

A Study of Lymph Node Aspiration Cytology in HIV Positive Patients at A Tertiary Care Center

Dr. Maruthi Devi Karri¹, *Dr. Sudhakar Ghanta², Dr. Sailabala Garikaparthi³,
Dr. Padmavathi Devi Chaganti⁴

¹Assistant Professor In Pathology, Guntur Medical College, Guntur

²Associate Professor In Pathology, Guntur Medical College, Guntur

³Professor In Pathology, Guntur Medical College, Guntur

⁴Professor In Pathology, Guntur Medical College, Guntur

*Corresponding author: Dr. Sudhakar Ghanta

Abstract

Background : Lymphadenopathy is one of the earliest manifestations of HIV infection. In developing countries like India with a huge population and socioeconomic constraints, there is a great need for a simple investigative technique for HIV infected lymphadenopathy cases.

Objectives: The purpose of the study is to study cytological findings and variations in cytological appearances, to correlate the FNAC finding with clinical, radiological and morphological patterns and to establish a correlation with FNAC findings and the CD4 count.

Methods: This cross sectional study was based on the patients with HIV infection /AIDS, with lymphadenopathy who were referred to the department of pathology, Guntur medical college, Guntur.

Results: The most common lesion observed in the lymph node cytology was granulomatous inflammation in 74%, followed by Reactive lymphadenitis in 22 cases.

Conclusion: FNAC is a simple, cost effective, low risk procedure and obviates excision while guiding subsequent therapy or observation.

Keywords: HIV/AIDS, FNAC, Granulomatous infections, reactive lymphadenitis.

I. Introduction

Acquired immunodeficiency syndrome (AIDS) is caused by the lymphotropic retrovirus human immune deficiency virus (HIV) and characterized by profound immune suppression that leads to opportunistic infections, secondary neoplasms and neurologic manifestations. The incidence of human immunodeficiency virus (HIV) infection is increasing in Asia particularly in Indian subcontinent. In India, the human immunodeficiency virus (HIV) epidemic is now a decade old and within this short period, it has emerged as one of the most serious public health problems. Great advances have been made in the treatment of patients with HIV infection. Lymphadenopathy is one of the earliest manifestations of HIV infection. In developing countries like India with a huge population and socioeconomic constraints, there is a great need for a simple investigative technique for HIV infected lymphadenopathy cases. The role of fine needle aspiration cytology (FNAC) in the evaluation of lymphadenopathies is well known. HIV positive patients often present with lymphadenopathy and show reactive changes, including progressive generalized lymphadenopathy (PGL) and/or opportunistic infections like mycobacterium tuberculosis, mycobacterium avium intracellulare, histoplasma capsulatum and cryptococcus neoformans. They may show malignant conditions such as non Hodgkins and Hodgkin's lymphomas and Kaposi's sarcoma. FNAC has become the primary investigative procedure for mass lesions on HIV-positive patients, particularly in the assessment of lymphadenopathy. It is simple, cost effective, low risk procedure. 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. The purpose of the present study is to know various cytological patterns of lymph node lesions, to correlate with available clinicopathological parameters and segregation of HIV infected lymphadenopathy cases for further evaluation.

II. Materials And Methods

This cross sectional study was based on the patients with HIV infection /AIDS, with lymphadenopathy who were referred to the department of pathology, Guntur medical college, Guntur from September 2013 to August 2015. In the present study 100 cases were included. The subjects who were on ATT and/or ART were not included in the study. Patients with lymphadenopathy of less than 0.5cm in diameter were also excluded from the study. Aspirations were performed either in outpatient clinic or in inpatient wards. The

patients were informed about the procedure and consent was taken. A 23 gauge needle and 10 ml disposable syringe was used on largest lymphnode with several passes with standard precautions. FNAC cytology material was spread directly on to glass slides and fixed in isopropyl alcohol and smears were stained with haematoxylin and eosin. Ziehl- Neelsen stain was done in clinically suspected tuberculosis cases. CD4 count was done by flow cytometry. Examination of sputum for AFB, X-ray chest and mantoux were done when needed.

