

Original Research Article**Fine Needle Aspiration Study of Head and Neck Swellings in HIV Positive Patients****Samrat Bordoloi^a, Sunita S. Vernekar^b, Sujata Giriyan^c**^aPost Graduate Student ^bAssociate Professor ^cProfessor and HOD, Department of Pathology, Karnataka Institute of Medical Sciences, Hubli, Karnataka 580022, India.**Abstract**

Objective: Head and neck manifestations of seropositive HIV and AIDS are one of the commonest complications of the disease. FNAC is an excellent first line method for investigating the nature of palpable lesions in head and neck region. Hence there is need to know the distribution and cytological features of the various types of lesions in the head and neck region in HIV positive patients and occurrence of different lesions according to age, sex and mode of presentation.

Methods: The study included FNAC study of head and neck swellings in HIV seropositive patients referred to the department of pathology, KIMS, HUBLI, over a period of 18 months from 1st November 2012 to 30th April 2014.

Results: Total number of cases in the study were 107. Overall incidence of HIV patients referred to Cytology was 4% with 70% of them presenting with head and neck swellings. Maximum age was 65 years and minimum was 1 year, majority being in the 3rd and 4th decade and with male to female ratio as 1:1.07. Ninety percent cases were Inflammatory. Lymph node was the commonest site involved (89.7%) followed by parotid (4.7%) and soft tissue (4.7%). In lymph nodes, tuberculous lymphadenitis was the most common diagnosis (48.9%) followed by reactive lymphadenitis(42.7%), acute suppurative lesion (5.2%), neoplasm (2.1%) and cryptococcal lymphadenitis(1.1%). In parotid, acute sialadenitis (40%) was the most common diagnosis. In cytological diagnosis of malignant cases 3 cases of non hodgkins lymphoma and each of metastasis, poorly differentiated carcinoma, medullary carcinoma thyroid were diagnosed. Cytological pattern of tuberculous lymphadenitis was studied in detail and most common pattern was caseation necrosis with granulomas (48.9%).

Conclusion: Fine Needle Aspiration Cytology study is a less expensive, less time consuming and a more patient compliant alternative to histological diagnosis of these swellings. Beside this, it helps in early commencement of appropriate treatment of HIV positive patients by providing rapid diagnosis and also helps in the follow up, especially with Tuberculosis lymphadenitis.

Keywords: HIV; Lymph Node; Tuberculous Lymphadenitis; Cryptococcal Lymphadenitis.

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Introduction

AIDS, the acquired immune-deficiency syndrome is a fatal illness caused by a retrovirus known as human

immunodeficiency virus (HIV) which breaks down the body's immune system, leaving the victim vulnerable to life-threatening opportunistic infections, neurological disorders, and unusual malignancies [1].

In the management of HIV sero-positive patients, an enlarging head and neck mass is encountered in upto 91% of patients. The evaluation of neck mass in a HIV sero-positive patient is, however complicated by the frequent presence of numerous opportunistic infections and neoplasms unique to HIV disease. Fortunately, many of these entities are amenable to diagnosis by fine needle aspiration cytology, thus obviating the need for open procedures [2].

FNAC is an excellent first line method for investigating the nature of palpable lesions in the head and neck region. It can obviate the need for surgery if the lesions are shown to be non neoplastic or, if the patients belong to poor risk group. It helps to obtain a pathologic diagnosis of a suspicious mass to guide further diagnostic evaluation and treatment [3].

