



A STUDY OF HAEMATOLOGICAL MALIGNANCIES IN THE NORTH INDIAN POPULATION - BASED ONLY ON HEMATOMORPHOLOGY.

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ABSTRACT

Introduction- Hematological malignancies are rising global concern and as developing countries being bearer of much higher proportion of population with a not very strong socio-economic conditions are causing higher burden of disease on world health scenario.

Aim- To study the haematological malignancies at a tertiary health care centre Lucknow in India based on age, sex and the type of malignancy with further sub typing wherever possible.

Material & method- A total of 149 cases of haematological malignancies were worked up from the Haematology section, Department of Pathology, Era's Lucknow Medical College and Hospital, Lucknow, Uttar Pradesh between 2016 to 2018

Result- Out of total 149 cases of haematological malignancies, males were more commonly affected than female with a ratio of 1.2:1. The most common malignancy was leukemia 92%, followed by lymphomas 5%, MDS 2% and plasma cell dyscrasias 1%. Together myeloid leukemia 84.67% were more common than lymphoid leukemia 15.33% and chronic leukemias were more prevalent with a frequency of 62.04% than acute leukemias constituting only 37.96% of total.

Conclusion- The commonest haematological malignancy in our study was leukemia, myeloid leukemias were more common than lymphoid; in myeloid CML constituted the substantial proportion of malignancies. Other diagnoses were lymphomas, plasma cell dyscrasias and myelodysplastic syndromes.

KEYWORDS : Hematological malignancies, leukaemia, chronic myeloid leukemia, peripheral blood smear, Leishman staining,

INTRODUCTION

According to a data, Haematological Malignancies are estimated to represent about 6.5 % of all cancers worldwide in 2012 [1]. In the same year, Non Hodgkins Lymphoma represented 2.7 % of all cancers and 2.4 % of all deaths from cancer worldwide. Leukemia accounted for 2.5 % of all cancers and 3.2 % of all deaths. Multiple Myeloma represented 0.8 % of all cancers and 1.0 % of cancer deaths, while Hodgkins Lymphoma represented 0.5 % of all cancers and 0.5 % of cancer deaths [1]. Despite lower incidence, developing countries bear more than half of the global cancer burden, because 75% of the world's population lives in these countries [2]. Because of population growth, aging and urbanization, changing dietary habits, better control of infections, and increasing tobacco consumption, developing countries are anticipated to bear greater cancer burdens, including that of haematological malignancies [3]. In India, 0.8 million new cases of cancer are diagnosed each year; 3 million are present at any time [4]. Hematological malignancies constitute 9.5% of cancers in men and 5.5% in women [5].

Aim

To study the haematological malignancies at a tertiary health care centre of Lucknow in India based on age, sex and the type of malignancy with further sub typing wherever possible.

Settings and design

A total of 149 cases of hematological malignancies were worked up from the Haematology section, Department of Pathology, Era's Lucknow Medical College and Hospital, Lucknow, Uttar Pradesh between 2016 to 2018

MATERIALS AND METHODS

Diagnosis was mainly based on morphological examination of peripheral blood and bone marrow smears stained by Leishman's stain. Further cyto-chemistry of the smears were done with MPO, Sudan Black and PAS stain as and where required. In cases of lymphomas histopathology of the biopsied lymph node were also performed. Distribution of cases was studied based on age, sex and the type of malignancy with further sub typing wherever possible.

RESULTS

The records were accessed for cases of hematological malignancies

based on morphological examination of peripheral blood and bone marrow smears between 2016 and 2018.

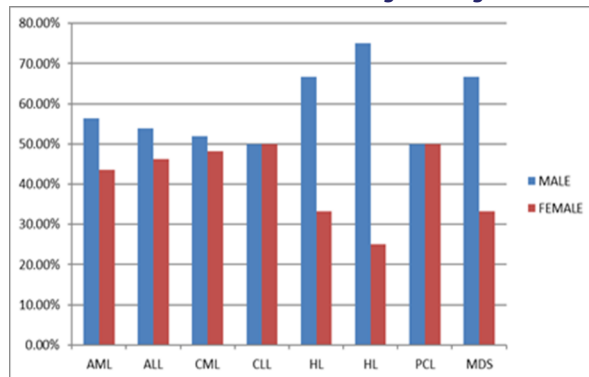
We found 149 cases of haematological malignancies which were mainly grouped as leukaemia, lymphoma, plasma cell dyscrasias and myelodysplastic syndrome.

