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Research Article

Fine needle aspiration cytology study of HIV lymphadenopathy and its correlation with CD4 count

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ABSTRACT

Background: HIV-AIDS is considered as a worldwide pandemic with an epicentre in Asia. Lymphadenopathy is the commonest manifestation observed in HIV-AIDS. Although multiple studies have been conducted in western countries, there is need for further studies to evaluate the causes of lymphadenopathy in Indian setting. So the FNAC study of HIV lymphadenopathy and its correlation with CD4 counts was carried out.
Methods: Two yrs. observational study was carried out at the Tertiary care centre from Jan 2013 to Dec 2014. All the patients of HIV lymphadenopathy during this period were included in the study. History and clinical details were obtained from medical records. Thorough clinical examination was done in all cases. Thereafter Fine needle aspiration cytology (FNAC), both guided and unguided was performed, as needed. Smears were fixed and stained with H & E stain & special stains, as required. CD4 counts were carried out at the antiretroviral treatment (ART) centre.
Results: Out of 64 cases, Tuberculosis (TB) lymphadenitis was the most common lesion with 47.05% cases & its mean CD4 count was 329/ul. There were 4 cases of malignancy; two were that of primary malignancy - lymphoma and other two were metastasis from epithelial malignancies.
Conclusions: FNAC is a simple and rapid investigative technique to differentiate and diagnose various causes of lymphadenopathy. TB lymphadenitis is the most common lesion associated with HIV positive patients. CD4 counts correlate well with underlying lymph node pathology, TB lymphadenitis being common in CD4 range of 200-500/ul and HIV associated malignancies seen in CD4 count less than 100/ul.

Keywords: HIV, Lymphadenopathy, CD4 count

INTRODUCTION

Tuberculosis is one of the commonest opportunistic infection in HIV positive patients, especially in India. It can present in highly atypical manner hence high index of suspicion is essential to correctly diagnose and treat. Opportunistic infections have a definite correlation with CD4 counts in HIV positive patients.

In India there are around 1.2 billion people, about half of them are adults in the sexually active age group. First case of AIDS was reported in 1986. The spread of HIV in India has been uneven. HIV epidemics are more severe in the southern half of the country and the far north-east. The highest estimated adult HIV prevalence is found in Manipur (0.78%), followed by Andhra Pradesh (0.76%), Karnataka (0.69%) and Nagaland (0.66%). However for the first time, in 2010 no states reported HIV prevalence among ANC attendees of 1.0%. Based on HIV Sentinel Surveillance 2008-09, it is estimated that 23.9 lakh people are infected with HIV in India, of whom 39% are female and 4.4% are children. The estimates highlight in

overall reduction in adult HIV prevalence and HIV incidence (new infections) in India. Adult HIV prevalence at national level has declined from 0.41% in 2000 to 0.31% in 2009.[1]

Lymphocytes are the target cells for HIV infection. Variable degree of lymph node involvement is seen in all stages of HIV. Lymphadenopathy in HIV can also be due to opportunistic infections (TB, CMV, and Pneumocystis), malignancies (Hodgkin's and Non-Hodgkin's lymphoma) or metastases.[2]

METHODS

This is a 2 yrs. observational study carried out from Jan 2013 – Dec 2014 at a tertiary care center in Solapur. All the patients of HIV lymphadenopathy during this period were included in the study. Total 64 cases of HIV lymphadenopathy were studied during this period. Detailed clinical history was obtained from case papers. Thereafter thorough clinical examination of the patient was carried out. Both FNAC guided and unguided FNAC was done, as needed. Smears were routinely stained with H&E. ZN staining for AFB was done in selected cases. CD4 counts were obtained from ART centre with due permission of the nodal officer. Finally results were correlated with CD4 count.

RESULTS

There were total 64 cases among which 53 % cases were females & rest were males. Most common age group involved in the present study was 31-40 yrs.

Cervical lymphadenopathy was the most common lesion. About ninety percent (90.63%) cases were non neoplastic. Mean CD4 count was 410/ul, ranging between 68 – 1319 /ul. Four cases were found to have a malignancy, 2 of them were primary malignancies -Non Hodgkin's lymphoma and other two were metastasis from epithelial malignancies. Tuberculosis (TB) was identified as the most important cause of lymphadenopathy in the present study with 32 cases (50%).

Figure 1: Lymphadenopathy (gross).

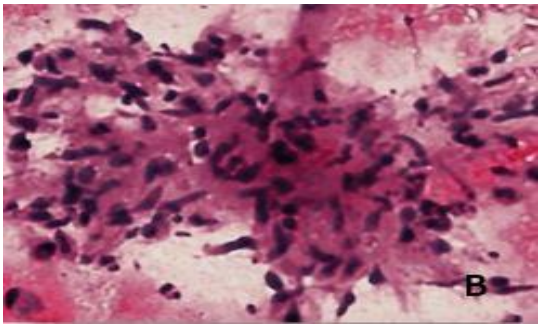

Figure 2: Microscopic picture of tuberculosis lymphadenitis showing well-formed granuloma with central caseous necrosis.

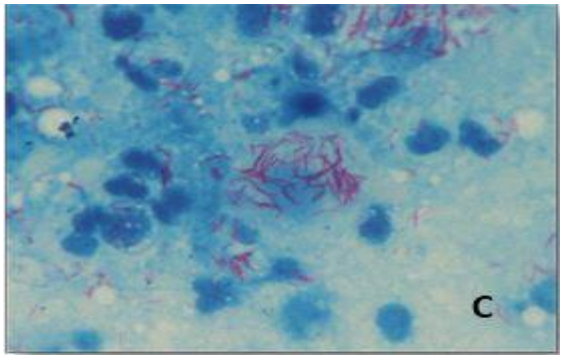

Figure 3: AFB positive bacilli.

