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ORIGINAL ARTICLE

CYTOLOGICAL FINDINGS IN LYMPHADENOPATHIES ASSOCIATED WITH ACQUIRED IMMUNO DEFICIENCY SYNDROME

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ABSTRACT: FNAC is an important diagnostic tool in the evaluation of lymphadenopathy in HIV positive patients. Thirty-six human immunodeficiency virus (HIV) positive patients with lymphadenopathy were subjected to fine-needle aspiration cytology (FNAC) over a period of 2 years. The maximum number of cases was reported in the age group of 21 to 30 years. Majority of the patients were males. The maximum number of cases had tuberculosis (58.3%) followed by reactive lymphadenitis (36.1%), non-Hodgkin's lymphoma (2.7%) and acute suppurative lymphadenitis (2.7%).

KEYWORDS: Human immunodeficiency virus, fine-needle aspiration cytology, granulomatous lymphadenitis, persistent generalized lymphadenopathy.

INTRODUCTION: Acquired Immuno Deficiency Syndrome (AIDS) is known to be caused by a lymphotropic retro-virus. This syndrome represents the most severe form of a broad spectrum disease. AIDS is a fatal illness that breaks down the body's immunity and leaves the victim vulnerable to life-threatening opportunistic infections, neurological disorders and/or unusual malignancies. In India, within short period of time, the human immunodeficiency virus (HIV) epidemic has emerged as one of the most serious public health problems.

Lymphadenopathy is one of the earliest manifestations of HIV. This may be due to the presence and effects of HIV. Lymphadenopathy may also be a manifestation of opportunistic infections or lymphoid malignancy developing in these immune deficient individual. Fine-needle aspiration cytology (FNAC) may be practiced for the diagnosis of opportunistic infections in HIV/AIDS viz. tuberculosis, histoplasmosis, toxoplasmosis and malignant conditions such as Kaposi sarcoma and lymphoma. The procedure is rapid, easily performed and in many cases obviates excision while guiding subsequent therapy or observation. This study was performed to evaluate the role of FNAC as a cytological investigative tool in the diagnosis of various lesions in HIV lymphadenopathy.

MATERIALS AND METHODS: This study consisted of 36 fine-needle aspiration (FNA) samples obtained from lymph nodes of HIV positive patients confirmed by 3 enzyme-linked immunosorbent assay (ELISA) and rapid tests using different antigens. Aspiration was done as an OPD procedure using a 22-guage needle with standard precautions. Four to five smears were obtained by using multiple passes. Smears obtained were stained with May-Grunwald-Giemsa Stain (MGG), hematoxylin and eosin stain (H and E) and Papanicolaou stain (PAP). Special stains used were Zheil-Neelsen (ZN) stain for acid-fast bacilli (AFB) and periodic acid-Schiff stain (PAS) for fungi.

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RESULTS: Detailed cytomorphologic study was conducted. Various lesions encountered were as follows: Mycobacterium tuberculosis in 20 cases, atypical mycobacterial infection in 1 case, reactive lymphadenitis in 13 cases, non-Hodgkin's lymphoma in 1 case and acute suppurative lymphadenitis in 1 case.

Majority of patients were males in the age group of 21-30 years [Table 1]. Cervical lymph node was the most common site.

DISCUSSION: Table 2 shows that reactive lymphadenopathy was the most common presentation of HIV cases in western studies. In the present study and as well as in the studies performed by Shenoy et al[1] and Satyanarayana et al[2]. mycobacterial infection was more common, possibly because of the increased prevalence of tuberculosis in our country as compared to the developed countries.

The maximum number of cases was found to be in the age group of 21-30 years, followed by 31-40 years. In a study conducted by Bottles et al.[3] The age of the HIV patients ranged from 18-52 years and the cervical group of lymph nodes were found to be the most commonly affected site. In a study by Bates et al.[4] 22 males and 1 female were found to be HIV-infected and their age ranged from 19 to 72 years. Further, cervical lymph nodes were the most commonly affected site. In a study performed by Shenoy et al.[1] The male: female ratio was 5:1 and the age group affected was 25-30 years with cervical group of lymph nodes being the most commonly affected site. However, Satyanarayana et al.[2] Report axillary node involvement being more common in their study.

