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PANCYTOPENIA: A CLINICOHEMATOLOGICAL STUDY

Medicine

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ABSTRACT

Background: Pancytopenia is a common haematological condition often encountered in day to day practice.
Aims: To evaluate the etiological causes of pancytopenia in one-year period.
Methods: In this retrospective study we included 120 pancytopenic patients who were evaluated clinically, along with hematological parameters and bone marrow aspiration. Results: Maximum number of cases was observed in age group 21-40 years and male to female ratio was found to be 1.18 :1in our study. Out of total 120 cases, megaloblastic anaemia was the commonest cause (40%) of pancytopenia.
Conclusion: The present study concludes that detailed hematological investigations including bone marrow aspiration in patients with pancytopenia are helpful for understanding the disease process and in planning further investigations and management.

KEYWORDS

Pancytopenia, bone marrow aspiration, megaloblastic anemia.

INTRODUCTION:

Pancytopenia is a common haematological condition often encountered in day to day clinical practice. It is defined as a decrease in all the three cell lines of blood viz., red blood cells, leucocytes, and platelets.Pancytopenia is defined as haemoglobin of < 9 gm/dl, WBC < 4,000/cmm, and platelets < 100,000/cmm. Pancytopenia is not a disease by itself but a triad of haematological finding that can result from a number of disease processes.[1]

The causes of pancytopenia can be:

a) Ineffective haematopoiesis with cell death in the marrow.
b) Formation of defective cells which are rapidly removed from circulation.
c) Sequestration and/or destruction of cells by the action of antibodies or,
d) Trapping of normal cells in a hypertrophied and over-reactive reticuloendothelial system.[2]

The severity of pancytopenia and the underlying pathology determine the management and prognosis. Thus, identification of the correct cause will help in implementing appropriate therapy.

AIMS:

To investigate the etiological causes of pancytopenia in one-year period.

METHODS:

The present retrospective study was undertaken for a period of 1 year in our hospital. Patients of all age groups and both sexes were included.In this study,120 pancytopenic patients were evaluated clinically, along with hematological parameters and bone marrow aspiration study. Patients with hemoglobin, <9 g/dL; total leukocyte count (TLC), <4,000 / µL ; platelet count, <100,000/ µL were included in the study. Two milliliters of EDTA (ethylene diamine tetra-acetic acid) anticoagulated blood was collected from each patient and processed through XT 4000i Sysmex automated hematologyanalyser. Peripheral smear was stained by Leishman 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.Bone marrow aspiration smears were stained with Geimsa stain for microscopy.

RESULTS:

The spectrum of disorders primarily or secondarily affecting the bone marrow may manifest with peripheral pancytopenia. Maximum number of cases was observed in age group 21-40 years and there were 55(45.8%) female and 65(54.1%) male cases in our study as shown in Table 1.

TABLE 1:Age and sex distribution

AGE	MALE	FEMALE
01-10 Years	05	03
11-20 Years	08	05
21-30 Years	15	20
31-40Years	15	15
41-50Years	09	05
51-60 Years	05	03
61-70 Years	05	02
71-80 Years	03	02
Total	65	55

Most of the patients presented with fever and generalised weakness. The commonest physical finding was pallor, followed by splenomegaly.

The commonest cause for pancytopenia was megaloblastic anemia (40.0%)in our study.

TABLE 2:Causes of pancytopenia as per bone marrow study

CAUSES	TOTAL	%
Megaloblastic anemia	48	40.0%
Erythroid hyperplasia	12	10.0%
Hypoplastic marrow	07	5.80%
Normocellular marrow	02	1.66%
Myelodysplastic syndrome	05	4.16%
Acute myeloid leukaemia	08	6.66%
Acute lymphoblastic leukaemia	05	4.16%
Non Hodgkin lymphoma	02	1.66%
Plasmacytosis	03	2.50%
Inconclusive	08	6.66%
TOTAL	120	100%

DISCUSSION:

In our study male to female ratio was found to be 1.18 :1.This is in accordance to the study done byB N Gayathri et al where male to female ratio was 1.2:1.[3]In our study most common cause of pancytopenia was found to be megaloblastic anemia. This was in accordance to the study done by Tilak et al where the most common cause of pancytopenia was megaloblastic anemia(68%) followed byaplastic anemia.(7.7%).[4]This is in contrast to the study done by Vermal et al where aplastic anemia(40.6%) was most common.[5]

CONCLUSION:

The present study concludes that detailed hematological investigations including bone marrow aspiration in patients with pancytopenia are helpful for understanding the disease process and in planning further investigations and management.

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