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Spectrum of Cytological Findings in Lymph Nodes among HIV Positive Patients

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Abstract

Introduction: HIV-1 probably originated from one or more cross-species transfers from chimpanzees in central Africa. HIV-2 is closely related to viruses that infect sooty mangabeys in western Africa.Genetically, HIV-1 and HIV-2 are superficially similar, but each contains unique genes and its own distinct replication process. HIV-2 carries a slightly lower risk of transmission, and HIV-2 infection tends to progress more slowly to acquired immune deficiency syndrome. *Methodology:* Based on the selection criteria HIV positive patients with lymph node enlargement underwent clinical examination and the history was taken. Laboratory findings were carried out for these patients like routine haematological tests, CD4 T cell count. Fine Needle Aspiration Cytology was carried out. In patients with more than one group of lymph node enlargement, representative nodes (larger in the group) were chosen from each group and were subjected to FNAC. *Results:* In this study 50.67% had reactive lymphadenitis followed by tubercular (38.67%), granulomatous lymphadenitis (8%), non Hodgkin's lymphoma (1.33%) and secondary metastases (1.33%). *Conclusion:* Most infectious causes of HIV lymphadenopathy can be correctly identified, in which the patients can commence prompt treatment for life-threatening infections.

Keywords: FNAC; Lymph Nodes; HIV.

Introduction

Human immunodeficiency virus (HIV) is a blood-borne, sexually transmissible virus. The virus is typically transmitted via sexual intercourse, shared intravenous drug paraphernalia, and mother-to-child transmission (MTCT), which can occur during the birth process or during breastfeeding.

HIV-1 probably originated from one or more cross-species transfers from chimpanzees in central Africa [1]. HIV-2 is closely related to viruses that infect sooty mangabeys in western Africa [2]. Genetically, HIV-1 and HIV-2 are superficially similar, but each contains unique genes and its own distinct replication process. HIV-2 carries a slightly lower risk of transmission, and HIV-2 infection tends to progress more slowly to acquired immune deficiency syndrome.

The acquired immuno deficiency syndrome (AIDS) (sometimes called "slim disease") is a fatal illness caused by a retro virus known as the HIV which breaks down the body's immune system, leaving the victim vulnerable to a host of life-threatening opportunistic infections, neurological disorders or unusual malignancies [2].

As on December 2008, nearly 39.5 million people globally are living with HIV/AIDS [4]. Estimated number of people living with HIV/AIDS, in India by 2008 are 2 to 3.1 million [5].

For the vast majority of people living with HIV/AIDS, anti retroviral therapy (ART) is still light years away largely inaccessible in resource poor countries where HIV continues to devastate families,

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communities and societies, especially the poor and the socially marginalized [6].

Lymphadenopathy is very common among HIV-infected individuals and may occur at any stage of HIV infection. It may be the first indication of a serious local or systemic condition, and it should be evaluated carefully. A multitude of conditions can cause lymphadenopathy, including HIV itself, opportunistic or other infections, and malignancies. The likely causes of lymphadenopathy, and thus the diagnostic workup, will depend in part on the patient's degree of immunosuppression. The risk of opportunistic and certain malignant conditions increases at lower CD4 cell counts.

Since the earliest days of AIDS epidemic, clinicians and researchers have recognized the importance of lymphoid tissue both in clinical manifestations of disease and its pathogenesis [7].

Lymph node fine needle aspiration cytology (FNAC) is a valuable investigative modality especially in HIV II infections. Most opportunistic infections (bacterial and fungal) can be correctly identified and high grade lymphoma can be diagnosed and phenotyped [8]. FNAC is a simple, inexpensive, rapid investigative procedure which can reduce surgical excisions and provide definite guidelines about further management [9].

Hence, the present study was undertaken to assess the spectrum of cytological findings, infectious and inflammatory conditions and neoplasms in HIV positive patients with lymph node enlargement.

Methodology

This study was conducted in the Department of Pathology, Tertiary care hospital.All the HIV positive patientspresenting with lymph node enlargement admitted or attending outpatient departments formed the study subjects

Inclusion

All HIV positive patients presenting with lymph node enlargement.

Exclusion

Patients with acutely inflamed lymphnodes and with history of enlargement of less than one week.

Based on the selection criteria HIV positive patients with lymph node enlargement underwent clinical examination and the history was taken. Laboratory findings were carried out for these patients like routine hematological tests, CD4 T cell count.

Fine Needle Aspiration Cytology was carried out. In patients with more than one group of lymph node enlargement, representative nodes (larger in the group) were chosen from each group and were subjected to FNAC.

The standard procedure was followed making use of 10 ml syringe with 23 gauge needle and as many as possible smears were prepared. Procedure was performed wearing desposable surgical gloves. Hands were washed with soap under running tap water after the procedure. The smears obtained were routinely fixed with ethyl alcohol or air dried according to type of stain to be used. If the smears were inadequate, aspiration was repeated. Smears were then stained by Haematoxylin and Eosin (H & E), May Grunwald Giemsa and ZN stain for acid fast bacilli (AFB).

Results

Overall most of the patients (40%) were aged between 31 to 40 years and 21 to 30 years (38.67%). However 9.33% patients were aged between 41 to 50 years, 6.67% between 6 to 10 years and 2.67% each had age between 11 to 20 years and more than 50 years. The mean age was 31.00 ± 9.31 years with range being minimum six years to maximum of 54 years.