In the present study, 21 cases of mycobacterial infection were diagnosed. Ten (47.6%) cases showed epithelioid granulomas and caseation, of which 7 were AFB positive [Figure 1]. Granuloma without caseous necrosis was observed in 6(28.5%) cases, of which one was AFB positive. Only caseous necrosis was observed in 4(19.04%) cases, out of which two were AFB positive.

One case was diagnosed as Mycobacterium avium-intracellulare (MAI) lymphadenitis that showed aggregates of pale histiocytes with foamy cytoplasm in the smears with poorly formed granulomas. The smear stained positive for both AFB and PAS [Figure 2 and 3]. Mycobacteria were observed in abundance in the cytoplasm of the histiocytes. The unique feature of Mycobacterium avium-intracellulare is that it stains positively for PAS, as described by Woods and Meyers[5] and was established in our study. In the study performed by Shenoy et al[1]., one case of MAI lymphadenitis was reported that showed similar findings on smears, as observed in our study.

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Age (Years)	Male	Female	Total	Percentage
1-10	2	0	2	5.5
11-20	3	3	6	16.6
21-30	11	5	16	44.4
31-40	7	2	9	25
41-50	3	0	3	8.3

Table 1: Age and sex distribution of HIV-positive cases

In the present study, 13(36.1%) cases of HIV-infected patients presented with reactive lymphadenitis, of which 6 patients presented with persistent generalized lymphadenopathy (PGL). Smears showed polymorphous cell population with mature and transformed lymphocytes, monocytoid cells, neutrophils and tingible body macrophages [Figure 3 and 4]. Changes in PGL could not be differentiated from reactive lymph nodes of different etiology in the present study. This finding was also inferred by Bates et al.[4] All the cases of reactive lymphadenitis in the present study were negative for AFB and PAS stains. Satyanarayana et al.[2] report a reactive cytomorphological pattern in 16.4% of their cases of tuberculosis. In the study conducted by Bottles et al,[3] on HIV lymphadenopathy, 50% of aspirates showed reactive lymphoid hyperplasia. Bates et al.[4] found reactive hyperplasia in 41% aspirates. Ellison et al.[6] and Reid et al.[7] found reactive hyperplasia in 33.3% and 51% aspirates, respectively.

One case (2.7%) of HIV with acute suppurative lymphadenitis was diagnosed. ZN and PAS stains were negative. Smears showed lymphocytes and neutrophils and the aspirate was purulent [Figure 5]. In the study performed by Shenoy et al.[1] acute suppurative lymphadenitis with AFB positivity was observed in 3(13%) patients.

Diagnosis	Bottles et al[3] n=121	Bates et al[4] n=27	Reid et al[7] n=65	Shenoy et al[1] n=56	Satyanarayana et al[2] n=196	Present Study n=36
Mycobacterial infection	17%	22%	15%	48.2%	34.2%	58.3%
Reactive lymphadenopathy	50%	41%	51%	35.7%	42.3%	36.1%
Lymphoma	20%	4%	9%	8.9%	2.6%	2.7%
Kaposi sarcoma	10%	15%	2%	-	-	-
Others	3%	18%	23%	7.2%	23.5%	2.7%

Table 2: Comparison of results of FNA cytology studies in HIV-infected patients

The neoplastic lesion reported in the present study was non-Hodgkin's lymphoma found in 1(2.7%) case. Smear showed sheets of large cells with some of them cleaving [Figure 6]. Further typing was not possible. Non-Hodgkin's lymphoma is the most common malignancy found in HIV positive patients. In the study conducted by Saikia et al[8]., one case of non-Hodgkin's lymphoma

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was reported. Similarly one case of high-grade B cell lymphoma was reported by Jayaram and Chew.[9]

No cases of Kaposi Sarcoma were found in our study, although it has been reported in the western literature.

In the present study, evidence of opportunistic infections other than Mycobacterium tuberculosis and Mycobacterium-avium-intracellulare was not found in any of the lymph nodes examined. No other opportunistic infections were encountered in the study conducted by Shenoy et al.[1] In the study performed by Bates et al[4]., one case of Histoplasma and one case of Cryptococcus were found. Satyanarayana et al[2] reported a case each of Cryptococcus neoformans and Rhodo torula

CONCLUSION: FNAC is the primary and safe investigative procedure for lesions of lymph nodes in HIV patients. Procedure is rapid, easily performed and in many cases, it obviates excision, guides subsequent therapy or observation. Most opportunistic infections can be identified and high-grade lymphomas can be diagnosed.