Materials and Methods

The present study is 18 months prospective study from 1st November 2012 to 30th April 2014 in the department of pathology KIMS Hubli. All the seropositive HIV patients with clinical history suggestive of head and neck swelling were included in the study. Patients with head and neck swellings, whose HIV status is not known were excluded from the study. Relevant clinical details were elicited in all cases and local examination findings are noted. Thus the study includes 108 sero positive HIV patients with clinical history of head and neck swellings. After taking an informed consent, under strict, safety aseptic precautions, FNAC was performed by using 5-10 ml disposable syringe with 22-24

gauge needle. The character of the aspirate was noted. The H&E, Leishman stain slides were studied. The ZN (Ziehl-Neelsen stain), GMS (Grocott's Methenamine Silver), Mucicarmine stain are also studied wherever required. The CD4 count done by BDFACS calibur flowcytometer and the data was available for 47 patients

Results

The present study includes 108 seropositive HIV patients with clinical history of head and neck swellings. The male to female ratio was 1:1.07. The peak age group affected was between 31 to 40 years with mean age 33.2 years Table 1. The lymph nodes constituted majority of the swellings (88.8%) Table 2. Among the lymph node, 49% of the cases were of Tubercular lymphadenitis Table 3 and the commonest pattern was caseating necrosis with granuloma (48.9%) followed by caseating necrosis (46.8%) alone Table 4. Out of 47 cases of Tubercular lymphadenitis, 13 were AFB positive Table no 5. The CD4 count in the 47 Tubercular lymphadenitis is as in Table no 6. The cytologic diagnosis of parotid swelling is as in Table no 7. The cytologic diagnosis of 6 malignant cases is as in Table no 8.

A case of cytologically diagnosed poorly differentiated carcinoma of swelling in nape of neck in a 21 year old male was available for histopathology, which turned out to be Epitheloid Haemangioendothelioma. But on IHC, tumour cells were CD34, CD31 and HMB45 negative. However, the cells were positive for CK 7/19 and CEA. Hence a diagnosis Epithelial carcinoma was made.

Table 1: Age and gender wise distribution of HIV patients with head and neck swellings

Age Group (years)	Male		Female	
	Number of Patients	Percentage	Number of Patients	Percentage
0-10	6	11.5 %	4	7.1 %
11-20	5	9.6 %	6	10.7 %
21-30	9	17.3 %	8	14.3 %
31-40	20	38.6 %	22	39.3 %
41-50	10	19.2 %	7	12.5 %
51-60	2	3.8 %	7	12.5 %
>60	0	0 %	2	3.6 %
Total	52	100 %	56	100 %

Table 2: Organ wise distribution of head and neck swellings

Organ	Number of Cases	Percentage
Lymph Node	96	88.8 %
Skin And Soft Tissue	6	5.6 %
Salivary Gland	5	4.6 %
Thyroid	1	0.9 %
Total	108	100 %

Table 3: Cytological diagnosis of lymph node swellings

Diagnosis	Number of Patients	Percentage
Tuberculosis Lymphadenitis	47	49 %
Reactive Lymphadenitis	41	43 %
Malignancy	2	2%
Suppurative Lymphadenitis	5	5 %
Fungal Infection	1	1%
Total	96	100 %

Table 4: Cytological pattern of tuberculous lymphadenitis

Cytological Pattern	Number of Cases	Percentage
Caseation Necrosis (CN)	22	46.8 %
CN + Granuloma (CN + GN)	23	48.9 %
Only Granuloma (GN)	0	0 %
Suppurative Lesion With AFB Positivity	2	4.3 %
Total	47	100 %

Table 5: Acid-fast bacilli (AFB) positivity in tuberculous lymphadenitis

AFB Status	Number of Cases	Percentage
AFB (+)	13	28 %
AFB (-)	34	72 %
Total	47	100 %

Table 6: CD4 count of patients diagnosed as tubercular lymphadenitis

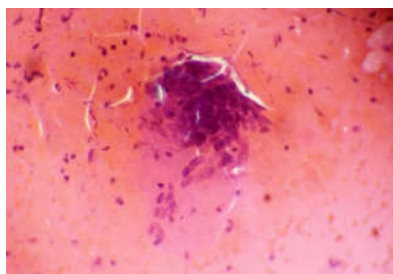
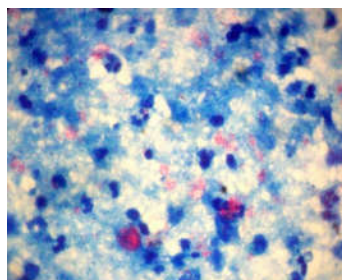
CD4 Count	Number of Cases	Percentage
>500 cells/cumm	0	0 %
200-499 cells/cumm	14	34 %
<200 cells/cumm	27	66 %
Total	47	100%

