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MALIGNANT LYMPHOMA IN WESTERN ETHIOPIA

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ABSTRACT

Objective: To identify the pattern of malignant lymphoma in western Ethiopia and compare it with similar studies conducted in the region.

Design: A retrospective study.

Method: A search was made for all histopathologic diagnosis of malignant lymphoma from the files of the department for the years 1988-1999. The pathologic diagnosis of Hodgkin's disease was grouped according to Rye's classification and non-Hodgkin's lymphoma according to the working formulation for clinical usage classification. The results were tabulated and analysed.

Setting: The department of pathology of Gondar College of Medical Sciences; the only unit which provides histopathologic services for the region, that includes Amhara and Tigray region.

Subjects: All lymphoma cases diagnosed at the department were included.

Results: A total of 83 cases of lymphoma were diagnosed over a period of 11 years (1988-1999). Their age ranged from four years to 79 years. Twenty one (25.3%) had Hodgkin's diseases, 61 (73.5%) non Hodgkin's lymphomas and one (1.2%) unspecified lymphoma. The commonest type of Hodgkin's disease were lymphocyte predominant (38%) and mixed cellularity (33.3%). Nodular sclerosing Hodgkin's disease was diagnosed in only one case. The commonest type of non-Hodgkin's lymphoma was high-grade lymphoma (41.0%) followed by low grade lymphoma (32.8%). Burkitt's lymphoma was diagnosed in four cases. The frequency of Hodgkin's disease was high in the first and second decades while non-Hodgkin's lymphoma showed high frequency in the fifth decade.

Conclusion: This study has shown many similarities in proportion of lymphomas and age and sex distribution of cases. The identified minor differences such as frequencies of histologic patterns of Hodgkin's disease and paucity of Burkitt's lymphoma deserve explanation and invites prospective studies.

INTRODUCTION

The histological pattern of malignant lymphomas worldwide has been extensively studied and shows a great variation in different parts of the world. Some types show climatic dependence, while others appear to be influenced by immunosuppressive viruses such as HIV and HTLV. For example, there is a very high incidence of Burkitt's lymphomas in the African continent, while in Europe and America this particular type of lymphoma is virtually non-existent. In the western world there is a very high incidence of follicular lymphoma while this contributes little to the African lymphomas(1). In Japan and parts of the Far East(2,3), a preponderance of T-cell lymphomas is noted, contrasting sharply with the African and European patterns where B-cell lymphomas predominate. With regard to the age and sex incidence, it is also interesting to note that the global variation is quite marked. The lymphomas in Africa,

in general, affect a younger age group than the European and American experience. It is this wide variation in the distribution of these lymphomas that could hold the key to important associations with potential aetiologic, pathogenic, confounding and prognostic factors.

The global incidence of malignant lymphomas is estimated at 393,000 new cases annually, with a prevalence of 2,740,000 cases. About 80% of these are the heterogeneous non-Hodgkin's lymphoma, the remaining 20% being Hodgkin's disease. At least 65% of these are reported in Africa each year, with the remaining 35% being reported in the remaining four continents of the world(4).

In Ethiopia the magnitude of malignant lymphomas is not well studied but according to one study, out of 3396 lymph node biopsies, 388 (11.43%) lymphomas were identified and the ratio of Hodgkin's disease to non-Hodgkin's lymphoma was 1:24(5).

The aim of this study was to determine and identify the patterns of lymphoma in north western Ethiopia and compare it with similar studies conducted in the region.

MATERIALS AND METHODS

This was a retrospective study, conducted at the Gondar College of Medical Sciences (GCMS), Department of Pathology; which is the only unit with histopathologic services in the region, serving patients coming all over the Amhara and Tigray regions. A minimum of 500 biopsies are examined annually. The department's files of pathologic reports for surgical biopsy from 1988-1999 were reviewed. The tissue samples were fixed adequately in 10% formalin and then sectioned for embedding. Haematoxyline and eosin (H/E) was used as a routine stain of the microscopic sections in all cases. Special stains such as periodic acid schiff (PAS) and reticulin stains were employed when found appropriate. Vital statistics such as age, sex, site of biopsy and pathological diagnosis were noted and recorded on a table. The pathological diagnosis were broadly classified under the following categories:

- (i) *Hodgkin's disease*: Mixed cellularity, nodular sclerosing, lymphocyte predominant, lymphocyte depleted and unclassified;
- (ii) *Non-Hodgkin's lymphoma*: Low grade, intermediate grade, high grade, mycosis fungoides and unclassified;
- (iii) *Lymphoma*: When it was difficult to categorise into Hodgkin's disease and non-Hodgkin's lymphoma.