Figure 1: Smear shows ill-formed granuloma in a case tubercular lymphadenitis (MGG, x 400).
Figure 2: Smear shows intra cellular and extracellular mycobacteria in MAI lymphadenitis (ZN, x1000).

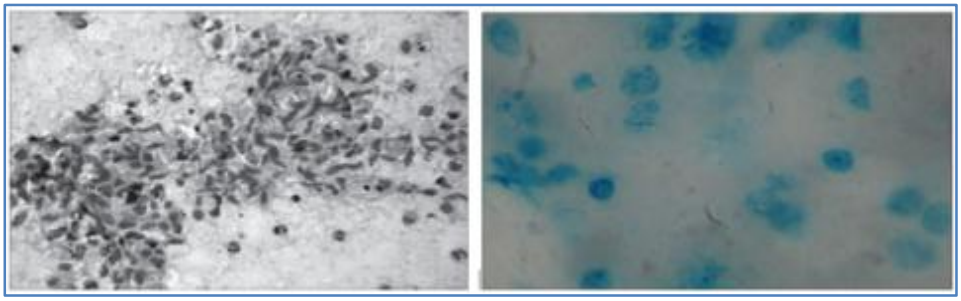

Figure 1 **Figure 2**

Figure 3: Smear shows intracellular and extracellular mycobacteria in MAI lymphadenitis (PAS, x1000).
Figure 4: Smear shows histiocytes and reactive of lymphocytes in reactive lymphadenitis (MGG, x100).

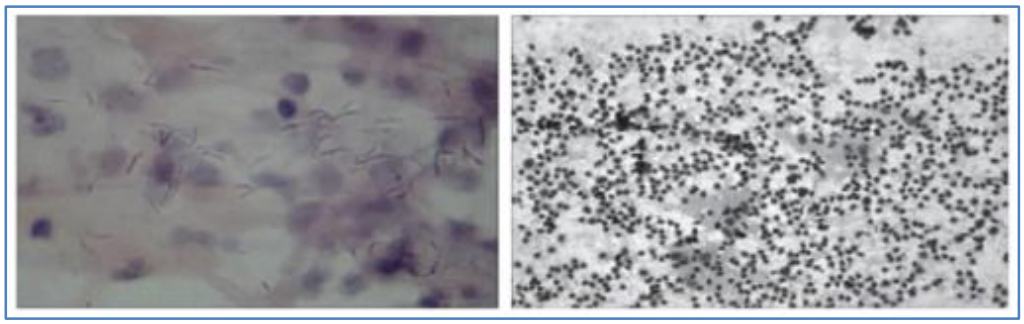

Figure 3 **Figure 4**

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Figure 5: Smear shows neutrophils and lymphocytes in a proteinaceous background in acute suppurative lymphadenitis (MGG, x100).

Figure 6: Smear shows large immature lymphoid cells with some showing prominent nucleoli in non- lymphocytes in reactive lymphadenitis (MGG, x100).

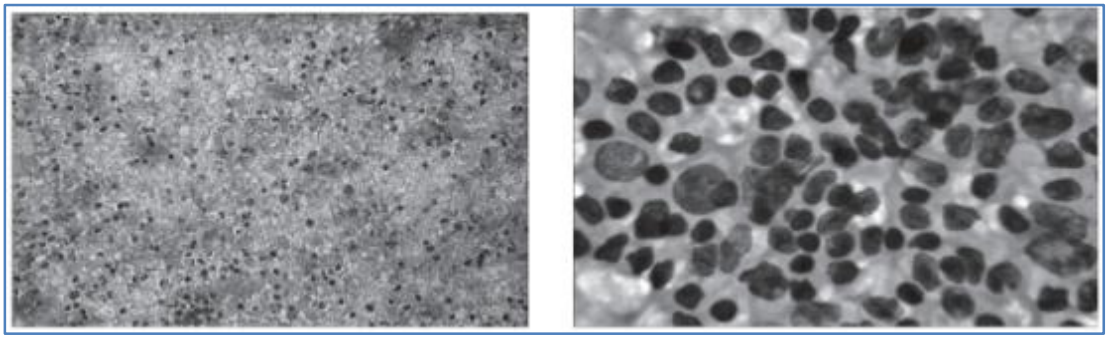

Figure 5 **Figure 6**

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