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Clinicoepidemiological features of adult leukemias in Aden, Yemen

KEYWORDS: Leukemia , Myeloid, Lymphoblastic , Yemen

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ABSTRACT *AIM OF STUDY: The present study aims at knowing the pattern of leukemia , their clinic-hematological correlation and providing study based suggestions for better diagnosis and treatment of them in this part of country.*

METHODS: This was a retrospective study from January 2008- December 2010. 129 cases with leukemias were included in this study. A clinical diagnosis was made based on history and physical examination. CBC was done for all patients and confirmed by bone marrow aspiration.

RESULTS: A total of 129 cases of leukemia were registered in patients aged 18 to 70 years with a mean age of 39.5 years and M:F ratio of 1.1:1. The more frequent leukemia was acute myeloid leukemia (AML). All patients were anemic at the time of diagnosis, their hemoglobin was 4 -12 g /dl. The TLC was quite variable ranged from <2000/cmm to >342,000/ mm3. Similarly the platelet count was <10,000 to >100000/mm3. The majority presented with fever and pallor .

CONCLUSIONS: In this study AML was the commonest type of leukemia Males were affected more than the females. The most common signs and symptoms were pallor and fever. The results are useful for the organization and follow-up of medical care. The development of specialized hematology and active protocols can optimize the management of leukemia patients in Yemen.

INTRODUCTION

Among the different types of cancers, leukemias, appears to have greatly increased in frequency. These malignancies are induced by genetic damage or mutation in somatic cells, which can result from environment chemicals, ionizing radiation and viral agents. Leukemias are a group of heterogenous neoplastic disorders of white blood cells whose etiology is still obscure (Aksoy, 1974) . The types of leukemia are grouped by how quickly the disease develops and get worse. Leukemia is either chronic or acute. Furthermore, the types of leukemia are also grouped by the type of white blood cell that is affected. There are four common types of leukemia: acute myeloid leukemia (AML), acute lymphoblastic leukemia (ALL), chronic myeloid leukemia (CML) and chronic lymphocytic leukemia (CLL) (Schenilberg et al 1997, Schiffer et al 1991, Edwards et al. 2002) . Most acute leukemias are classified as lymphoid or myeloid lineages by standard microscopic morphology and cytochemistry (Bene et al 1995, 1998, Bennett et al 1985) .

The World Health Organization (WHO) classification of acute leukemia incorporates morphologic, cytogenetic, immunologic and clinical features to define the entities that are biologically homogeneous and that have clinical relevance(Jaffe et. al 2001).

The observed geographic variation in incidence remains unexplained as yet. Previous studies have shown important differences in geographic, racial/ethnic, age and trend patterns for different leukemia subtypes. Thus, suggesting that subtypes may have different etiologic factors. Therefore a comprehensive assessment of leukemia patterns is warranted globally. (Kulshrestha 2009, Estey 2008).

The aim of this study, therefore, is to determine the distribution and spectrum of leukemia which are encountered in Al-Gamhouria Teaching Hospital , Aden, Yemen and at knowing their clinicoepidemiology and hematological correlation and providing study based suggestions for better diagnosis and treatment of them in this part of the country.

MATERIAL AND METHODS

This is a retrospective study of all cases of leukemias that were referred to, diagnosed and managed at Hematology-Oncology department, Al-Gamhouria Teaching Hospital, Aden, Yemen, from 1 st January 2008 to 30 December 2010. General particulars like age, sex, address and detailed history was recorded for every patient. Detailed clinical examination was then performed on each patient with particular emphasis on hematological examination. Diagnosis was made in all cases, from clinical features, blood counts, peripheral blood films and bone marrow cytology and special staining techniques were used where indicated. Other investigations done to guide in diagnosis or management included – X-rays, creatinine, liver function tests. Film examination for cell morphology was performed after staining with leishman stain. Bone marrow was examined after aspiration from posterior iliac spine as described by Dacie and Lewis (Dacie and Lewis, 2006) .

Statistical methods include descriptive statistics (mean, median, SD). Analysis was done on SPSS and Epi info v 3.3.

RESULTS

A total of 129 cases of leukemias were registered in patients aged 18 to 70 years with a mean age of 39.5 years and M:F ratio of 1.1:1. Of the 129 cases diagnosed, 87 cases were of acute leukemia and 42 of chronic leukemia. Acute myeloid leukemia (AML) was found to be the commonest type of leukemia (39.5 %). Acute lymphoblastic leukemia (ALL) was the next most common type (27.9%). Of 42 cases of chronic leukemia, 28 were of chronic myeloid leukemia (21.7%) and 14 of chronic lymphocytic leukemia (10.9%).

In acute leukemia (87 cases), 46 were male and 41 female, with M: F ratio of 1.12:1. While in the chronic leukemia, 22

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were male and 20 cases were seen in female and the M: F ratio was 1.1:1. The overall M: F ratio was 1.11:1.

Table 1: Distribution of leukemias according to type of malignancy and sex

Type of malignancy	No. of Cases		Total	
	Male	Female	No	%
Acute Myeloid leukemia (AML)	24	27	51	39.5
Acute lymphoblastic leukemia (ALL)	22	14	36	27.9
Chronic myeloid leukemia (CML)	14	14	28	21.7
Chronic lymphatic leukemia (CLL)	8	6	14	10.9
Total	68	61	129	100

The common presenting complaints were fever, pallor, generalized weakness in most of leukemias followed by body aches in AML and ALL, and splenomegaly in CML (100%), AML (75%) and ALL (72%) .

