



Spectrum Of Haematological Diseases Diagnosed By Bone Marrow Examination: A 2 Year Retrospective Study.

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Abstract

Introduction: The spectrum of haematological disorders is relatively different in the developing world than the developed countries . At most of the instances, the diagnosis can be made by complete clinical examination and by doing simple investigations. Bone marrow picture along with peripheral blood smear and clinical findings can help in arriving at a conclusive diagnosis.

Aim and Objectives:

This study was done to know the spectrum of various haematological disorders that can be diagnosed on bone marrow examination and to know the age and gender distribution.

Materials and Methods:

The study was a retrospective study conducted in the Postgraduate Department of Pathology at Acharya Shri Chander College of Medical Sciences and Hospital, Sidhra, Jammu during a period of 2 years from January 2021 to December 2022. A total number of 98 cases were included in this study. The clinical details were taken from case sheets and bone marrow aspiration reports of the patients were collected from the bone marrow register of Pathology department. Peripheral blood smear along with necessary hematological and clinical parameters were also noted from the record file. Aspirates of inadequate material or dry tap were excluded from the study. Then the data obtained was statistically analysed.

Results:

A total of 98 patients who had undergone bone marrow examination were included in this study, of which 62 were males and 36 were females with M:F ratio of 1.7:1. In the present study, the age group of the patients was from 9 to 80 years. The maximum number of cases 38.7% were in the age group of 21-30 years. Erythroid hyperplasia was the common finding in our study. In these cases, there were no other significant findings. Out of 29 cases (29.5%) of erythroid hyperplasia, 16 cases were micronormoblastic hyperplasia and 15 cases were normoblastic hyperplasia . Megaloblastic anemia was seen in 24 cases (24.4%).

Keywords: Bone Marrow, Hematology, Erythroid Hyperplasia

Introduction

Haematological disorders in any age group usually presents with anemia and is the commonest presentation worldwide and particularly in developing countries like India. The spectrum of

haematological disorders is relatively different in the developing world than the developed countries . At most of the instances, the diagnosis can be made by complete clinical examination and by doing simple investigations. Bone marrow picture along with

peripheral blood smear and clinical findings can help in arriving at a conclusive diagnosis. Bone marrow examination also gives explanation for unexplained cytopenias, leukemias and rare disorders. Bone marrow examination is an important diagnostic tool in haematology. It is a simple and relatively safe procedure carried out routinely for the diagnosis and management of haematological and to some extent non-haematological disorders.

Aim & Objectives: This study was done to know the spectrum of various hematological disorders that can be diagnosed on bone marrow examination and to know the age and gender distribution.

Material And Methods:

The study was a retrospective study conducted in the Postgraduate Department of Pathology at Acharya Shri Chander College of Medical Sciences and Hospital, Sidhra, Jammu during a period of 2 years from January 2021 to December 2022. A total number of 98 cases were included in this study. The clinical details were taken from case sheets and bone marrow aspiration reports of the patients were collected from the bone marrow register of Pathology department. Peripheral blood smear along with necessary haematological and clinical parameters were also noted from the record file. Aspirates of inadequate material or dry tap were excluded from the study. Then the data obtained was statistically analysed.

Results:

A total of 98 patients who had undergone bone marrow examination were included in this study, of

which 62 were males and 36 were females with M:F ratio of 1.7:1 and this gender ratio is shown in figure 1.

In the present study, the age group of the patients was from 9 to 80 years. The maximum number of cases 38.7% were in the age group of 21-30 years, followed by 20.4% cases in age group of 31-40 years were shown in Table 1 , shows the age distribution.

The spectrum of these various hematologic disorders on bone marrow examination in the present study is shown in Table 2. Erythroid hyperplasia was the common finding in our study. In these cases, there were no other significant findings. Out of 29 cases (29.5%) of erythroid hyperplasia, 16 cases were micronormoblastic hyperplasia and 15 cases were normoblastic hyperplasia . Megaloblastic anemia was seen in 24 cases (24.4%). In 2 cases (2.0%) of hypoplastic anemia, all 3 cell lineages were suppressed. In 7 cases (7.14%) of Acute leukemia, 5 cases were AML and 2 cases was ALL. Chronic myeloid leukemia was seen in 8 cases (8.16%), both were correlated with peripheral blood smear findings. 9 cases (9.18%) of multiple myeloma showed >10% plasma cells and correlated with biochemical, radiological and clinical findings. 2 cases (2.0%) of bone marrow aspiration showed metastasis with 1 case each of squamous cell carcinoma and adenocarcinoma deposits, Myelofibrosis and ITP was seen in 2 cases (2.0%). Normal bone marrow findings was seen in 3 cases (3.0%). This is graphically represented in Figure 2.