Table 7: Cytological diagnosis of parotid swelling in the present study

Diagnosis	Number of Patients	Percentage
Acute Sialadenitis	2	40 %
Chronic Sialadenitis	1	20 %
Benign Lymphoepithelial Lesion	1	20 %
Sialadenosis	1	20 %
Total	5	100

Table 8: Cytological diagnosis of malignant cases in the present study

Diagnosis	Number of Patients	Percentage
Non Hodgkins Lymphoma	3	50 %
Metastasis	1	16.7 %
Vascular Tumor	1	16.7 %
Medullary Carcinoma	1	16.6 %
Total	6	100 %

**Fig. 1:** Granuloma - Tuberculous Lymphadenitis (H&E, 400x)**Fig. 2:** Acid Fast Bacilli in Tuberculous Lymphadenitis (ZiehlNeelsen stain, 1000x)

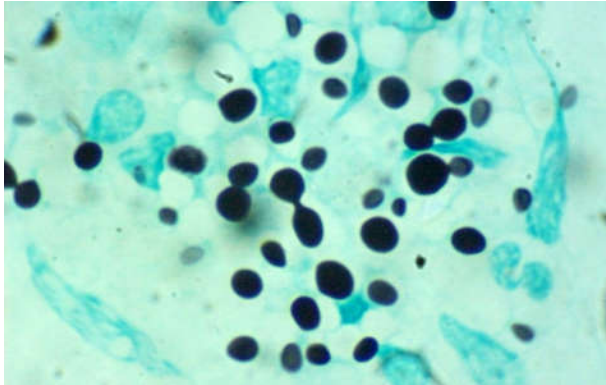


Fig. 3: Budding forms of Cryptococcus in aspirate from lymph node (GMS, 400x)

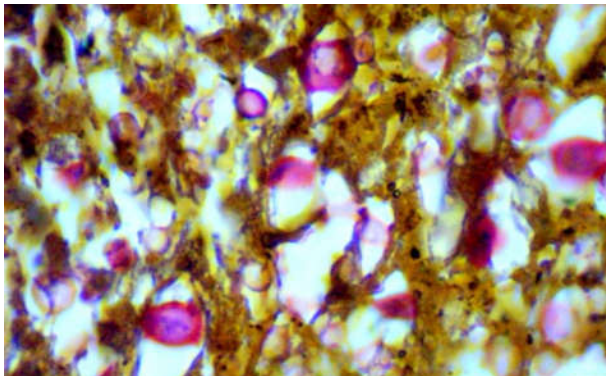


Fig. 4: "Rose pink" capsule of Cryptococcus in lymph node aspirate (Mucicarmine, 400x)

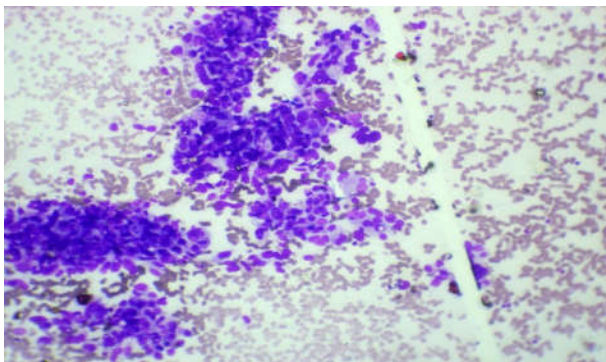


Fig. 5: Medullary Carcinoma thyroid showing loose clusters and singles of spindle, oval to plasmacytoid cells (Leishman stain, 100x)

