



SPECTRUM OF HEMATOLOGICAL MALIGNANCIES IN A TERTIARY CARE HOSPITAL OF TRIPURA, NORTH-EASTERN HILLY STATE

Pathology

Dr.Nabaneet Majumder*

Assistant Professor, Department of Pathology, Tripura Medical College & Dr. BRAM Teaching Hospital *Corresponding Author

Dr.Sutanuka Khasnabish

Post Graduate Trainee (2nd year), Department of Pathology, Tripura Medical College & Dr. BRAM Teaching Hospital.

ABSTRACT

BACKGROUND: Hematological malignancies include diverse and biologically distinct subgroups and can be defined as clonal neoplasm of hematopoietic stem cells characterized by uncontrolled proliferation of immature cells in bone marrow and spilling into peripheral blood. The patterns of subtypes of hematological malignancies vary in different populations and geographic areas because of genetic, environmental, dietary and social factors. Research of epidemiological features of leukemia are poorly reported in Tripura. The objective of the study is to get an idea about the pattern of hematological malignancies in our institute.

MATERIALS AND METHODS: This is a one year prospective and two years retrospective study conducted in the department of Pathology, Tripura Medical College & DR BRAM Teaching Hospital March 2014-March 2017. Medical records of all patients admitted to our hospital and diagnosed as a case of hematological malignancy were reviewed for demographic and clinical characteristics at diagnosis. Data analysis was performed by using SPSS version 16.

RESULTS: A total number of 62 cases of hematological malignancies were diagnosed and included in our study of which 41 were of acute leukemia and 17 cases were of chronic leukemia. Amongst the cases of acute leukemia, 21 were diagnosed as AML and 12 were diagnosed as ALL. Out of chronic leukemic cases, 15 were diagnosed as CML and 2 cases were diagnosed as CLL. Overall, males were affected more than females and adults outnumbered the children. Commonest form of leukemia in adults were AML followed by CML whereas in children, the commonest form was ALL followed by AML. Three cases of Multiple Myeloma and one case of Plasma Cell Leukemia and one case of Non Hodgkin Lymphoma infiltrating bone marrow were also diagnosed. The most common peripheral blood finding in hematological malignancy was pancytopenia followed by bicytopenia.

CONCLUSION: In our study, acute leukemia was the most common subtype of leukemia in all age groups. Of all leukemia cases, majority were of AML whereas CLL was found to be the least common. Demographic characteristics were almost the same as other regional reports. Our observation is mostly comparable with other studies from India and the neighborhood countries. The differences observed in few demographic parameters may be due to geographic variation and genetic difference of study population.

KEYWORDS

INTRODUCTION

Developing countries bear more than half of global cancer because 70% of world's population live in these countries. Worldwide, leukemias constitute 3% of all malignancies whereas in India, it constitutes 3.5% of all malignancies.^{1,2} Leukemias are heterogeneous group of hematopoietic malignancies that include diverse and biologically distinct subgroups.³ Acute leukemias afflict both adults and children while chronic leukemias afflicts adults mainly. The patterns of subtypes of leukemia vary in different populations and geographic area. The spectrum of hematological malignancy is dependent upon various genetic, environmental, dietary and social factors. Accurate reporting of the cancer profile from a region has several limitations especially in a developing country.⁴ This is because of improper record keeping, lack of stable population as well as lack of basic health care. There are no well documented reports about the epidemiological features of leukemia in Tripura, a north eastern hilly state which has a mixed population of tribes and non tribes with different genetic and cultural background. Here, an attempt has been made to get an idea about the pattern of hematological malignancies on an institution based study.

Materials and Methods

It was a two year retrospective and one year prospective study conducted in the department of Pathology, Tripura Medical College from a period of March 2014- March 2017. A total of 62 cases of hematological malignancies were diagnosed and included in our study. The data obtained were analysed to evaluate the incidence of hematological malignancies in our institution and was compared with the observation of other workers.

RESULTS

Among a total of 62 cases of malignancy, 41 were of acute leukemia of which 29 were of diagnosed as AML and 12 were diagnosed as ALL. Amongst 17 cases of chronic leukemia, 15 were diagnosed as CML and 2 cases were diagnosed as CLL. Males were affected more commonly than females (1.6: 1). Overall, adults outnumbered the children and the commonest leukemia in adults was AML followed by CML whereas in the children's subgroup, the commonest type was ALL followed by AML.

Table-1 shows the number, frequency, gender distribution and age distribution of all cases. The age of patients with AML ranged from 4 yrs- 75 yrs with a mean age of 37 yrs. We reported a total of 12 cases of ALL of which 10 (83 %) were children.

Table-2 shows the distribution of 15 cases of CML. 11 cases were in chronic phase, all with blasts <5%, 4 cases were in accelerated phase with 10-19% of myeloblasts. We did not find any case of CML in blast crisis.

All the 2 cases of CLL were in adults in their 7th decade and both of them were of male sex. Three cases of Multiple myeloma, one case of plasma cell leukemia and one case of metastatic infiltration of bone marrow by Non Hodgkin's Lymphoma were also diagnosed.

The most common peripheral blood finding in hematological malignancy cases were pancytopenia (38%) followed by bicytopenia (23%). Among clinical presentation, splenomegaly (42%) followed by hepatomegaly (36%) were common. The most common malignancy was AML (47%) followed by CML (24%).

On analysis of clinical features of acute leukemia patients, we found pyrexia to be the commonest clinical symptom followed by weakness, pallor, ecchymosis and bone pain.