Table 2: Clinical manifestations of leukemias

Clinical manifestation	AML	ALL	CML	CLL
Fever	100%	89%	54%	71%
Pallor	100%	86%	64%	62%
Generalized weakness	100%	92%	61%	79%
Body aches	100%	75%	61%	79%
Splenomegaly	75%	72%	100%	50%
Lymphadenopathy	20%	72%	0%	100%
Hepatomegaly	69%	69%	18%	50%
Bone tenderness	100%	75%	7%	50%
Bleeding	75%	64%	7%	7.2%

AML: acute myeloid leukemia; ALL: acute lymphoblastic leukemia;

CML: chronic myelogenous leukemia; CLL: chronic lymphocytic leukemia.

Table 3: Distribution of leukemias according to age

Age group in years	No of cases				Total	
	AML	ALL	CML	CLL	no	%
1-10	0	8	0	0	8	6.2
11-20	7	13	2	0	22	17.0
21-30	11	9	5	0	25	19.4
31-40	9	1	6	0	16	12.4
41-50	10	2	7	2	21	16.3
51-60	8	2	5	8	23	17.8
61-70	6	1	3	3	14	10.9
Total	51	36	28	14	129	100
Mean Age in years	35	24	45	57.5	39.5	

The age group most affected in patients with acute myeloid leukemia was 21-50 years and in acute lymphoblastic leukemia was 11-20 years and 1-10 years. In chronic myeloid leukemia the peak was in 31-50 years and in chronic lymphatic leukemia at the age group 51-60 years.

The mean hematological values of hemoglobin (Hb), total leukocyte count (TLC) and platelet count at presentation are shown in table 4. Low hemoglobin was seen in AML and ALL. Platelet counts was significantly lower than normal in AML and ALL. TLC was quite variable, ranged from <2000/ cmm to > 342000/cmm (mean 51821 and 90045) at presentation .

Table 4: Mean of hematological parameters in leukemias

Parameters	AML	ALL	CML	CLL
Mean Hb in gm/dl	6.17	7.18	8.80	11.00
Mean TLC/cmm	51821	90045	87964	61000
Mean platelets count/ cmm	34214	74681	557107	131250

DISCUSSION

Different leukemia subtypes have shown important differences in geographic, racial/ethnic, age and trend patterns in previous studies thus suggesting that different subtypes may have different etiologic factors. (Groves 1997). Therefore a comprehensive assessment of leukemia patterns is warranted globally.

The most frequent leukemia subtype was AML (39.5%) . The next most frequent leukemia subtype was ALL with an incidence of 27.9% while CML and CLL had incidence rate of 21.7% and 10.9% respectively. In the Western countries however CML accounts for 20% of leukemia subtype while CLL accounts for 25% of cases (Hoffbrand & Pettit 2006) .Similar results have been reported from Kenya in Africa, while different results from Karachi reveal that ALL was the commonest type (Noor et al, 1989). It means that the incidence of acute leukemia is variable in different parts of the world.

In all types of leukemias the predominant age groups were 21-50 years in AML, 11-30 years in ALL, 41-50 years in CML and 51-60 years in CLL. The age ranges in these series agrees with previous studies in Africa (Williams et al 1983). The difference in the age incidence observed in this study when compared to the western countries may be due to the interplay of both environmental and racial factors (Omoti 2005) .

In this study the most common manifestations were fever, pallor, generalized weakness and body aches in most leukemias , while splenomegaly was seen in 100% of CML and more than 70% of acute leukemias. Bone tenderness was seen in all cases of AML and lymphadenopathy in 100% of CLL and in more than 70% of ALL cases. Similar results reported by Hassan et al 1993 and Bashir et al. 2010.

Anemia was a constant feature in all cases of which 90% of acute leukemia and 60% of chronic leukemia had moderate to severe anemia with initial Hb concentration of <9.0 g/dl. It was more common & severe as compared to western studies.(Whitkaker 1987). This is not surprising because anemia has been known to be a common finding in leukemia . The probability of occurrence of anemia in cancer patients depends on a number of variables (Mittelman 2003). A positive correlation between anemia and thrombocytopenia was seen in AML and ALL. The mean total leukocyte counts was highest in ALL and CML. (Abdul Hamid, 2007).

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A possible reason for the lower number of cases encountered for the acute lymphoblastic leukemia, chronic lymphatic leukemia in our study may be due to the fact that many cases might have ended up in private hospitals or other peripheral government hospitals without adequate facilities for the diagnosis of these diseases without being referred to specialized hospital.

CONCLUSION:

Acute myeloblastic leukemia is the commonest type of leukemia. Chronic lymphatic leukemia is rare, whereas chronic myeloid leukemia is common. The success rate for leukemias in our country is still poor irrespective of the biological subtypes. Factors responsible for this include late presentation of disease due to poverty, illiteracy and ignorance, unavailability of drugs, high cost of therapy and often times lack of supportive blood components. This was reflected in the average duration of illness before presentation where it was found to significantly influence the survival in each patient.

There is need for greater vigilance in the diagnosis, and interdisciplinary approach for the effective management of hematological malignancies, particularly the leukemia biblio_titolo - ignora

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