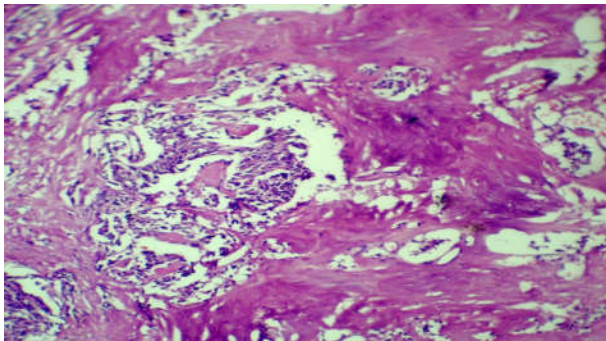


Fig. 6: Histopathology of Medullary Carcinoma Thyroid showing abundant intra and extracellular eosinophilic material (amyloid) (H&E, 100x)



Fig. 7: Gross specimen of Epithelial Carcinoma showing a hemorrhagic area measuring 3x0.5 cm surrounded by firm tan coloured tissue

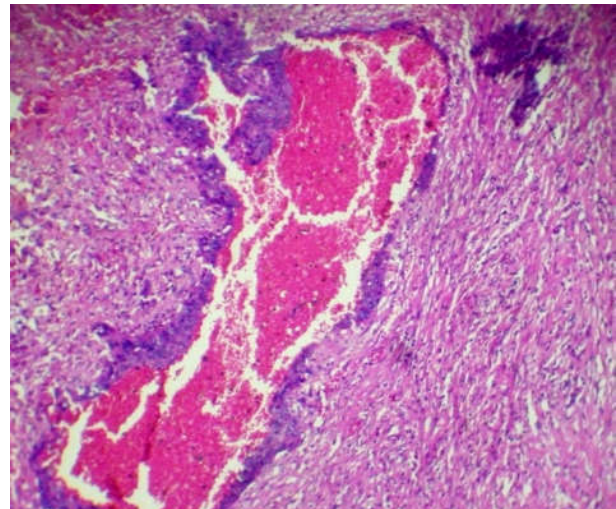


Fig. 8: Histopathology of Epithelial Carcinoma showing tumor cells arranged in around vascular spaces (H&E, 100x)

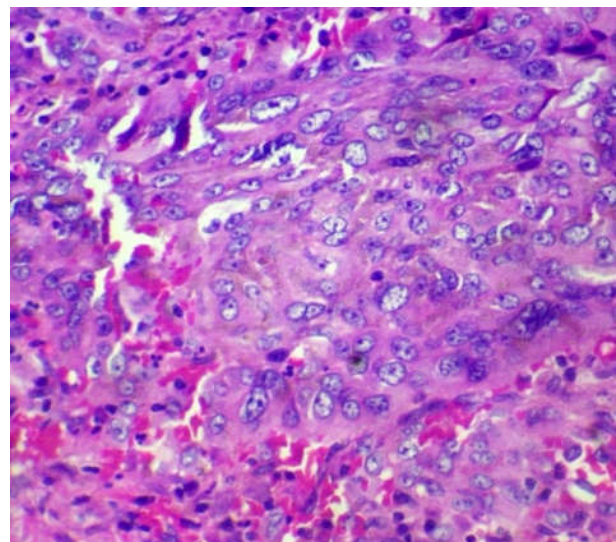


Fig. 9: Histopathology of Epithelial Carcinoma showing polygonal tumor cells with abundant eosinophilic cytoplasm, round to oval vesicular nuclei and prominent nucleoli (H&E, 400x)

Discussion

Fine Needle Aspiration Cytology (FNAC) of the head and neck region is well accepted as a diagnostic procedure. It is now being considered as a valuable diagnostic aid because of the early availability of results, its simplicity, minimal trauma and the absence of complications. The cytomorphological features collaborate with the histopathology and it has the qualities of a micro-biopsy [4]. Lymphoid tissues are the prime targets in HIV positive cases. Regardless of the portal of entry of HIV, they are the major anatomic sites for propagation and establishment of HIV infection [5].

