

Pattern of Haematological Malignancies in Ilorin, Nigeria: A Ten Year Review

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Abstract

A 10 year retrospective survey of haematological malignancies in Ilorin, Nigeria, was carried out based on data from the Records Department and the Cancer Registry of the Morbid Anatomy Department of the University of Ilorin Teaching Hospital. The aim was to determine the current pattern of haematological malignancies in the study area and compare with previous reports from other parts of Nigeria and worldwide. A total of 370 cases of haematological malignancies which were diagnosed within the study period (January 1996 to December 2005) by means of available haematological laboratory methods and histological examinations were analyzed. The distribution of the various haematological malignancies recorded were: ALL 18(4.9%), AML 18(4.9%), CLL 20(5.4%), CML 42(11.4%), Hairy cell leukaemia 2(0.5%), NHL 104(28.1%), Hodgkin's disease 42(11.4%), Burkitt's lymphoma 102(27.5%), Multiple myeloma 20 (5.4%) and Plasma cell leukaemia 2(0.5%). The lymphomas were found to constitute the highest prevalence (67.0%), with non-Hodgkin's lymphoma being the commonest, accounting for about 42% of the lymphoma cases. Hairy cell leukaemia and plasma cell leukaemia were the least seen, each constituting 0.5% of the cases. The distribution of the various haematological malignancies in this study is similar to the pattern reported in previous studies, although, there appears to be generally a lower prevalence of haematological malignancies recorded when compared to the earlier findings. Difficulties in management and poor outcome observed for the various haematological malignancies are attributable to late presentation, high patients default rate, poverty and shortage of chemotherapeutic agents.

INTRODUCTION

Haematological malignancies are primary cancers of the blood and blood forming organs i.e. the bone marrow and lymphoid tissues. They are usually clonal in origin and are quite often associated with chromosomal abnormalities [1]. These malignancies are induced by genetic damage or mutation in somatic cells, which can result from environmental agents such as chemicals, ionizing radiation and viral agents. The pattern of clinical presentation of these malignancies is variable and depends largely on the nature of the disease and its extent. They have a worldwide distribution and can occur at all ages and in both sexes. Although, there are differences between the various types as regards the age and sex incidence, a changing pattern in the clinical presentation and distribution has been reported in various communities over the years [23,45,67,89]. In Ibadan, the annual incidence for acute lymphoblastic leukemia and acute myeloblastic leukemia had been reported to be 3.7 per 10⁶ per year and 1.9 per 10⁶ per year respectively [23]. Acute leukaemias were also reported to be the commonest form of leukaemias in Ethiopia, constituting 63.8% of all cases reviewed, acute myeloid leukaemia(AML) being three times

more common than acute lymphoblastic leukaemia(ALL) [6].

In the United States of America, it was reported that haemopoietic malignancies accounted for approximately 6-8% of cancer incidence in both sexes, the incidence of acute leukemias being about 34 per million populations [78].

Malignant lymphomas have been among the most extensively studied neoplasms due to their rising incidence, the important insights they provide regarding cancer pathogenesis, the high treatment response rates and their potential curability [101].

The annual incidence for non-Hodgkin's lymphomas (NHL) was reported to be about eight cases per million populations among Zimbabweans [10]. In the United States of America (USA), the annual death rate from lympho-reticular malignancies is approximately 60 per million, of which Hodgkin's lymphoma accounted for 35%, and NHL for more than 45% [11].

The incidence rates for all lymphoid and granulocytic leukaemias in Ibadan for the period 1978-1982 ranged

between 3.7 per 10⁶ and 7.6 per 10⁶ per year and between 5.0 per 10⁶ to 10.0 per 10⁶ per year respectively [12]. Studies from Ethiopia showed that chronic leukaemias were commoner than acute leukaemias, chronic myeloid leukaemia (CML) being the commonest followed by chronic lymphocytic leukaemia (CLL) and the acute leukaemias [56]. Reports from Britain and the USA also indicated that chronic leukaemias were more common than acute leukaemias [7813]. However, almost equal numbers of acute and chronic leukaemias were reported from Zimbabwe [4].

The incidence of leukaemias and lymphomas in various age groups has attracted considerable attention, and many studies have reported a changing pattern over the years. Earlier studies showed that the incidence of acute leukaemias had two peaks at below 5 years and in the 15-20 years age group; and CLL was noticed to show a bimodal distribution in age incidence [14].