III. Observation And Results

A total of 100 HIVsero positive patients, who were not subjected to ATT or ART therapy were included in the present study. Fine needle aspiration of lymphnodes was done and the smears were stained with routine cytological stains and special stains where ever needed. A detailed cytomorphological study was done in each case. The age distribution of the cases indicated maximum number of cases being clustered in the age groups of second, third and fourth decades. The youngest patient was 3 years and the oldest patients was of 71 years. Majority of the patients were males. Out of 100 cases, 58 were males and 42 were females with M :F ratio of 5.8:4.2 with a male preponderance. In cases of Male the peak incidence was noted in 31-40 years age group and in female the incidence of 21-30 years.

Age	Granulomatous	Reactive	Suppurative	Secondary	Total
0-10	9	3	0	0	12
11-20	11	5	0	0	16
21-30	23	2	1	0	26
31-40	21	8	0	0	29
41-50	8	3	0	0	11
51-60	2	0	1	0	3
61-70	0	1	0	1	2
71-80	0	0	1	0	1
Total	74	22	3	1	100

case of peak was noted

Table: 1 Age wise Incidence of Lesions

Out of 100 cases, most common lesion in the lymph node cytology was granulomatous lymphadenitis in 74 cases reactive lymphadenitis was seen in 22 cases, acute suppurative lymphadenitis was seen in 3 cases. One case has shown secondary deposits of squamous cell carcinoma. Out of this 74 cases Ziehl-neelsen and mantoux test was positive in 60 cases and negative in 14 cases. Reactive lymphadenitis was seen in 22 cases.

Table:2 Occurrence of Various Lesions

Diagnosis	No of Cases	Percentage
Granulomatous lesions	74	74%
Reactive lymphadenopathy	22	22%
Acute suppurative lymphadenitis	3	3%
Squamous cell carcinoma deposits	1	1%
TOTAL	100	100%

The most common site of involvement is cervical nodes in 86 cases. Granulomatous lymphadenitis accounted for 62% of the cases and reactive lymphadenitis in 20% of the cases.

Table :3 Distribution of Lesions in Relation to site

Count of Report	Site				Total
	Cervical	Axillary	Cervical & Axillary	Inguinal	
Granulomatous lymphadenitis	62	6	4	2	74
Reactive	20	0	2	0	22
Suppurative lymphadenitis	3	0	0	0	3
Secondary Deposits	1	0	0	0	1
Total	86	6	6	2	100

Out of the total 100 cases single lymphnode involvement was seen in 59 cases. And multiple nodes were involved in 41 cases.

Table:4Lymphnode Involvement

SINGLE	MULTIPLE
59	41

Of the total 74 Granulomatous lymphadenitis patients 60 cases show Mantoux test positive.

Table:5Results of Mantoux test

Count of Report	Mantoux		Grand Total
	Negative	Positive	
Granulomatous lymphadenitis	14	60	74
Reactive	22	0	22
Suppurative lymphadenitis	3	0	3
Secondary Deposits	1	0	1
Total	40	60	100

Of the total 74 granulomatous lymphadenitis cases, 47 cases showed caseation.

Table:6Distribution of Lesions In Relation to Caseation

Count of Report	Caseation		Grand Total
	No	Yes	
Granulomatous lymphadenitis	27	47	74
Reactive	22	0	22
Suppurative lymphadenitis	0	3	3
Secondary Deposits	1	0	1
Total	50	50	100

Out of the total 100 cases, in 81 cases the CD4 counts were more than 200 and in 19 cases the CD4 counts were less than 200.

Table:7CD4 Count in relation to Lesions

CD4 count	Granulomatous	Reactive	Suppurative	Seconda	Total
> 200	61	16	3	1	81
< 200	13	6	0	0	19
TOTAL	74	22	3	1	100

Out of 74 Granulomatous lymphadenitis, 33 cases have positive X-ray findings

Table:9 showing X RAY findings Lesion wise

Count of Report	X-Ray		Grand Total
	Normal	Positive	
Granulomatous	41	34	74
Reactive	22	0	22
Suppurative Lymphadenitis	3	0	3
Secondary Deposits	1	0	1
Total	66	34	100

IV. Discussion

Lymphadenopathy is one of the most common conditions encountered in clinical practice and its exact diagnosis poses problem to the clinicians as well as to the pathologists. Present study was carried out in the Department of Pathology,Guntur Medical College,Guntur on HIVseropositive patients who are not on ATT/ART.If the lymphnode is adequately sampled,one aspiration will yield enough material for diagnosis. In our study all the samples are adequate.The present study of FNAC of lymphnodes of different sites with different lesions is found to be quite reliable. The percentage correlation of each type of lesion was calculated and it has been compared with the work of others which have been mentioned in the following paragraphs.