The peak age group affected in present study (31-40 years) was compared with other studies [6,7,8] who also observed similar peak age of incidence. Affected various anatomical sites in head and neck region were compared with study done by Ramchandra et al [9]. Among the various anatomical sites affected, lymph node was the

commonest site (88.8%) in the present study. In literature [7,9-13], the incidence of cervical lymph node involvement in HIV positive patients varies from 54.8% to 81.8%. Various cytologic diagnosis of lymph nodes in sero positive HIV patients were compared with the other studies Table 10. Apart from Tuberculosis and Reactive lymphadenitis Fungal infection were more observed in study done by Laishram et al [13]. Various cytologic patterns in Tubercular lymphadenitis were compared with other studies. The commonest pattern observed was caseating necrosis with granuloma Table 11. In present study AFB positive tubercular lymphadenitis were 28%, whereas in study done by Laishram et al [13] and Agravat et al [8] it was 74% and 46.3% respectively.

The CD4 count in cases of Tubercular lymphadenitis are compared with other studies [6,7,8,10] and observed that the mean CD4 count ranges from 166.46 cells to 261,8 cells/cu mm Table 12.

Table 9: Comparison of location wise distribution of the head and neck lesions in the present study with other studies

Location	Ramachandra ⁽⁶⁾		Present Study	
	Number of Cases	Percentage	Number of Cases	Percentage
Lymph Node	283	89.2%	96	88.9%
Skin and Soft Tissue	19	6%	6	5.6%
Salivary Gland	5	1.6%	5	4.6%
Thyroid	10	3.2%	1	0.9%
Total	317	100%	108	100%

Table 10: Comparison of cytological diagnosis of lymph node swellings

Authors	No. of cases	Tuberculous Lymphadenopathy	Reactive Lymphadenopathy	Malignancy	Suppurative lesion	Fungal infection	Others
Agravat et al. ⁸	300	38.4%	48.6%	4.6%	1.3%	0%	6.9%
Guru et al. ⁶	231	41.5%	46.3%	3%	1.3%	0.4%	0%
Tirumalasetti et al. ¹⁴	129	41.8%	35.6%	3.9%	12.4%	0.7%	0%
Ratan et al. ¹⁰	121	38.8%	42.1%	1.6%	6.6%	0.8%	10%
Baghel et al. ¹¹	73	31.5%	46.6%	2.8%	9.5%	0%	9.6%
Laishram et al. ¹³	64	42.2%	28.1%	4.7%	10.9%	7.8%	6.3%
Deshmukh et al. ⁷	44	45.4%	29.5%	0%	6.8%	0%	18.1%
Vanishri et al. ¹²	36	58.3%	36.3%	2.7%	2.7%	0%	0%
Present study	96	49%	43%	2%	5%	1%	0%

Table 11: Comparison of the cytological patterns in tuberculous lymphadenitis

Authors	Number of TB cases	Necrosis	Necrosis + Granuloma	Granuloma	Suppuration
Agravat et al. ⁸	114	21%	59.6%	19.4%	0%
Guru et al. ⁶	96	45.9%	46.9%	3.1%	4.1%
Tirumalasetti et al. ¹⁴	54	37%	51.8%	11.2%	0%
Laishram et al. ¹³	27	33.4%	29.6%	18.5%	18.5%
Deshmukh et al. ⁷	20	35%	40%	15%	10%
Vanishri et al. ¹²	21	19%	47.6%	28.5%	10%
Present study	47	46.8%	48.9%	0%	4.3%

Table 12: Comparison of mean cd4 count in tuberculous lymphadenitis

Authors	Mean CD4 Count
Agravat et al. ⁸ (n=46)	261.8 cells/cumm
Guru et al. ⁹ (n=96)	123.8 cells/cumm
Ratan et al. ¹⁰ (n=47)	164.78 cells/cumm
Deshmukh et al. ⁷ (n=20)	196.05 cells/cumm
Present Study (n=47)	166.46 cells/cumm