Multiple myeloma belongs to the group of lymphoproliferative disorders, which affect the B-lymphocyte system, with an annual incidence of 1.0 per 10⁶ in the general population, and this relative incidence has been reported to have remained constant in many populations over the years [15]. It is known to affect males more than females (M:F ratio 2:1) and this compares with the chronic leukaemias which also occur more in males than females.

Given the marked disparity in the physical and social environment between the developed and developing countries, it is reasonable to suspect that there may be significant differences in the epidemiology of haematological malignancies in this part of the world when compared to that of the more advanced communities.

Although some work on the distribution and clinical presentation of haemopoietic cancers have been carried out in Ibadan in the eighties, reports on the incidence and distribution from the other parts of Nigeria, including Ilorin which is located in the middle belt of the country, is rather scanty and sporadic.

The aim of this study, therefore, is to determine the distribution and spectrum of various haematological malignancies which are encountered in Ilorin, and compare with the findings that have been reported from elsewhere.

MATERIALS AND METHODS

This is a retrospective study of all cases of haematological

malignancies that were referred to, diagnosed and managed at the Haematology Department of the University of Ilorin Teaching Hospital, Ilorin, from 1st January, 1996 to 31st December 2005 inclusive.

The materials used were data obtained from patients' case folders, bone marrow report forms and histopathology report forms where available. The case notes of all the patients included in the study were retrieved from the Records Department of the Hospital. Also, records from the Cancer Registry of the Morbid Anatomy Department were examined for the lymphoma cases that were diagnosed but not managed in the Haematology Department. Additional data regarding total hospital admissions and the total number of all cancer cases recorded for the period under review were also obtained from the Records department.

The cases were characterized with respect to age, sex, morphological or histological type of malignancy, extent of disease, survival and outcome. In the cases of haematological malignancies other than lymphomas, diagnosis was made in most cases, from clinical features, blood counts, peripheral blood films and bone marrow cytology and special staining techniques were used where indicated. Final diagnoses were arrived at by consensus among the Consultants and Senior Residents in the Department. Diagnosis of lymphomas cases was based mainly on the histological reports from the pathologists which were correlated with findings on bone marrow aspirate and biopsy.

Other investigations done to guide in diagnosis or management included – X-rays, serum sodium, potassium, urea, creatinine, calcium and phosphate; liver function tests; serum protein electrophoresis, serum total proteins and albumin; Bence-Jones Protein and urinalysis where indicated.

All the peripheral blood and marrow films of the patients were prepared using standard haematological methods described by Dacie and Lewis [16].

The data generated from the above sources were analyzed using the EPI Info 6.0 statistical package and the results were presented in form of frequency tables.

RESULTS

A total of 2050 cancer cases were recorded between 1st January 1996 and 31st December 2005 inclusive at the University of Ilorin Teaching Hospital (U.I.T.H), out of

which there were 370 cases of haematological malignancies. The haematological malignancies represented 18.05% of all cancer cases seen, and 0.42% of all hospital admissions during the period under review. The total number of hospital admission for this period was 89,000 approximately.

The distribution of the various haematological malignancies recorded were: ALL 18(4.9%), AML 18(4.9%), CLL 20(5.4%), CML 42(11.4%), Hairy cell leukaemia 2(0.5%), NHL 104(28.1%), Hodgkin's disease 42(11.4%), Burkitt's lymphoma 102(27.5%), Multiple myeloma 20 (5.4%) and Plasma cell leukaemia 2(0.5%) (Table I).

Acute lymphoblastic leukaemia occurred more in late childhood (mean age 13.5 years) while acute myeloid leukaemia, Burkitt's lymphoma and Hodgkin's lymphoma were found more in adolescents. Chronic myeloid leukaemia and non-Hodgkin's lymphoma occurred more among young adults while chronic lymphocytic leukaemia and Multiple myeloma were found in the elderly. The mean age of patients at diagnosis for the various malignancies recorded is shown in Table I.

The sex distribution for the various haematological malignancies is shown in Table II. There were more males (56.2%) compared with females (43.8%).

More male cases were recorded for each of the various malignancies except for CLL and Burkitt's lymphoma where slight preponderance of female cases was noticed. Malignant lymphomas constituted 67.0% of all the haematological malignancies reviewed. Non-Hodgkin's

lymphoma was the commonest of all the lymphomas constituting 41.9% of the lymphoma cases, followed by Burkitt's lymphoma (41.1%) and Hodgkin's lymphoma (17.0%). Chronic leukaemias were next to the lymphomas, followed by multiple myeloma and the acute leukaemias. Hairy cell leukaemia and plasma cell leukaemia were least seen, only 2 cases each being recorded. (Table II)

Out of the 370 cases of haematological malignancies recorded, only 220 (59.4%) of them were referred to, diagnosed and managed by the Haematology unit.