Clinical presentation for chronic leukemias included fever, organomegaly and lymphadenopathy.

DISCUSSION:

Research on epidemiological features of hematological malignancies are poorly reported in Tripura. Our study demonstrates that acute leukemia is commoner than chronic leukemia and the most common morphological type is AML. This observation is consistent with other studies like G.C. et al,⁵ Modak H et al⁶ and Kulshretra R et al⁷. We also observed that AML was the most common subtype of acute leukemia which is comparable with the studies by Modak et al and Chen et al⁸ whereas Kulshretra reported maximum cases of CML. AML is a disease of older age with median age of 60-65 yrs whereas the mean age in our study was 39 yrs. Different studies in India quoted the median age of AML to be of 39 yrs.

AML patients showed wide variation in Hb%, TLC and platelet count. 18 patients had anemia (Hb,10 gm/dl) and 11 patients had low platelet count. Interestingly, 16 patients (55%) had low to normal TLC with presence of peripheral blasts. Low TLC with relative low percentage of peripheral or bone marrow blasts may present with diagnostic difficulties.

Acute Lymphoid Leukemia: ALL comprises 30% of childhood cancers worldwide and 75% cases occur below 10 yrs and 50% cases below 5 yrs. In our study, we reported 12 cases of ALL comprising 29% cases of acute leukemia and 19% cases of all leukemia cases. In India, the rate ranges from 9-39% in different series with a higher incidence in Southern India.⁸ In our study, 9 cases (75%) were below 15 yrs and 8 cases were below 10 yrs (83%) and 4 cases below 5 yrs(33%). Among ALL, 7 cases had anemia(Hb< 10 gm/dl) and all had low platelets. 11 cases had TLC> 11000/mm³ and one case had TLC< 4000/mm³.

Chronic Myeloid Leukemia: Worldwide, CML accounts for 20% of all cases of leukemia. We reported 15 cases of CML comprising 24% of all leukemias. Different studies of India show frequency of CML ranging from 30-56% being the commonest form of malignancy in adults.¹⁰ In our study, all patients had high WBC count and majority had anemia with high platelets.

Chronic Lymphoid Leukemias: CLL virtually occurs rarely before 50 yrs. However, it is infrequent in Asian countries. CLL was the least common malignancy comprising 3% of cases in our study. Which is similar to studies in India and Nepal.^{9,11}

Multiple Myeloma: Ghartimagar D et al.¹² found Multiple myeloma represents 15% of all hematological malignancies whereas it comprised of 5% of cases in our study. Males and females are known to be affected equally in other literature though in the current study, males were affected twice as commonly as females(67%). Median age for presentation was 69 yrs.

CONCLUSION:

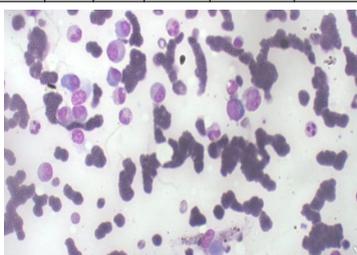
In our study, acute leukemia was the most common subtype of leukemia in all age groups. Of all leukemia cases, majority were of AML whereas CLL was found to be the least common. Demographic characteristics were almost the same as other regional reports. Our observation is mostly comparable with other studies from India and the neighborhood countries. The differences observed in few demographic parameters may be due to geographic variation and genetic difference of study population.

Table-1: Distribution of malignant cases reported on bone marrow

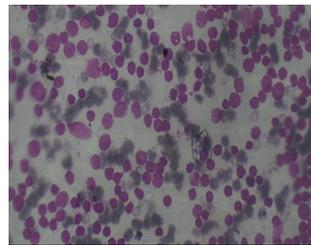
Entities	n	(%)	Male	Female	Adult	Children (<15 yrs)
AML	29	47	16	13	20	09
ALL	12	19	08	04	02	10
CML	15	24	07	08	14	01
CLL	02	03	02	-	02	-
MM	03	05	02	01	03	-
Mets+infiltr	01	02	-	01	01	-
Total	62		35	27	42	20

Table-2: Distribution of CML in different phase

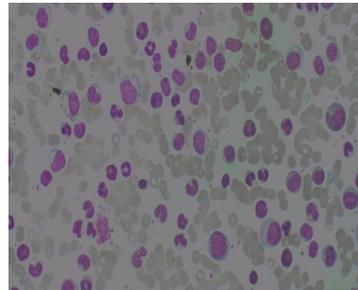
CML Subtypes	n	(%)	Male	Female	Adult	Children (<15 yrs)
Chronic Phase	11	73	05	06	11	-
Accelerated phase	4	27	02	02	03	01
Blast crisis	-	-	-	-	-	-
Total	15		07	08	14	01



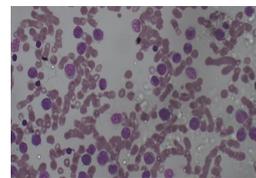
PBS showing increased no of plasma cells and rouleaux formation in PCL(MGGx40)



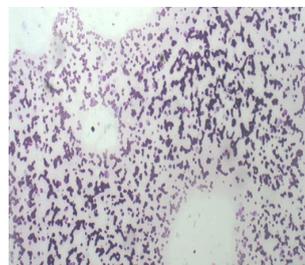
PBS showing increased no of myeloblasts in AML (MGG40X)



PBS showing increased no of myelocytes and band forms in CML



PBS showing increased no of lymphoblasts in ALL (MGG 40X)



BMA with increased no of plasma cells in PCL(MGGx10)

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