Original research article

A Comparative Study of Clinical Features of Acute Leukemia Patients at a Tertiary Health Care Centre in Indore, Madhya Pradesh.

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Abstract

Introduction: Leukemia is malignant neoplasm of the hematopoietic stem cells characterized by diffuse replacement of the bone marrow and/or peripheral blood by neoplastic cells. As per available information from population based surveys, the incidence of leukaemia in India varies from 0.8/1, 00,000 in Barshi (Rural area of Maharashtra) to 5/1, 00,000 in Delhi. Aim: to study clinical characteristics of acute leukaemia in central India at a tertiary health care centre. Methodology: Cases for the study collected from Sri Aurobindo Medical College and PG Institute Hospital wards attached to Department of Medical Oncology.

The study comprises 106 cases of acute leukaemia. Study period was from November 2015 to November 2017. Results: Present study showed that prevalence of ALL (51.9%) was higher as compared to that of AML (48.1%).

Keywords: Acute leukemia, AML, ALL, blood cancer, neoplasia

Introduction

Leukemia is malignant neoplasm of the hematopoietic stem cells characterized by diffuse replacement of the bone marrow and/or peripheral blood by neoplastic cells. Leukaemia's identification as a separate malignancy happened in 1889.[1,2]Since then apart from its etiopathogenesis increasing interest has been developing in the geographic pattern of leukemia and its distribution throughout the world.

Leukemias are the 10th most common cancer in men and 12th most common in women and constitute 3% of the global cancer burden.[3] Developing countries bear more than half of global cancer burden, because 75% of the world population lives in these countries.[4] The incidence of Leukemia is highest in North America and Australia/ New-zealand and lowest in sub-

saharan Africa.[5] Leukemia is one of the most frequently occurring cancers in all races or ethnicities with relative proportion vary between 25-40% [3]. In 2013, males have been accounted for more than 57 percent of the new cases of leukaemia [6]. High incidence of subtypes of leukemia in males may be due to more exposed to occupational and environmental carcinogens [3,7,8,9]. Epidemiology has played a vital role in learning about the causes of leukaemia in the past few decades. The developing countries have greater burden of cancer including haematological malignancies due to population growth, ageing and urbanisation, changing dietary habits, better control of infections, and increasing tobacco consumption [10]. This is further challenging to take these findings in detecting different types of leukaemia earlier and ideally to prevent the disease. In India, lympho-haematopoietic malignancies constitute 9.5% of all cancers in men and 5.5% in women.[11] As per available information from population based surveys, the incidence of leukaemia in India varies from 0.8/1, 00,000 in Barshi (Rural area of Maharashtra) to 5/1, 00,000 in Delhi. These figures are comparably lower than rest of the world but under-diagnosis and under-reporting cannot be ruled out.[11] The cell type distribution of leukemias observed in India is different from that observed in developed world.Leukemias are classified into two broad groups, myeloid and lymphoid, based on the origin of the leukaemia stem cell clone.[12].Myeloid leukemias predominate in India while lymphoid leukemias dominate in western world mainly because of higher incidence of chronic lymphatic leukaemia.[11] The aim of the index study is to study clinical characteristics of acute leukaemia in central India at a tertiary health care centre.

Methodology:

This Prospective clinical study was conducted at Sri Aurobindo Medical College and PG Institute, Indore, Madhya Pradesh. Cases for the study collected from Sri Aurobindo Medical College and PG Institute Hospital wards attached to Department of Medical Oncology.

The study comprises 106 cases of acute leukaemia. Study period was from November 2015 to November 2017. A pre-tested proforma was used to collect the relevant information by interviewing, clinical examination of patients, and noting relevant investigations required for treatment. Consent form for the study purpose had been prepared. No special consent is required as clinical examination , imaging and histopathological examination are part of routine evaluation.

Inclusion criteria included All patients of Acute leukemia, equal to more than 1 years whose guardian or adults less than or equal to 70 years who are willing to give informed written consent for study.