A greater proportion of the lymphomas diagnosed (60.5%) were managed in the other clinical units of the hospital. (Table III).

Figure 1

Table 1: Showing the frequency, Mean age at diagnosis and the Mean survival of the various haematological malignancies

	Diagnosis	Frequency	Mean Age at Diagnosis (Years)	Mean Survival (Months)
1.	Acute lymphoblastic leukaemia	18(4.9)	13.5	0.5
2.	Acute myeloid leukemia	18(4.9)	20.9	0.5
3.	Chronic lymphocytic leukaemia	20(5.4)	54.7	45.0
4.	Chronic myeloid leukaemia	42(11.4)	35.4	25.5
5.	Hairy cell leukaemia	2(0.5)	57.0	24.0
6.	Non-Hodgkin's Lymphoma	104(28.1)	43.8	15.5
7.	Hodgkin's lymphoma	42(11.4)	33.3	40.0
8.	Burkitt's lymphoma	102(27.5)	13.0	4.4
9.	Multiple myeloma	20(5.4)	56.0	44.0
10.	Plasma cell leukaemia	2(0.5)	60.0	1.0
		370(100%)		

Figure 2

Table 2: Showing the frequency and sex distribution of the various haematological malignancies

S/No	Diagnosis	Frequency		Total
		Male	Female	
1.	Acute lymphoblastic leukaemia	10(2.7)	8(2.2)	18(4.9)
2.	Acute myeloid leukemia	10(2.7)	8(2.2)	18(4.9)
3.	Chronic lymphocytic leukaemia	8(2.2)	12(3.2)	20(5.4)
4.	Chronic myeloid leukaemia	26(7.1)	16(4.3)	42(11.4)
5.	Hairy cell leukaemia	2(0.5)	0(0.0)	2(0.5)
6.	Non-Hodgkin's Lymphoma	64(17.3)	40(10.8)	104(28.1)
7.	Hodgkin's lymphoma	16(4.3)	26(7.1)	42(11.4)
8.	Burkitt's lymphoma	60(16.2)	42(11.3)	102(27.5)
9.	Multiple myeloma	12(3.2)	8(2.2)	20(5.4)
10.	Plasma cell leukaemia	1(0.25)	1(0.25)	2(0.5)
	Total	209(56.2%)	161(43.8%)	370(100%)

Figure 3

Table 3: Showing the frequency and distribution of haematological malignancies seen and managed by the haematologists

Type of haematological malignancies	No. seen in UITH, Ilorin	No. of patients managed by the haematologists
Acute lymphoblastic leukaemia	18(4.9)	18(4.9)
Acute myeloid leukemia	18(4.9)	18(4.9)
Chronic lymphocytic leukaemia	20(5.4)	20(5.4)
Chronic myeloid leukaemia	42(11.4)	42(11.4)
Hairy cell leukaemia	2(0.5)	2(0.5)
Non-Hodgkin's Lymphoma	104(28.1)	22(5.9)
Hodgkin's lymphoma	42(11.4)	16(4.3)
Burkitt's lymphoma	102(27.5)	60(16.2)
Multiple myeloma	20(5.4)	20(5.4)
Plasma cell leukaemia	2(0.5)	2(0.5)
Total	370(100%)	220(59.4%)

DISCUSSION

A total of 370 cases of haematological malignancies were recorded at the University of Ilorin Teaching Hospital, Ilorin over the 10 year period under review, constituting 0.42% of all hospital admissions and 18.05% of all cancers cases. Of these, only 220 cases (59.4%) were managed at the Haematology department of the hospital.

Malignant lymphomas constituted about 67% of all haematological malignancies reviewed. Both NHL and Burkitt's lymphomas accounted for about 41-42% and Hodgkin's lymphoma 16.9% of all cases of malignant lymphomas.

The high prevalence of malignant lymphomas noted in this study agrees with earlier observations from previous studies from Africa and the USA [10141516].

Acute leukaemias (ALL and AML) form 4.9% each of haematological cancers in this study, each having an annual incidence of 1.2 per million.