In our study males [54%] were more commonly affected than female population [46%] with a ratio of 1.2: 1. All the malignancies were showing same gender demography except in plasma cell dyscrasias where the male and female were affected in same proportion.

Table 1 Type of haematological malignancy

TYPE	TOTAL No.	%	MALE	FEMALE
AML	39	26.2%	22(56.4%)	17(43.6%)
ALL	13	8.7%	7(53.8%)	6(46.2%)
CML	77	51.7%	40(51.9%)	37(48.1%)
CLL	8	5.4%	4(50%)	4(50%)
HL	3	2.0%	2(66.7%)	1(33.3%)
NHL	4	2.6%	3(75%)	1(25%)
PCL	2	1.3%	1(50%)	1(50%)
MDS	3	2.0%	2(66.7%)	1(33.3%)
TOTAL	149	100	81(54%)	68(46%)

Gender based distribution of haematological malignancies



Maximum patients were in the age group of 21-30 years.

The most common malignancy was leukemia 92%, followed by lymphomas 5%, MDS 2% and plasma cell dyscrasias 1%.

Among leukemias, chronic myeloid leukemias were the commonest approx. 56.2% followed by acute myeloid leukemia 28.4%, acute lymphoblastic leukemia 9.5%, and chronic lymphocytic leukemia 5.9%. Together myeloid leukemia 84.67% were more common than lymphoid leukemias 15.33% and chronic leukemias were more prevalent with a frequency of 62.04% than acute leukemias constituting only 37.96% of total.

While out of 39 cases of AML, 21 patients had classical morphology but in 8 cases the diagnosis was a little bit tricky. In classical cases of AML, large sized cells having high nucleocytoplasmic ratio with a thin peripheral rim of granular basophilic cytoplasm with nuclei having fine chromatin and multiple prominent nucleoli have confirmed the diagnosis. But in 8 difficult cases, the morphology of blastoid cells were not very prototyped.

Out of 8 cases, 5 cases on peripheral smear had shown large sized cells with high nucleocytoplasmic ratio and a thin peripheral rim of agranular basophilic cytoplasm but the nuclear features were quite characteristic of myeloblast in having relatively fine chromatin with 1-2 distinct nucleoli. On bone marrow examination hypercellular marrow with markedly increased M: E ratio showing granulocytic lineage hyperplasia and markedly depressed erythroid and megakaryocytic lineage were very much suggestive of myeloid leukaemia.

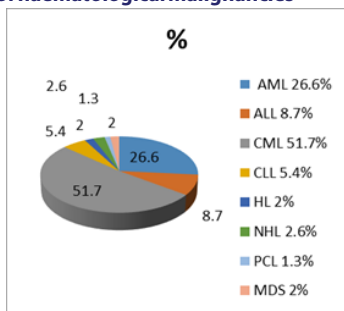
Three cases were quite difficult to diagnose on basis of peripheral smear as the blastoid cells had neither characteristic cytoplasmic nor nuclear findings suggestive of myeloblast. On bone marrow examination also the morphology of blastoid forms were not very clear. Here the diagnosis was clinched by looking the predominant mature cell population of leukocytes which were polymorphs with markedly decreased lymphocytic cell population. Clinical features had also provided a good support in these cases; as 2 of the cases had shown no lymphadenopathy but only hepatosplenomegaly, and a very short duration history of fever and tachycardia and exertional weakness suggestive of anemia. In one of the case the lymphadenopathy was clinically observed along with hepatosplenomegaly so was very difficult to differentiate from ALL. Non Hodgkin lymphomas (57%) were more common than Hodgkin lymphomas (43%).

In plasma cell dyscrasias there was one case of multiple myeloma and one very rare case of plasma cell leukemia.