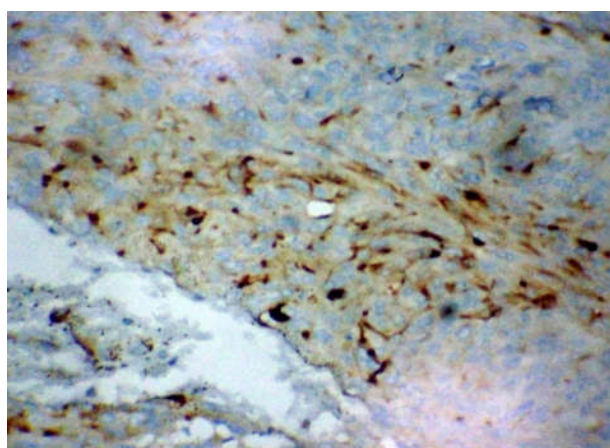


Fig. 10: Epithelial Carcinoma showing tumor cells positive for EMA (IHC, 400x)

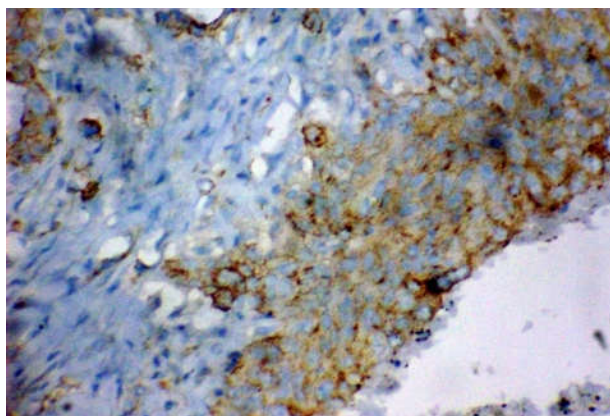


Fig. 11: Epithelial Carcinoma showing tumor cells positive for Cytokeratin (IHC, 400x)

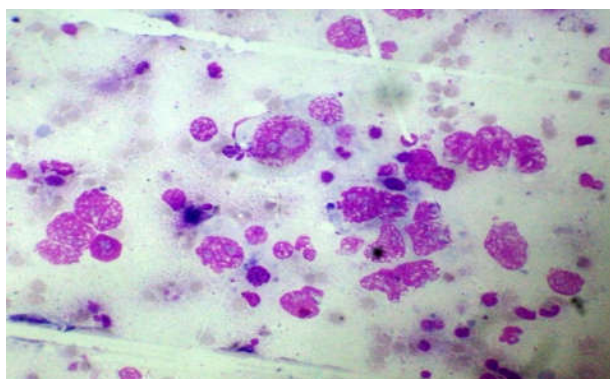


Fig. 12: Non Hodgkins Lymphoma showing dissociated tumor cells with round to oval pleomorphic nuclei, coarse nuclear chromatin and prominent nucleoli (Leishman stain, 400x)

Conclusion

India has the third highest number of estimated people living with HIV in the world. Head and neck swellings being a common mode of presentation in these patients, there is a need for a quick and effective mode of investigation. In the head and neck region, FNAC is of great value because of the multiplicity of accessible organs and heterogeneous pathologies encountered.

An early differentiation of benign from malignant pathology greatly influences the planned treatment. There is no evidence that the tumor spreads through the skin track created by the fine hypodermic needle used in this technique. Obviating the need for frequent open biopsies, it also prevents unnecessary exposure of the hospital staff to the highly infectious bio hazardous material.

In the present study the results regarding the peak age group, gender distribution and cytological spectrum of diagnosis were comparable to the results obtained in other studies. Hence, this study has shown that FNAC can provide useful information regarding the diagnosis of these lesions and obviate the need for open biopsies which are a risk to the patient as well to the health care professional in HIV positive patients.

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