Table 1: Distribution of cases according to age and sex

Age Group (Years)	Male		Female		Total	
	No	%	No	%	No	%
6 To 10	4	5.33	1	1.33	5	6.67
11 To 20	2	2.67	0	0.00	2	2.67
21 To 30	17	22.67	12	16.00	29	38.67
31 To 40	22	29.33	8	10.67	30	40.00
41 To 50	4	5.33	3	4.00	7	9.33
> 50	2	2.67	0	0.00	2	2.67
Total	51	68.00	24	32.00	75	100.00

In this study majority (74.67%) had cervical lymph enlargement. The other lymph nodes recorded were axillary (9.33%), generalized (8%), inguinal 5.33% and retroperitoneal (2.67%).

In this study 50.67% had reactive lymphadenitis followed by tubercular (38.67%), granulomatous lymphadenitis (8%), non Hodgkin's lymphoma (1.33%) and secondary metastases (1.33%).

Table 2: Distribution of cases according to site of lymph node involved

Nodes involved	Distribution (n=75)	
	Number	Percent
Cervical	56	74.67
Axillary	7	9.33
Retroperitoneal	2	2.67
Inguinal	4	5.33
Generalized	6	8.00
Total	**75**	**100.00**

Table 3: Distribution of lymph node lesions diagnosed by FNAC

Cytological diagnosis	Distribution (n=75)	
	Number	Percent
Reactive lymphadenitis	38	50.67
Tubercular lymphadenitis	29	38.67
Granulomatous lymphadenitis	6	8.00
Non Hodgkin's Lymphoma	1	1.33
Secondary - Metastasis	1	1.33
Total	**75**	**100.00**

Discussion

In the present study of the 75 cases, males constituted 68% and 32% were females. The male to female ratio was 2.12:1. A study from India reported sex ratio of 5:1 whereas other studies observed sex ratio of 24:1 [10] and 22:1 [11]. The male preponderance in the present study could be due to the greater number of male patients attending OPD in our set up and overall, greater involvement of male patients in "high-risk" activities predisposing to HIV infection.

Overall most of the patients (40%) were aged between 31 to 40 years and 21 to 30 years (38.67%). The mean age was 31.00 ± 9.31 years with range being minimum six years to maximum of 54 years. Among males 29.33% were aged between 31 to 40 years age group and 22.67% between 21 to 30 years and the mean age was 31.33 ± 8.50 years. Among females 16% had aged between 21 to 30 years followed by 10.67% between 31 to 40 years and the mean age was 30.29 ± 7.94 years. Several studies have reported the mean age between 27.5 to 39 years. A study from India reported the mean age of patients as [10] 30 years. The other studies several regions have reported 39 years [8], 27.5 years [12], 34 years [13], and 36.4 years [11]. In this study, majority of patients were of the age between 21 to 40 years as this age group is the sexually active group.

In this study majority (74.67%) had cervical lymph enlargement. The other lymph nodes involved were axillary (9.33%), generalized (8%), inguinal 5.33% and retroperitoneal (2.67%). Cervical lymph node enlargement was reported as predominant lymph node involved in a study from India (66.66%) [8], Another study from other region reported 40.70% [12], of cervical lymph node involvement. The involvement of other lesions could be comparable to the other studies reported in the literature [8,12].

In this study overall, majority (70.67%) patients had CD4 count more than 200 cells/mm^3 followed by 50 to 200 cells/mm^3 (25.33%) and less than 50 cells/mm^3 (4.00%).

In this study 50.67% had reactive lymphadenitis followed by tubercular (38.67%), chronic granulomatous lymphadenitis (8%), non Hodgkin's lymphoma (1.33%) and secondary metastases (1.33%).

In the present study among patients with reactive lymphadenitis, 68.42% were males and 31.58% were females. Overall, 42.11% cases with reactive lymphadenitis had age between 31 to 40 years and 39.47% were aged between 21 to 30 years and similar pattern of age was noted among males (31.58% and 21.05% respectively) whereas among females 18.42% were between 21 to 30 years and 10.53% were aged between 31 to 40 years.

The diagnosis of reactive changes was based on finding a heterogenous population of cells in the aspirate. These cells included a spectrum of small and large lymphocytes some of which were in mitosis. Fragments of reactive follicular centre cells, including

tangible body macrophages and some plasmacytoid cells were also seen [11].

The histological appearance varies, depending on the duration of the lesion, with florid reactive hyperplasia in the early stage to advanced lymphocytic depletion and burnt out follicle centre in the late stage. This was reflected in the cytology in some cases, but the changes of PGL could not always be differentiated from reactive lymph nodes with different aetiology [11]. However, the histological stages of HIV lymphadenopathy recognized in surgical pathology are not readily diagnosable on FNAC.

A study [14] from South India reported that reactive lymphadenitis was predominant cytological diagnosis (46.32%). Reactive lesion was also common in a study conducted in Chadigarh, India (40%) [13]. Similar observations were reported in studies conducted in California, North America (50%) [15] and in Europe (51%) [13] and (41%) [11].

Conclusion

FNAC of lymph nodes in HIV positive patients is indeed a valuable diagnostic tool, which is very useful and inexpensive technique that can be performed safely on HIV-positive patients using universal precautions and extra care

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