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Pathology

A STUDY OF DISTRIBUTION OF LEUKEMIA CASES IN A TERTIARY CARE CENTRE

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ABSTRACT

Introduction: Leukemias are neoplastic proliferations of hematopoietic cells. Its incidence is increasing slowly and steadily. Leukemias form a major proportion of haematopoietic neoplasms that are diagnosed worldwide.

Objective: To find out the incidence of four major types of leukemias in a tertiary care centre in central India.

Methods: A total of 105 cases were selected over a period from July 2019 to June 2020. Diagnosis was based on peripheral blood smear examination.

Results: Out of 105 cases , 13 cases (12.38 %) were of Acute Lymphoblastic Leukemias, 33 cases (31.42 %) were of Acute Myeloblastic Leukemias, 44 cases (41.90%) were of Chronic Myeloid Leukemias, 15 cases (14.2%) are of Chronic Lymphocytic Leukemia .

Conclusion: The present study showed that Chronic leukemias were more common than acute leukemias with Chronic Myeloid Leukemia being the most common type, followed by acute myeloid leukemia, chronic lymphocytic leukemia and acute lymphoblastic leukemia.

KEYWORDS : Acute Lymphoblastic Leukemias, Incidence

INTRODUCTION

Leukemia was not a very common disease few years back. However, it is increasing in incidence and prevalence gradually. Leukemias are the10th most common cancer in men and 12th most common in women and constitute 3% of the global cancer burdun In India, lympho-haematopoietic malignancies constitute 9.5% of all cancers in men and 5.5% in women [1]. As per available information , the incidence of leukemia in India varies from 0.8/1, 00,000 in Barshi (Rural area of Maharashtra) to 5/1,00,000 in Delhi. It is relatively lower than rest of the world but under diagnosis and under-reporting cannot be ruled out [2]. The distribution of type of leukemias observed in India is different from that seen in developed world. Myeloid leukemias predominate in India while lymphoid leukemias dominate in western world due to higher incidence of chronic lymphatic leukemia [3]. Despite being relative uncommon, leukemias have been studied more extensively because of easy accessibility of involved tissue .The leukemias are the diseases in which abnormal proliferation of haematopoetic cells leads to progressively increasing infiltration of bone marrow, along with lymphatic tissues involvement [4]. Malignant proliferation of haematopoietic cells is leukemia. Leukemias are classified as myeloid and lymphoid subtype further divided into acute and chronic [5]. Typing of leukemia is important for proper treatment because prognosis and survival rate are different for each type and subtypes [6]. Acute leukemias are; acute lymphoblastic leukemia (ALL) and acute myeloid leukemia (AML) while Chronic leukemias are classified into chronic myeloid leukemia (CML) and chronic lymphocytic leukemia (CLL) [7,8]. In childhood, ALL is most common type than AML. Most of the population of India is unaware of leukemia due to lack of screening program. Hence it is important to determine the incidence of leukemia's in India as well as to understand how it differs across the whole country.

The study was conducted from July 2019 to June 2020. Total 105 cases were studied from in and out patient departments, thorough case history and clinical examination done along with hemoglobin estimation, WBC count, Platelet count and hematological indices were evaluated using automated analyzer. Peripheral blood smear was made on clean glass slides and Leishman stain was poured on air dried unfixed smears for a period of 5-7 minutes, then added twice quantity of buffered distilled water for 10 minutes. Smears were examined under microscope.

OBJECTIVE

To find out the incidence of four major types of leukemias in a tertiary care centre in central India.

METHODS

A total of 105 cases were selected over a period from July 2019 to June 2020. Diagnosis was based on peripheral blood smear examination.

RESULTS

The present study comprises 105 cases of leukemia. The observations made in this study are as follows.

Table No-1: Type Of Leukemia's, Including Age, Sex Distribution

Age (yrs) sex	CML (44)	CML (%)	AML (33)	AML (%)	CLL 15	CLL (%)	ALL 13	ALL (%)
0 -15	0	0	01	3.03	0	0	12	92.3
15-60	40	90.9	30	90.09	03	20	01	7.69
>60	4	9.09	02	6.06	12	80	0	0
Male	23	52.27	16	48.4	09	60	08	61.5
Female	21	47.72	17	51.5	06	40	05	38.4

Among 105 cases , 44 cases (41.9%) were of Chronic Myeloid Leukemias, 33 cases (31.4 %) were of Acute Myeloblastic Leukemias, 15 cases (14.2%) is of Chronic Lymphocytic Leukemia, 13 cases (12.38 %) were of Acute Lymphoblastic Leukemias. On observing age category 13 cases (13.38%) are of 0 -15 years, 74 cases (70.4%)are in15-60 years and 18 cases (17.1%) are of more than 60 years. 92.3% cases of ALL are seen in paediatric age group and 80 % CLL cases are found to be of more than 60 years.

In our study out of 105 cases – 56 cases (53.3 %) were male and 49 cases (46.6%) were females.

Table-2: Frequency (in Percentage) Of Various Leukemias In India

Reference	Region (Period of Study	No of cases	AML	ALL	CML	CLL
Advani et al[12]	Mumbai (1960–1975)	1126	13	30	40	9
Shome et al[13]	Chandigarh (1975–1983)	820	29.3	24	36.7	8.8
Rathee et al[14]	Haryana (2008-2012)	650	33.8	17.2	39	10
Jaya Bhaskar[11]	Loni, Maharashtra (2006 and 2011)	156	23.07	26.28	33.97	15.38

Ahirwar et al[15]	Bhopal (2013-2014)	73	15.07	31.51	47,97	1.37
Our study	Gwalior (2019-2020)	105	31.4	12.38	41.9	14.2

DISCUSSION

Leukemia incidence has increased considerably and this rise is due to improved statistics, better diagnostic techniques. The incidence varies in different geographical regions because of varying life styles and economic conditions [9].

In India the incidence of various hematological cancers is differ from that of western countries because of less health awareness and poor availability of health care delivery system in India[10]. In our study 105 cases of leukemias were studied 46 cases (43.8%) and 59 cases (56.1%) were of acute and chronic leukemias respectively. On observing age category 13 cases (13.38%) are of 0 -15 years, 74 cases (70.4%) are in15-60 years and 18 cases (17.1%) are of more than 60 years. 92.3% cases of ALL are seen in paediatric age group and 80 % CLL cases are found to be of more than 60 years. The incidence and prevalence of chronic myeloid leukemia (CML) higher due to chronicity and greater physician awareness. The studies done by various authors also observed [6,8,19-23] higher incidence of chronic myeloid leukemia (CML) (Table 2). Our study revealed chronic myeloid leukemia (CML) [41.9 %] as the most common type of leukemia (Table 1). In our study the cases of acute myeloid leukemia were the second predominant (31.4%) which correlates with study of **Shome et al and Rathee et al** (Table 2). The spectrum of cancer epidemiology seen in India is different from developed country. There are not many cancers registry data in India despite a large population, so better development of regional and national registries should be done.

CONCLUSION

Present study concluded that the incidence of different types of leukaemia in central India doesn't differ markedly from rest of the Indian populations. Chronic leukemia was more common than acute leukemia with chronic myeloid leukemia being the most common type, followed by Acute Myeloblastic Leukemias and Chronic myeloid leukemia which came out to be more common , is mainly seen in adults affecting the myeloid series while AML is second most common is characterized by presence of >20% blasts in marrow, as per the WHO criteria.

Incidence varies in different geographical regions according to varying life styles and economic conditions.. It should be stressed that there are not many cancers registry data in India despite a large population, so better development of regional and national registries is required.

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