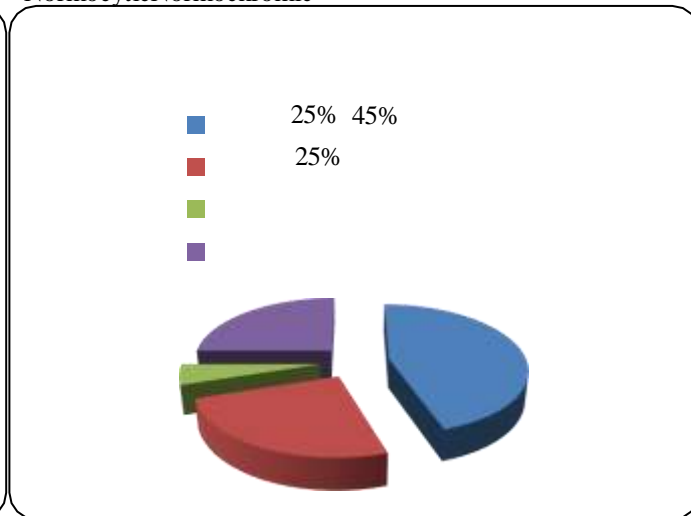
The most common mode of presentation was generalized weakness; other main symptoms were fever and weight loss. Pallor was noted in all cases. Splenomegaly and hepatomegaly were seen in cases of megaloblastic anaemia.

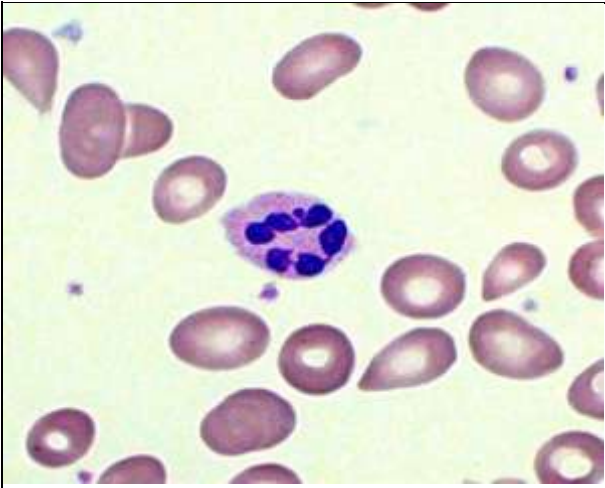
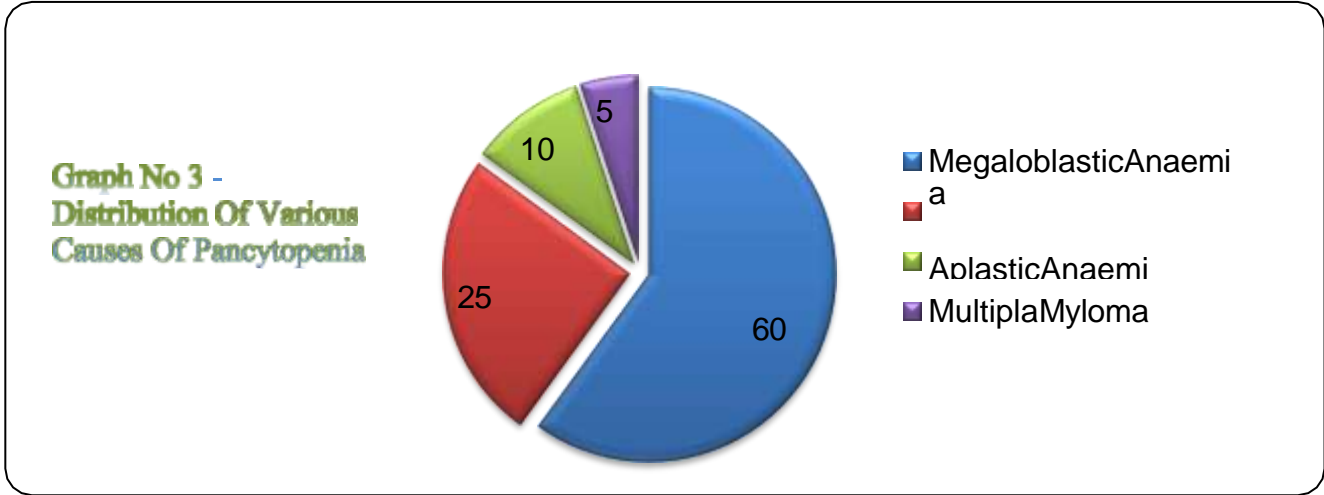
The predominant blood picture was dimorphic anaemia (45%), followed by macrocytic anaemia (25%); peripheral smear showed macro-ovalocytes with hypersegmented neutrophils. Microcytic Hypochromic Anaemia (5%) and normocytic normochromic anaemia (25%). Leucopenia and thrombocytopenia were seen in all cases.