Figure 1: Gender Distribution

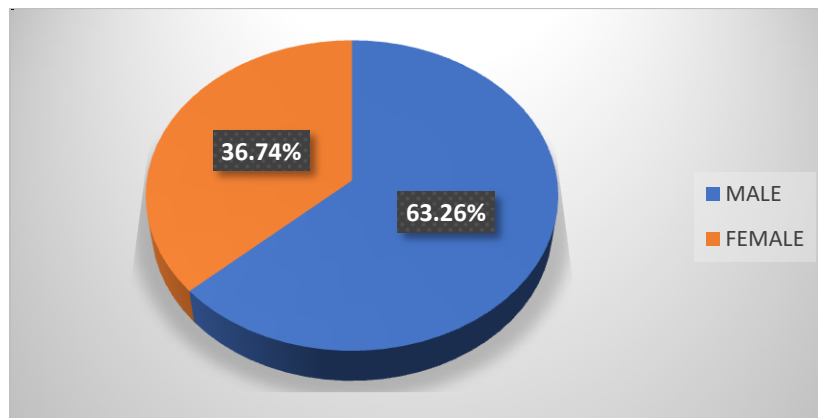


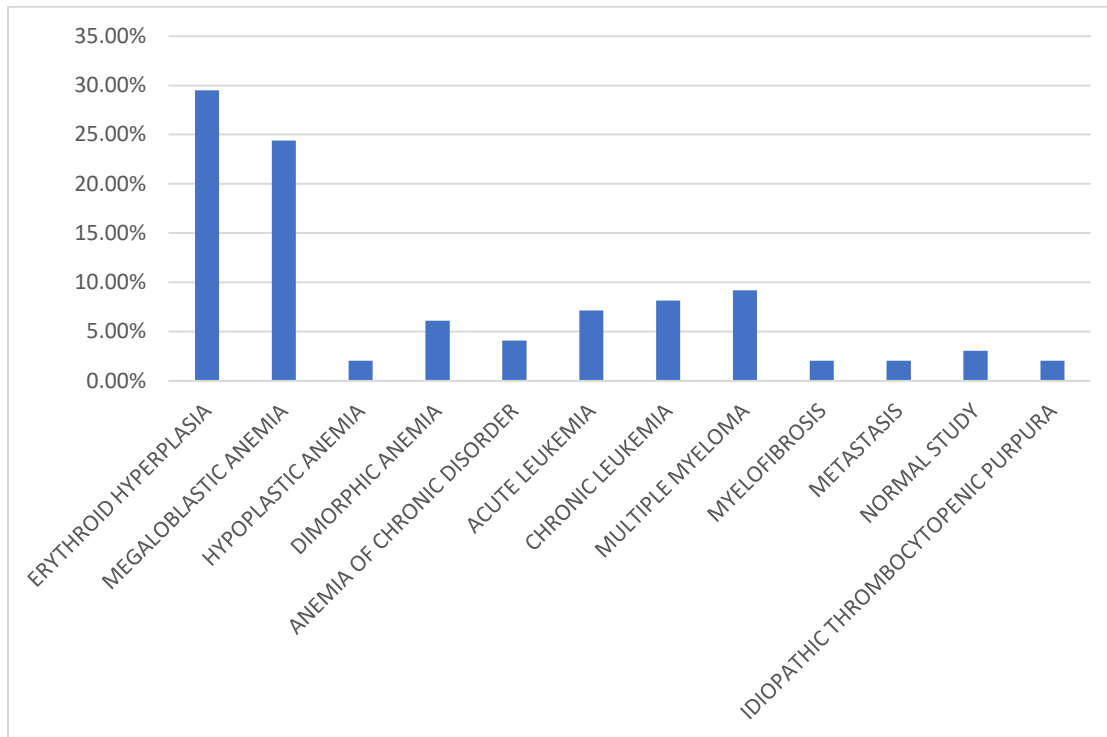
Table 1: Age Wise Distribution

AGE GROUP	NO. OF CASES	PERCENTAGE
0-10	2	2.04%
11-20	10	10.20%
21-30	38	38.77%
31-40	20	20.40%
41-50	15	15.30%
51-60	6	6.12%
61-70	5	5.10%
71-80	2	2.04%
TOTAL	98	100%