Some of the reports were in old diagnostic terminologies (lymphosarcoma) and in these cases the slides were retrieved and examined and renamed according to the above classifications.

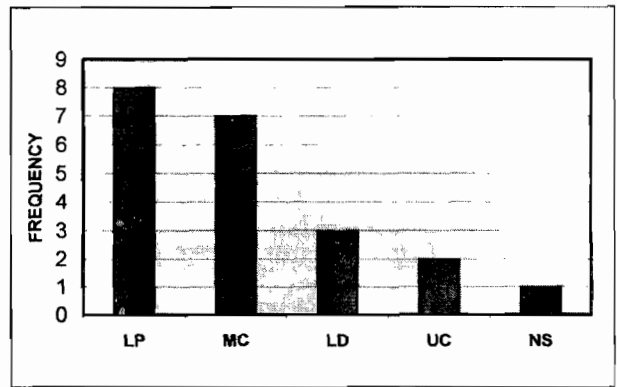
RESULTS

Over the past eleven years (1988-1999), a total of 83 cases of lymphoma were diagnosed from various tissue samples submitted to the department of pathology. These samples were taken from 64 males (77.1%) and 19 females (22.9%). Their age ranged from four years to 79 years of age. Hodgkin's disease was diagnosed in 21 cases, accounting for 25.3% and non-Hodgkin's disease was diagnosed in 61 cases (73.5%). One case was diagnosed as lymphoma. Cervical lymph nodes were the most commonly involved lymph nodes (53.0%) in the case of Hodgkin's disease whereas extranodal and axillary lymph nodes were the commonest sites (23.9% and 21.7% respectively) in non-Hodgkin's lymphoma.

Figures 1 and 2 show the frequencies of Hodgkin's disease and non-Hodgkin's lymphoma. The commonest types of Hodgkin's disease were lymphocyte predominant (38.1%) and mixed cellularity (33.3%). Nodular sclerosing was seen only in one case (4.8%). Likewise the commonest type of non-Hodgkin's lymphoma was high grade lymphoma (41.0%), followed by low grade (32.8%) and intermediate grade (9.8%). Out of the high-grade lymphomas, Burkitt's variant was diagnosed in four cases only, accounting for 16% of high-grade non-Hodgkin's lymphoma.

Figure 1

Frequency of histologic sub-variants of Hodgkin's lymphoma

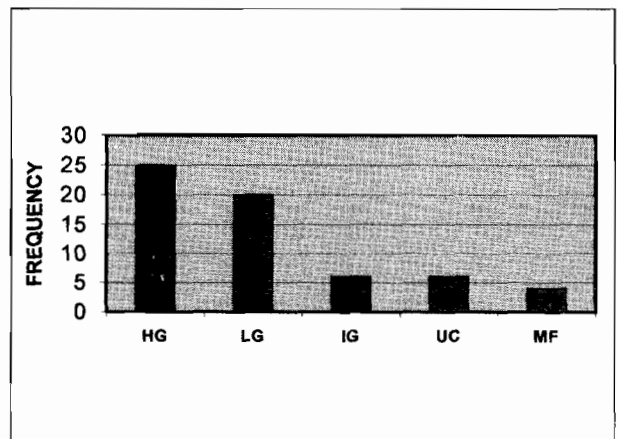


Variants

Key: LP = lymphocyte predominant, MC = mixed cellularity, LD = lymphocyte depleted, UC = unclassified, NS = nodular sclerosing.

