



ORIGINAL RESEARCH PAPER

Pathology

A BONE MARROW ASPIRATION STUDY IN FEMALES: A RETROSPECTIVE CASE STUDY AT RIMS RANCHI

KEY WORDS: bone marrow aspiration cytology, females ,erythroid hyperplasia

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ABSTRACT

Background: Bone marrow aspiration (BMA) cytology is a common and cheap technique which reveals the marrow cellularity, its structure, and stages of differentiation of different blood cells. Objectives: The objectives of the study were to study the incidence , etiology and the common presentation in patients undergoing BMA with special focus on the females. **Materials and Methods:** This is a retrospective study that was carried out in the Department of Pathology of RIMS Ranchi, India. The study was done from January 20121 -September 2021 on 292cases . BMA was carried out and relevant clinical history, physical examination, and laboratory data were retrieved. **Results:** Out of 292 cases, 14 cases were excluded from the final analysis due to inadequate marrow. Male-to-female ratio was 1.24:1 The most common indication was unexplained anemia and bleeding. The most common etiological diagnosis was erythroid hyperplasia EH (35.6% microcytic EH-22% and megaloblastic EH-13%) followed by acute leukemias(16%). Among adolescents (>11– 20 years)-23% and reproductive age group females -21% where erythroid hyperplasia was the most common cause followed by acute leukemia. **Conclusion:** The common hematological disorders prevailing in females are erythroid hyperplasia (microcytic EH and EH with megaloblastic changes) main cause being nutritional anemia followed by acute leukemia.

INTRODUCTION

Examination of the marrow is critically important in the study and management of wide variety of haematological disorders. ¹ Hematological disorders usually presents with anemia in any age group.

Anemia is common worldwide and particularly so in developing countries.²The spectrum of hematological disorders is relatively different in the developing world than the developed countries.³

Up to 30% of all women report heavy menstrual bleeding(HMB) at some point during their reproductive years and upto half seek medical attention for this symptom.^{4,5} Among women known to have a bleeding disorder, HMB is the most common symptom.⁶

AIM-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 incidence in females.

INCLUSION CRITERIA-

All females coming to the department for bone marrow examination irrespective of age ,religion and geographical distribution.

EXCLUSION CRITERIA-

smears which shows inadequate tissues for diagnosis.

MATERIAL AND METHOD

This was a retrospective study done in the department of Pathology, RIMS, Ranchi, over a period of 9 months from January 2021- September 2021. A total of 292 cases which were done 278 cases were included in this study and 14 excluded due to inadequate tissue.

The clinical details were taken from case sheets and BMA

reports of the patients were collected from the bone marrow register of Pathology department. Data collected mainly focuses on the bone marrow aspiration reports of female patients of all ages with different presenting complain. Then the data obtained was statistically analyzed.

The procedure of Bone marrow aspiration was done after giving 2% xylocaine as local anesthesia either from sternum or from posterior iliac spine. Leishman stained peripheral blood and bone marrow smears were studied. The diagnosis among various hematologic disorders was confirmed by using the standard criteria.

RESULT

A total of 278 patients who had undergone bone marrow examination were included in this study, of which 154 were males and 124 were females with M:F ratio of 1.24: 1 .

Table 1. SexWise Incidence

sex	Number of cases	Percentage of cases
male	154	55.39
female	124	44.61
total	278	100

In the present study, the age group of the patients was from 12 months to >70 years. The maximum number of cases (23.4%) were in the age group of 11-20 years, followed by 21-30 years (21%) and were shown in Table 2, shows the age distribution

Table 2. AgeWise Distribution

Age distribution	No .of cases	percentage
1-10years	17	13.7
11-20years	29	23.4
21-30years	26	21
31-40years	21	17
41-50years	18	14.5
51-60years	8	6.4

61-70years	4	3.2
>70years	1	0.8
total	124	100

The present study shows anemia (49%) to be most common cause in female coming for bone marrow examination.

Table 3. Various presenting complains

Complains	No.of cases	percentage
Anemia and bleeding	61	49.2
Jaundice	2	1.6
Hepatosplenomegaly	15	12.2
Infection	4	3.2
Bone pain	8	6.4
Pancytopenia	12	9.8
normal	22	17.7
Total	124	100

Table 4. different hematological diseases

Hematological diseases	No.of cases	percentage
Hypoplastic study	12	9.6
Normal	9	7.2
Hypercellular/Hypersplenism	5	4
Erythroid hyperplasia with microcytic changes	28	22.6
Erythroid hyperplasia with megaloblastic changes	16	13
Myeloid hyperplasia	14	11.5
CML	14	11.5
AML	20	16
Multiple myeloma	2	1.6
Chronic ITP	4	3.2
total	124	100

DISCUSSION

According to the study done by Gayathri et al,⁷ the age range in their study was from 2 years to 80 years and M:F ratio of 1.2:1, which was similar to the present study findings. The most common finding in the present study on bone marrow examination was erythroid hyperplasia which was seen in 44 cases (35.6%) with the common age group being 11-20years and M:F ratio of 1.1:1. Similar findings of 21% and 19.6% cases of erythroid hyperplasia was seen in a studies done by Pudasani S et al⁸ and by Jha et al.⁹

The next common in females were the malignancies, in this study acute leukemia comprising to 20 cases (16%) and CML comprising 14 cases(11.5%) and multiple myeloma(1.6%). In the study done by Pudasani et al,⁸ Acute leukemia was seen in 7 cases (12.3%). Out of this, 6 cases (10.5%) were AML and 1 case (1.8%) was ALL. Out of 6 cases of AML, the commonest type was AML M3 (3 cases). Other series also showed that acute leukemia is the commonest hematological malignancy and AML is more common than ALL.

The most common presenting complain was anemia and bleeding. The most common age groups were the adolescent and reproductive age group female . Iron deficiency is the most common cause of erythroid hyperplasia associated with microcytic anemia.¹⁰

CONCLUSION

The most common hematological disease in female is erythroid hyperplasia followed by AML. The most common indication for bone marrow aspiration cytology is anemia and bleeding in adolescents and reproductive age group females. So we can conclude that adolescents and reproductive females usually presents with nutrition anemia.

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