Table 2: Spectrum Of Hematological Disorders

S.NO.	HEMATOLOGICAL DISORDERS	NO. OF CASES	PERCENTAGE
1	ERYTHROID HYPERPLASIA	29	29.50%
2	MEGALOBLASTIC ANEMIA	24	24.40%
3	HYPOPLASTIC ANEMIA	2	2.04%
4	DIMORPHIC ANEMIA	6	6.12%
5	ANEMIA OF CHRONIC DISORDER	4	4.08%
6	ACUTE LEUKEMIA	7	7.14%
7	CHRONIC LEUKEMIA	8	8.16%
8	MULTIPLE MYELOMA	9	9.18%
9	MYELOFIBROSIS	2	2.04%
10	METASTASIS	2	2.04%
11	NORMAL STUDY	3	3.06%
12	IDIOPATHIC THROMBOCYTOPENIC PURPURA	2	2.04%
TOTAL		98	100%

Figure 2: Spectrum Of Haematological Disorders



Discussion:

The spectrum of hematological disorders is very wide. Bone marrow examination is safe and a useful test in reaching the final diagnosis.

In our study, the most common age group undergoing BMA was 21- 30 years (38.7%) followed by 31-40 years (20.4%). In a study conducted by Shastry *et al* [1] similar results were noted with majority of patients were in the age group 21-30years (25.4%).

In our study, the total number of patients included in the study was 98 cases. There were 62 males and 36 females with male:female ratio of 1.7:1. This is similar to the study conducted by Jha *et al* [2] which had 89 males and 59 females with male: female ratio of 1.5:1.

In our present study, erythroid hyperplasia was seen in 29 cases (29.5%). In a study conducted by Pudasini *et al* [3] 21% cases showed erythroid hyperplasia . Similar finding 19.6% cases of erythroid hyperplasia was seen in a study done by Jha *et al* [2].

Megaloblastic anemia was 2nd common diagnosis in the present study which included 24.4%cases. Similar findings were reported in study conducted by Jha *et*

al [2] in which megaloblastic anemia comprised 23.64 % cases. In a study done by Gayathri *et al* [4] megaloblastic anemia was the commonest cause of pancytopenia and was the commonest finding in BMA. The increase incidence of megaloblastic anemia reflects the higher prevalence of nutritional deficiency in our country.

In our present study, hypoplastic anemia was seen in 2.0% cases. In a study conducted by Liashram *et al* [5] similar findings were seen where hypoplastic anemia was seen in 3.2% cases. However, anemia of chronic disorder was seen in 4.0% cases. Similar findings were reported in study conducted by Munir *et al* [6] which comprised 5.1% cases. The role of bone marrow aspiration and examination become important to differentiate it from pure iron deficiency anemia in which iron stores of the bone marrow are depleted.

Chronic leukaemias were the commonest malignant hematological disorder in the present study constituting 8.16% cases. This is similar to 10.4% of overall cases in study conducted by Atchyuta M *et al* [7]. Among the chronic leukemia’s, chronic myeloid leukemia (CML) was most common comprising 50% cases.

In our study, we observed 7.1% cases of acute leukaemia, 2.0% cases of myelofibrosis and 9.1% cases of multiple myeloma. Similar findings were reported in study conducted by Atchyuta M *et al* [7] which comprised 6% of acute leukemia, 2.7% cases of myelofibrosis and 5.2% cases of multiple myeloma.

Present study revealed 2.0% cases of ITP which is similar to findings of study conducted by Para *et al* ⁸ which had 1.7% cases. Also metastatic lesions were studied in 2.0% cases which was similar to study conducted by Munir *et al* [6] where metastatic lesion comprised of 1.3% cases. However in our study normal bone marrow findings was observed in 3.0% cases which was similar to study conducted by Jha *et al* [2] which comprised 3.3% cases.

Conclusion:

In our study, the spectrum among these hematologic diseases showed that non malignant diseases were common than hematologic malignancies and among these nonmalignant hematologic diseases, the most common disorder was erythroid hyperplasia followed by megaloblastic anemia, dimorphic anemia and anemia of chronic disorder, ITP, Hypoplastic marrow. Multiple myeloma, Chronic leukemias were common followed by acute leukemias among hematological malignancies. Myelofibrosis and metastasis were also among haematological disorders diagnosed by bone marrow examination in our present study. Thus we conclude that bone marrow examination is an important step to arrive at the confirmatory diagnosis of wide varieties of hematological disorders which is necessary for their management.

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