From previous reports in Ibadan, annual incidence for ALL and AML were 3.7 per 10⁶ and 1.9 per 10⁶ respectively [3]. In Zimbabwe, the incidence for acute leukaemias was estimated to be about 4.2 to 12.7 per 10⁶ population [4]. The annual incidence for acute leukaemias in this study is considered very low when compared to the previous studies from Africa [3512] and the United States of America where the

annual incidence for acute leukaemias is about 34 per million-population[78].

Chronic myeloid leukaemia was next in frequency to malignant lymphomas in this study, accounting for 11.4% of the haematological malignancies reviewed while chronic lymphocytic leukaemia accounted for 5.4% of the cases. These figures are comparatively lower compared with the figures quoted from previous reports [121317]. The number of chronic leukaemias were more than that of acute leukaemias which is in keeping with observations that had been made in previous studies where they also found a definite preponderance of the chronic leukaemias [345789]. Considering the morphological forms, myeloid was found to be more common in this study than lymphatic leukaemias as had been reported in several other studies [512131718]. A possible reason for the lower number of cases encountered for the acute and chronic leukaemias 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 the tertiary centre.

There were 20 patients (5.4%) with multiple myeloma and 2(0.5%) cases of plasma cell leukaemia in the present study. Various authors have quoted various annual incidences among different populations for multiple myeloma and other plasma cell disorders [19202122]. The actual incidence for plasma cell disorders in recent times is not known and it may be difficult to estimate a true incidence from this study.

The incidence of leukaemias and lymphomas in various age groups has attracted considerable attention in literature. Earlier studies showed that the incidence of acute leukaemias had two peaks, at below 5 years and in the 15-20 years age group. CML had a peak incidence at 20-50 years and CLL a peak at 45-60 years[5723].

In Ibadan, CLL was noticed to show a bimodal distribution in age incidence, with a peak occurring in the middle of the 4th decade of life [14].

In the present study, the mean age at diagnosis for the various haematological malignancies reviewed were ALL (13.5 yrs), AML (20.9yrs), CLL (54.7 yrs), CML (35.4 yrs), NHL (43.8yrs), and MM (56.0 yrs) (Table I). These observed mean ages at presentation are in agreement with the pattern that had been reported from other studies in Africa [4561213].

NHL, however, had been shown to be more common in people aged 50yrs and above in the United State of America [1115]

Many haematological malignancies have been reported to occur more in males than females [2425]. In our study, equal numbers of males and females were recorded for the acute leukaemias; CML, NHL and MM had more males than females while CLL and Hodgkin's disease had slightly higher number of females compared to males (Table II). The male to female ratio for CLL is 1:1.5, and NHL is 1:1.6, which is a reversal of what had been reported in many studies[15162526].

The mean survival for the acute leukaemias was found to be less than a month, and for the chronic leukaemias, it ranged between 24 to 45 months. Patients with malignant lymphomas were found to have survived from 4 to 40 months, all with treatment with cytotoxic drugs.(Table I).

The mean survival time, which was observed in this study, was significantly lower than that reported from other studies [3,4,5,8,14,26,27]]. Several factors may have been responsible for this observed difference in the mean survival such as late presentation in hospital, unavailability of required chemotherapeutic drugs either due to poor financial status of the patients, or due to difficulty in procuring the drugs. Improve outcome was reported for patients with chronic myeloid leukaemia in Lagos, Nigeria which might have been due to access to Interferon-alpha (Roferon A) which was used for drug trial at the centre at that period [28].

CONCLUSION AND RECOMMENDATION

The distribution of the various haematological cancers in this study was similar to that seen in Ibadan and the age incidence observed correlated well with other studies within and outside Nigeria. The lower number of cases observed for most of the haematological malignancies in this study, may be a reflection of the lesser population of Ilorin when compared to a place like Ibadan which has a greater population density.

There were more chronic leukaemias than acute cases and this study has shown that leukaemia generally is not predominantly a disease of the elderly in this environment as in the western world. Sex incidence ratios for acute leukaemias, CML and multiple myeloma were found to agree with observations from other studies, however, a reversal was noted for CLL which may be rather apparent than real.

Of the 248 cases of lymphomas reviewed, only 98 cases were managed in the Haematology department of the hospital. There is the need for greater vigilance in the diagnosis, and an inter-disciplinary approach for the effective management of haematological malignancies, particularly the lymphomas. It is hoped that this work will form the basis for a more extensive prospective study in the nearest future.

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