Results:

In the present study, the mean age of the study sample was 27.29 years ranging from 2years to 70 years in different patients. Most of the patients belonged to the 16-35 years of age group. In patients with ALL mean age was 15.4 years(Range 2-70 Years) and for AML patients the mean age was 40 years (Range 2-70 Years).
The study sample had 67 males and 39 females among all the patients having acute leukemia.

Table 1 below shows Body surface area distribution [BSA] among the included patients.

SEX	ALL NO. OF PATIENTS (N=55)	AML NO.OF PATIENTS (N=51)
HEIGHT (cms)	135 (82-195)	164(85-182)
WEIGHT (kgs)	34.7 (7-85)	57 (10-78)
BSA	1.11 (0.4-1.99)	1.61 (0.48-1.96)

The present study had clinical features as shown in the table 2 below-

Table 2: Showing C/F Distribution of the ALL N AML PTS

FEATURE	ALL(55)	AML(51)
ECOG	1.6(1-3)	2(1-4)
FEVER	28(50.90%)	28(54.90%)
CONSTITUTIONAL	43(78.18%)	37(72.54%)
BLEEDING	24(43.63%)	18(35.29%)
LYMPHADENOPATHY	20(36.36%)	3(5.88%)
HEPATOMEGALY	29(52.72%)	13(25.49%)
SPLENOMEGALY	31(56.36%)	14(27.45%)
MEDIASTINAL MASS	10(18.18%)	2(3.92%)
CNS+	0	0

Constitutional symptoms were the most common clinical feature in ALL patients followed by splenomegaly (56.36%) and hepatomegaly (52.72%). None of the patients were CNS +ve at presentation.
Constitutional symptoms were the most common clinical feature in AML patients followed by fever (54.90%) and bleeding manifestations (35.29%). None of the patients were CNS +ve at presentation.

Discussion:
Acute Leukemias were mainly classified into AML and ALL, on the basis oflaboratory data and morphological features of leukemic cells.
Of total 106 cases of acute leukemia, 55 cases (51.9%) were ALL and 51 cases (48.1%) were AML.

In this study, it was seen that acute leukaemia was more common in male (63%) as compared to female(37%), male to female ratio was 1.70:1.

For ALL, male to female ratio was 1.89:1 and in AML, male to female ratio was 1.55:1. These findings were comparable to the studies conducted by GuptaR et al[13] they reported male to female ratio - 1.94:1, 2.05:1 and 1.82:1 in Acute leukemia, ALL and in AML respectively in their study. Jatav et al[14] reported male:female ratio of 1.76:1 for all acute leukaemia,2.08:1 for ALL and 1.56:1 for AML.

Present study showed that prevalence of ALL (51.9%) was higher as compared to that of AML (48.1%) however different findings have been reported by Khalid Hassan et al[15]. Studied conducted by Laishram RS et al[16] and Kulshreshtha R et al[17] also showed the higher prevalence of AML as compared to that of ALL.

Findings of our study regarding age distribution are not exactly comparable to study conducted by Gupta Rajat et al[13]. That study reported majority of cases (35%) in age group of 0 -10 years, followed by (21%) cases in age group of 11-20 years and (19%) cases in age group of 21-30 years. In Indian studies Jatav et al[14] and Gupta Rajat et al[13], it was found that acute leukemia is more common in patients less than 35 years of age.

In our study all clinical signs and symptoms of acute leukaemia patients had been recorded at the time of first presentation and on analysis of these constitutional symptoms (like fatigue,weakness,loss of appetite) were the most common clinical symptom followed by fever, splenomegaly and hepatomegaly were commonest clinical sign. Lymphadenopathy was more common in ALL (36.36%) as compare to AML (5.88%). These findings are comparable with the study conducted by Gupta Rajat et al[13] who reported generalized weakness and fever were the most common presenting symptoms followed by bone pains, weight loss and bleeding manifestations respectively. However Jatav et al[14] reports fever and pallor as most common clinical feature.

Conclusion:
Most common symptoms encountered among cute leukemia patients were fatigue, weakness and loss of appetite. Our study had limitations of firstly having wide age range, secondly a small sample size.

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