Other causes of lymphadenopathy identified in the present study were acute suppurative lymphadenitis, reactive lymphadenitis and Non-Hodgkin's lymphoma in decreasing order respectively. In two cases opinion was not possible.

Table 1: Age wise distribution of cases HIV associated lymphadenopathy.

Age Group	No. of cases
0-10	-
11-20	10
21-30	18
31-40	20
41-50	12
51-60	-
61-70	4

Table 2: Sites of involved lymph nodes.

Site	No. of cases
Cervical	40
Axillary	2
Submandibular	4
Posterior triangle	2
Posterior Auricular	2
Supraclavicular	4
Intra-Abdominal	2
Generalized	8

Table 3: Distribution of lymph node lesions in HIV positive patients diagnosed by fine needle aspiration cytology.

Lesion	No. of cases (Out of 58)	% age	CD_4 range	Mean CD_4 count (/ul)
Tuberculosis lymphadenitis	32	55.17	81 - 810	329
Acute Suppurative lymphadenitis	16	27.58	196 - 928	380
Reactive lymphadenitis	10	17.24	162 - 1319	493

Most of the TB lymphadenitis cases were males and the commonest age group was 31-40 yrs. CD4 count in TB lymphadenitis (TBL) cases ranged from 81-810/ul with a mean CD4 count of 329/ul. TB lymphadenitis was further classified into three categories depending on the presence of necrosis and granuloma – 1) Both caseous necrosis and granuloma, 2) Only necrosis and 3) Only granuloma. ZN staining for AFB was positive in all cases with caseous necrosis (8/8). While it was positive in 8/10 cases with both granuloma & necrosis and 6/14 cases in patients with only granuloma.

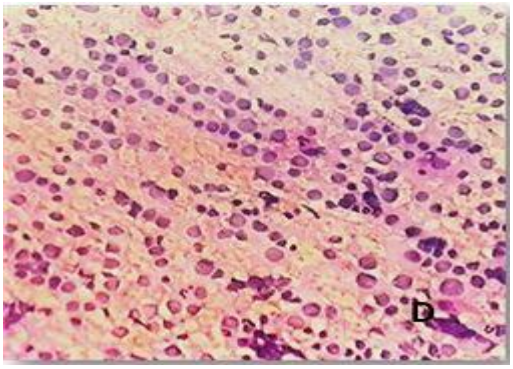

Figure 4: Photomicrograph of Non-Hodgkin's lymphoma.

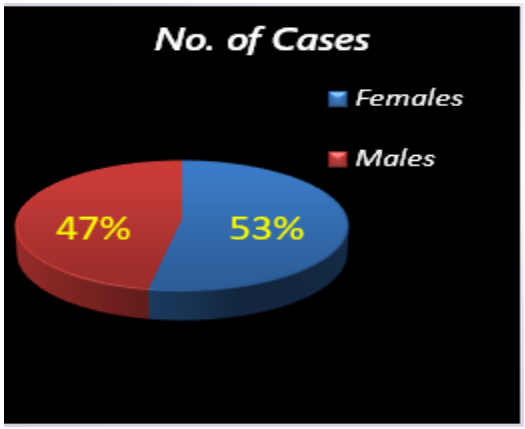

Figure 5: Sex wise distribution of cases.

DISCUSSION

Cervical lymphadenopathy was most commonly observed in the present study as well as in the studies conducted by Rajesh et al[4], Vanisri et al[5] & Guru et al.[7] 31-40 was identified as the most common age group in the present, similar findings were noted by Rajesh et al4 and Guru et al.[7] In the present study there was slight female preponderance while studies conducted by Vanisri et al[5] (2008), Rajesh et al[4] (2010) & Neelam et al[3] (2014) showed slight male preponderance. This variation can be attributed to small sample size and geographic and ethnic factors. Tuberculous lymphadenitis is one of the most common causes of lymphadenopathy. In the present study, TB lymphadenitis was observed as the commonest lesion, our findings were corroborated by the independent studies carried out by Vanisri et al (2008)[5], Rajesh et al[4] (2010) & Neelam et al[3] (2014). In the study conducted by Shobhana et al[6] mean CD4 count in TB lymphadenitis was 212/ul while in the present study, it was 329/ul. Both studies concurred - TB lymphadenitis is common in CD_4 count ranging from 200 to 500/ul. In both Kumar guru et al[7] and the present study - Granulomatous lymphadenitis most commonly observed pattern of TBL while Neelima et al[3] observed Necrotizing granulomatous lymphadenitis as the most common pattern. In the present study, there were two cases of lymphoma with CD4 count - 68/ul. Similarly, Neelima et al[3] and Shobhana et al[6] both had mean CD4 count < 100/ul in HIV associated malignancies. The cytologic criteria favouring diagnosis of tuberculosis, as defined by some workers comprise hypocellularity in smears, evidence of necrosis and presence of epithelioid cells with or without giant cells.[8,9] FNAC patterns may be used to predict the CD4 counts in HIV patients where CD_4 counting facilities are not available or vice versa.[10]

CONCLUSION

FNAC is a simple and rapid investigative technique to differentiate and diagnose various causes of lymphadenopathy. TB lymphadenitis is the most common lesion associated with HIV positive patients. CD4 counts correlate well with underlying lymph node pathology, TB lymphadenitis being common in CD4 range of 200-500/ul and HIV associated malignancies seen in CD4 count less than 100/ul.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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