There were 3 cases of myelodysplastic syndrome in our study in which 2 were AIDS patients being husband and wife and one was a case of MDS with excess blasts.

While summarising our results if individual groups were taken separately than the frequency of each group was AML about 26.6%, ALL 8.7%, CML 51.7%, CLL 5.4%, HL 2%, NHL 2.6%, PCL 1.3% and MDS 2%.

Distribution of haematological malignancies



DISCUSSION

Haematological malignancies are rising global concern and though even there frequency is less in developing countries, the population burden and poor socio-economic conditions are causing huge cancer load on world health scenario. Haematological malignancies are affecting male population more commonly than female ones, which was also found in our study with Male:Female ratio of approx. 1.2:1. A study conducted by Modak et al. [6] showed a male to female ratio 1.8:1, which was similar to our finding and to another similar studies [7,8].

Among haematological malignancies, leukemias are constituting the major proportion, similar results were observed in our study as the most common malignancy was leukemia approx. 92%; which was also seen in another study done by Al Ghazaly et al [9] in which they have studied 627 cases of haematological diseases and reported that leukemia was the most common diagnosis on bone marrow examination.

We found a very high distribution of chronic leukemia cases 85/137(62.04%) as compared to acute leukemias 52/137 (37.96%). Similar high incidence of chronic leukemias has been reported by Hansen NE et al [10] in their study where they found more cases of chronic leukemias (60%) as compared to acute leukemias. Similarly Rani S [11] from Delhi, India also reported more chronic leukemias (51.1%) as compared to acute leukemia. Whereas some other studies done by Kwiatkowski A [12], C Besson et al [13], Idris M [14], Al Ghazaly et al [9], Pradhan PK et al [15] and Chatterjea et al [16] have reported higher frequency of acute leukemias as compared to chronic ones. Acute and chronic leukemias have been reported to be seen with equal frequency by Advani et al [17].

In our study population; myeloid leukemias were much more prevalent than lymphoid which have been reported also by Pradhan PK et al [15], Rani S et al [11], Bhutani M et al [18] and Yeolle BB et al [19]. Among myeloid leukemias we found more cases of CML-77/116 than AML 39/116 which also well correlated with the study by Pradhan P et al [15] in which cases of CML (38.3%) were more than AML (29.0%). A higher incidence of CML has also been reported by Chatterjea et al [16] and Advani et al [17]. However Kasthuri AS et al [20] have reported AML as the most common (61/121) among leukemias in adults in Pune, India.

Among lymphoid leukemias in our series, ALL was far more common 13/21(61.90%) than CLL 8/21(38.10%). Similar findings have been reported by many authors like Roda L et al [21], Pradhan P et al [15], Rani S et al [11], Kasthuri S et al [20], Kushwaha et al [22], and D'costa G et al [23].

In our study only 7/137 cases were diagnosed as Lymphoma. Similarly RA Tasleem et al [24] have reported lymphoma only in 2/318 bone marrow examinations; whereas Idris M et al [14] have reported 15.39% cases of haematological malignancies as lymphoma in Abbotabad. Bhutani et al [18] have reported that occurrence rates of lymphomas are highest in the United States, Europe and Australia and the lowest rates are seen in Asia.

Myelodysplastic syndromes were reported with a very low frequency of only 2% (3/149) of the total malignancies which was similar to a study done by Al Ghazaly et al [9] in which 13/627 cases (2%) were diagnosed as MDS.

We found a very low incidence, i.e. only 1% cases of plasma cell dyscrasias in our study. Low incidence of plasma cell dyscrasias were also found by Idris M et al [14] as only 4.61% incidence of multiple myeloma in their study. Whereas Besson C et al [13] have reported multiple myeloma as the most common (34%) haematological malignancy in their series. A similar high incidence of multiple myeloma has been reported among Afro Americans in the USA by Brown LM et al [24].

CONCLUSION-

The commonest haematological malignancy in our study was

leukemia, myeloid leukemias were more common than lymphoid; in myeloid CML constituted the substantial proportion of malignancies. Other diagnoses were lymphomas, plasma cell dyscrasias and myelodysplastic syndromes.

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