Graph No 1- Presenting Complaints And Physical Findings

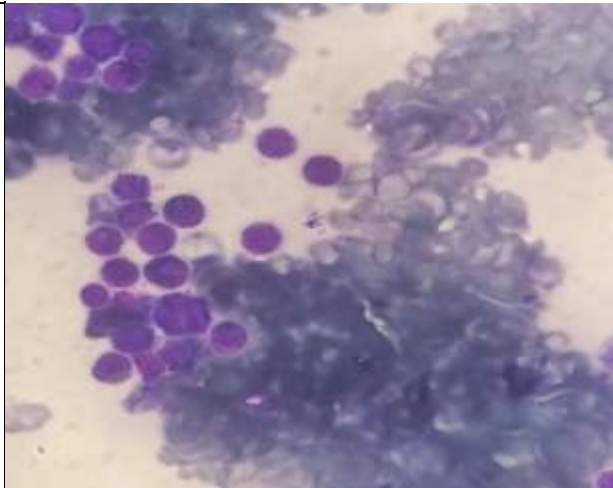


Graph No 2- Peripheral Blood Picture In Pancytopenic Patients
 Dimorphic Anaemia 45%
 Macrocytic Anaemia 25%
 Microcytic Hypochromic 5%
 Normocytic Normochromic 25%



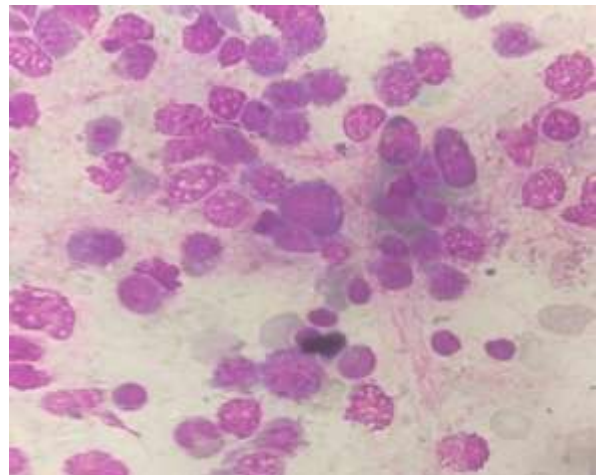
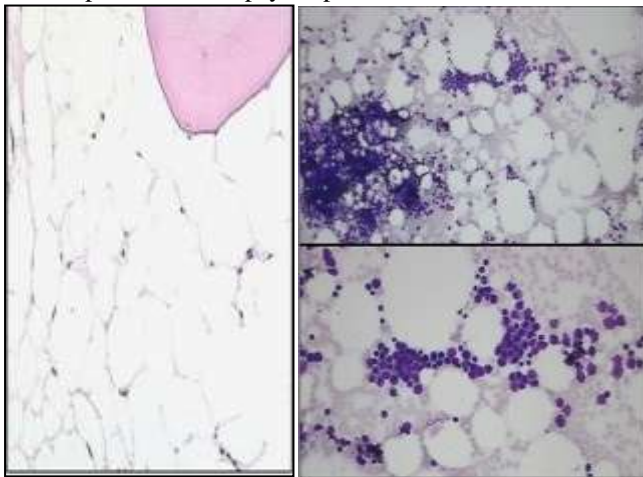


PS Finding of Megaloblastic Anaemia



Bone marrow Aspiration of Megaloblastic Anaemia

Bone Marrow Aspiration and Biopsy of Aplastic Anaemia



Discussion:-

A total 20 patients of pancytopenia were studied in present study.

Statistical data of Age, Sex, Presenting complaints, Peripheral smear finding, Bone marrow aspiration and Biopsy finding with various causes of pancytopenia were studied in all cases and observations were compared in those with studies published in the literature.

Tableno.1:- Age, Sex Distribution compared to other study.

Authors	Tilak V et al	Kumar Ret al	Khodke K et al	Khunger JM et al	Present study
No. of cases	77	166	50	200	20
Age range	5-70	12-73	3-69	2-70	10-70
M:F	1.4:1	2.1:1	1.3:1	1.2:1	1.2:1

Causes of pancytopenia

The commonest cause of pancytopenia in various studies throughout the world has been aplastic anaemia. This is in sharp contrast with the result of our study where the commonest cause of pancytopenia was found to be megaloblastic anemia. Similar findings were observed in other studies done in India.

All the above studies have been done in India and stress importance of megaloblastic anaemia being major cause of pancytopenia.

Tableno.2:- Causes of pancytopenia compared to other study.

Study	Tilak V et al	Kumar R et al	Khodke K et al	Khunger JM et al	Present study
Year	1999	2001	2001	2002	2021
Commonest cause	Megaloblastic Anaemia	Aplastic Anaemia	Megaloblastic Anaemia	Megaloblastic Anaemia	Megaloblastic Anaemia
Second most common	Aplastic Anaemia	Megaloblastic Anaemia	Aplastic Anaemia	Aplastic Anaemia	Aplastic Anaemia

Conclusion:-

The commonest cause of pancytopenia in our study and studies done in India is megaloblastic anaemia.

All these studies seem to reflect the higher prevalence of nutritional anaemia in Indian patients.

The present study concludes that detailed primary hematological investigation along with bone marrow aspiration in pancytopenic patients help to determine the cause of pancytopenia and to rule out causes which are important for planning further investigations and management.

References:-

1. Tilak V, Jain R. Pancytopenia-A Clinico-hematologic analysis of 77 cases. Indian J Pathol Microbiol 1992;42:399-404.
2. Ferkin Frank, Chesterman Colin, Penington David et al. Pancytopenia; aplastic anaemia. Chapter 6. In: de gruchy's clinical Haematology in medical practice .5th edition; 1996. Delhi: Oxford university Press. 119- 136.
3. Khunger JM, Arulselvi S, Sharma V, Ranga S, Talib VH. Pancytopenia – A Clinico-hematological study of 200 cases. Indian J Pathol, Microbiol 2002; 45 (3): 375 – 379
4. International agranulocytosis and aplastic anemia study. Incidence of aplastic anemia, the relevance of diagnostic criteria. Blood 1987; 70:1718-21.
5. 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.