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Original Article

Prevalence Of Hematological Disorder: A Bone Marrow Study Of 177 Cases In A Private Hospital At Faridpur

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Abstract

Bone marrow examination of 177 cases of suspected hematological disorders was carried out in a private hospital at Faridpur from May 2007 to August 2009. Among the malignant hematological disorders, Acute Myeloid Leukemia (AML) was the most common disorders (27.69%) followed by Acute Lymphoblastic Leukemia (9.04%), MDS (7.91%), CML (7.34%) and Multiple Myeloma (1.69%). Among the non-malignant hematological disorders, Combined (both iron and folic acid and /or Vitamin B12) deficiency anemia was the most common disorders (24.87%) followed by Aplastic anemia (10.74%), ITP (6.21%), and Kala-azar (2.82%).

Introduction

Biopsy of bone marrow is an indispensable adjunct to the study of diseases of the blood & may be the only way in which a correct diagnosis can be made1. Hematological disorders are quite frequent in all age group population ranging from very common condition like deficiency disorder to relatively rare multiple myeloma. The spectrum of hematological disorders is relatively different in the developing world than the developed countries2. Most of the time the diagnosis can be arrived at by detail clinical examination and few simple investigations. However without bone marrow examination the diagnosis is usually not a confirmatory.

Bone marrow examination is one of the most frequent and relatively very safe invasive procedures done routinely in the hospitals. Though an invasive procedure, it can be easily performed even in the presence of severe thrombocytopenia with little or no risk of bleeding. Commonly it is done for the evaluation of unexplained cytopenias and malignant conditions like leukemias. Bone marrow examination is also at times done for the diagnosis or staging of a neoplasm and storage disorders. Trephine biopsy is usually performed when there is hypoplasia or aplasia or aspiration. At time it is also done in cases of lymphomas, granulomatous conditions and osteoporosis. So there are wide variety of disorders where bone marrow examination provides diagnostically important information, which otherwise would not be possible. This study was undertaken with the view to study the etiological spectrum of disorders as diagnosed on bone marrow examination.

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Materials and Methods

This prospective study was carried out among 177 patients with suspected hematological disorders, attending in a private hospital at Faridpur during the period from May 2007 to August 2009.

Both adult and child patients referred for bone marrow study were included.

Procedure: Bone Marrow was collected by bone marrow aspiration needle from posterior iliac spine of each selected patient after giving local anaesthesia by 2% Lidocaine hydrochloride (Jayson Pharmaceutical, Bangladesh).

Results

Table I shows the age distribution of the study population. Among the 177 patients maximum 41 (23.16%) were in 10-19 years age group and lowest 6 (3.39%) in above 70 years age group. The age ranged from 3.5 years to maximum 80 years with a mean age 27.05 years.

Table I: Age distribution of study population (n=177)

Age (Years)	Number of study patients	Percentage
<10	13	7.34
10-19	41	23.16
20-29	34	19.21
30-39	23	12.99
40-49	16	9.04
50-59	22	12.43
60-69	22	12.43
>70	6	3.39
Total	177	100.00

Table II shows the sex distribution of study populations. Out of 177 selected patients, 111 (62.71%) were male and 66 (37.29 %) were female in a ratio of 1: 0.59.

Table II: Sex distribution (n=177)

Sex	Number of study patients	Percentage
Male	111	62.71
Female	66	37.29
Total	177	100.00

Tables III shows the bone marrow examination findings of study population. Among 177 study populations maximum 49 (27.69%) were Acute Myeloid leukemia (AML), 44 (24.87%) were Combined (both iron and folic acid and /or Vit B12) deficiency anemia, 19 (10.74%) were Aplastic anaemia, 16 (9.04%) were Acute lymphoblastic leukemia and only 3 (1.69%) were normal.

Table III: Bone marrow examination findings of study population (n=177).

Bone marrow examination findings	Number of study patients	Percentage
Aplastic anemia	19	10.74
ITP	11	6.21
Combined deficiencyanemia	44	24.87
CML	13	7.34
AML	49	27.69
ALL	16	9.04
MDS	14	7.91
Kala-a-zar	5	2.82
Multiple myeloma	3	1.69
Normal study	3	1.69
Total	177	100.00

· ITP- Idiopathic thrombocytopenic purpura
· CML- Chronic Myeloid Leukemia
· AML- Acute Myeloid Leukemia
· ALL- Acute Lymphoblastic Leukemia
· MDS- Myelodysplastic Syndrome

Discussion

The spectrum of hematological disorders both in children and in adult is very wide. Bone marrow examination is a useful test in reaching the final diagnosis. It is one of the most common and safe procedures in medical practice. Rarely infection, excessive bleeding or embolism has been reported after bone marrow biopsy[3].

In this study, out of 177 study population, maximum 41 (23.16%) were in 10-19 years age group and lowest 6 (3.39%0 were in > 70 years age group (Table I). And out of 177 cases, 111 (62.71%) were male & 66 (37.29%) were female. Male –Female ratio was 1: 0.59 (Table II).

In these hematological findings of bone marrow study, of the 177 study cases, maximum 49 (27.69%) were Acute Myeloid Leukemia (AML), which was commonest malignancy in our patients (Table III). In contrast to the present study, in a study in Pakistan among children, Rahim et al, reported only 6.36% were Acute Myeloid Leukemia (AML) and maximum 17.92% were Acute Lymphoblastic Leukemia (ALL), which was only 9.04% in the present study[4]. The incidence of ALL in our study is lower as compared to India and China[5]. The increase number of ALL in the present study might be due to the fact that we have included more adult population than the children in the present study. Other malignancies in this study were CML 7.34%, Multiple myeloma 1.69% and Myelodysplastic Syndrome (MDS) 9.04%.

In this study, among non malignant hematological disorder of bone marrow study, micronutrients deficiency (Combined deficiency) anemia were most common. Out of 177 cases, combined (both iron and folic acid and /or Vit. B12) deficiency anemia were 44 (24.87%). Similarly 24.29% micronutrients deficiency anemia like megaloblastic anemia and 15% mixed deficiency anemia was reported by Rahim et al, in a study in Pakistan[4]. In other similar studies its frequency ranges from as low as 24% [6] to as higher as 68%[7]. Folate deficiency is more common in children, while B12 deficiency is more common in adults[7]. It is a common problem in developing countries. The usual presenting age in developed world in infancy. But in developing countries like ours it can occur at any age.

The second most common and most lethal non-malignant disorder is Aplastic anemia in our patients

(10.74%). Epidemiologically, aplastic anemia has a pattern of geographic variation opposite to that of leukemia, with higher frequency in the developing world than in the industrialized West[9]. In a study in Pakistan, Rahim et al, reported 14.15%, which was similar to the present study[4]. Idiopathic thrombocytopenic purpura was the third most common hematological disorder (6.21%) found on bone marrow examination in our patients. It is the most common cause of mucocutaneous bleeding. Its frequency on bone marrow examination varies between 32% to 48%[6]. Rahim et al, reported 14.15% aplastic anemia cases in a study in Pakistan among children, which was contrary to the present study[4].

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