Figure 2

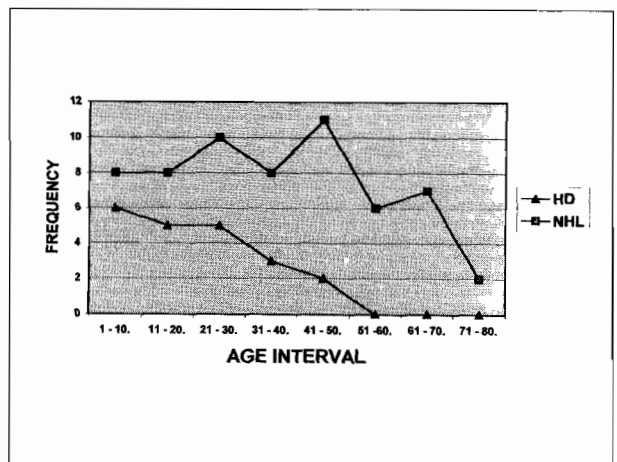
Frequency of non-Hodgkin's lymphoma according to working formulation



Key: HG = high grade, LG = low grade, Ig = intermediate grade, UC = unclassified, MF = mycoses fungoids.

Figure 3

Frequency of Hodgkin's and non-Hodgkin's lymphoma in age intervals



Key: HL=Hodgkin's lymphoma, NHL = non-Hodgkin's lymphoma

Figure 3 shows the distribution of Hodgkin's disease and non-Hodgkin's lymphoma according to age. High numbers of non-Hodgkin's lymphoma were seen in the fifth decade of life while Hodgkin's disease was seen in the first and second decades of life. The male to female sex ratio for non-Hodgkin's lymphoma was 3.4:1 and for Hodgkin's lymphoma 6:1.

DISCUSSION

In Africa, a relatively small number of studies on lymphomas have been carried out, the majority of which emphasise the unusual epidemiologic, clinical and histopathologic features of these tumours, in contrast to the western (American and European) experience. This might be explained by geographical differences, occurrence of a wide range of infections, which predispose to immunological disturbances and rampant poor nutrition. This study has shown a similar proportion of Hodgkin's and non-Hodgkin's lymphoma as that of the global picture and a male dominance in both cases.

In Africa, Hodgkin's disease has several epidemiologic, pathologic and clinical characteristics that distinguish it from Hodgkin's disease encountered in other parts of the world(6-10). First, there is an excess of mixed cellularity and lymphocyte depleted type, which are associated with poor prognosis. Second, Hodgkin's disease is commonly seen in children with relatively few cases in the older population. Third, nodular sclerosing type, the most common histologic type seen in developed societies is the least common variety. This study shows clearly a similar age distribution and paucity of nodular sclerosing Hodgkin's disease, which is seen only in one case but unlike the African picture lymphocyte predominant Hodgkin's disease was the commonest type followed by mixed cellularity. The absence of the second peak in the older age groups may be explained by the composition of the population in terms of age and the shorter life span of the population.

The findings in the age, sex distribution and histologic pattern of non-Hodgkin's lymphoma are more or less similar to other African based studies, except for a relatively low frequency of Burkitt's lymphoma. Among the more recent studies from Nigeria(11,12), it was shown that there is a high male to female ratio, a peak incidence between 41 and 50 years of age, with the small lymphocytic lymphomas (low grade) apparently accounting for most (38.1%) of the biopsies. In the study by Obafunwa *et al*(11), diffuse lymphomas were shown to account for 86.7% of the cases of non-Hodgkin's lymphoma, while the follicular lymphomas accounted for 13.3%. Extranodal presentation accounted for 90% of the cases (80% of these cases being Burkitt's lymphoma). While nodal presentation accounted for 10% of the cases. In this study follicular lymphoma was seen only in one case.

In Kenya, a series of studies on non-Hodgkin's lymphomas(13) highlighted a high prevalence of lymphosarcoma and reticulum cell sarcoma, with a

Hodgkin's disease being infrequent. Hodgkin's disease was usually common among children under the age of 15 years. This was the picture seen before 1980. Later analysis of these results(14), showed that Burkitt's lymphoma accounted for most of the lymphomas in the countries lowland regions. In Uganda, a number of earlier studies have confirmed Burkitt's lymphoma to be the most commonly encountered tumour, displaying a well known geographic and clinical manifestations(15-18). Additional observations included the low frequency of follicular lymphoma and the now well recognised geographic co-distribution between malaria and Burkitt's lymphoma.

In conclusion, this study shows many similarities in the proportion of lymphomas and age and sex distribution of cases. The identified minor differences such as frequencies of histologic pattern of Hodgkin's disease and paucity of Burkitt's lymphoma deserve explanation by doing prospective studies in the future.

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