Age wise sex incidence of lesions: In present study the maximum number of cases was seen in between 21-30 years and 30-40 years age groups. Males were mostly affected. In the study by Vanisriet al¹, majority of patients were males in the age group of 21-30 years. Males with female ratio in 5.8:4.2 with male preponderance.

Site of Lymphnode.:

In the present study cervical group of lymphnodes are being the most commonly involved group (86%).In Vanisriet al¹ also cervical group was being most commonly affected site, but in Satyanarayana et al reported as axillarylymphnode involvement being more common in their study.According to Kumarguru et al cervical Lymphnodes are involed in 78.76% and axillarylymphnodes were involved in 21.23%.

Granulomatous lesions:

Tuberculosis is widely prevalent in our country. In present study out of 100 cases, 74 cases were due to granulomatouslesions.The diagnosis is based on presence of epitheloid cells, which are plumpy, spindle shaped cell with fusiform vesicular nucleus which appears as “Foot Print” appearance (Fig.No.1) Langerhan’sgaint cells are also encountered in cytology (Fig.No.3). Caseous necrosis with epitheloidgranulomas was observed in 47 cases (Fig.No.2) and granulomaswithoutcaseation observed in 27 cases.In present study Ziehl-neelsen staining was done in tuberculosis suspicious clinically and microscopically .Among the 74 granulomatous lesions 60 cases were positive for mycobacterial bacilli. Only those cases in whom Ziehl-neelsen stain positive were diagnosed as tuberculousgranulomatous lesions (60 cases) and rest as chronic non specific granulomatouslesios(14cases).Tuberculous lymphadenitis was the most common lesion constituting 60cases.Studies conducted by Shenoy et al².(50%) in Mangalore, Saikia et al³.(32%)in Chandigarh and Jayram et al⁴.(53.84%) in Malaysia also observed Tuberculous lymphadenitis as a common lesion.HoweverWesteren studies conducted in California by Bottles et al⁵.(17%), in Europe by Reid et al⁶ (15%),and Martin-Bates et al⁷.(22%) demonstrated lower number of cases in comparion with present study.

Reactive Lymphadenopathy:

In the present study out of 100 cases, 22 %cases are presented with reactive lymphadenitis smears showed polymorphous cell population with mature lymphocytes (Fig.No.4&6) and transformed lymphocytes (Follicular center cells) (Fig No.5.), monocytoid cells, neutrophils and tingible body macrophages (Fig. No.7.) The reactive cytomorphological changes are sometimes seen in early cases of TB and Hodgkin’s.In present study, the accuracy is 22%. In the study conducted by Bottles et al⁵ on patients with HIV &lymphadenopathy, 50% of aspirates showed reactive hyperplasia.Bates et al⁷. found reactive changes in 41% HIV aspirates.Satyanarayanaet al⁸ reported a reactive cytomorphological pattern in 16.4% of their cases of Tuberculosis which is lower than our study.According to Kumarguru et al .Reactive lymphadenitis is seen in most of the lesions (46.33%), followed by TB Lymphadenitis (41.55%).

Acute SuppurativeLymphadenitis :

In present study, 3% cases of HIV are presented with acute suppurative lymphadenitis. The aspirate was purulent. Smears show necrotic background with sheets of neutrophils and lymphocytes (Fig.No. 8&9.). ZN stain was negative in these 3% cases.In the study conducted by Vanisri et al¹., 2.7% cases with HIV showed acute suppurative lymphadenitis. ZN stain was negative in her cases.In the study performed by Shenoy et al²., Acute suppurative lymphadenitis was observed in 13% patients, some cases shown AFB positivity.In the present study no lymphoma cases were identified. In the study of Vanisri et al the Non Hodgkin’s lymphomas were found to be in 2.7%of case.In the study conducted by Saikia et al³ one case and similarly l case of high grade β cell lymphoma was reported by JayaramGita et al⁴ .No cases of Kaposi sarcomas were found in our study, although it has been reported in bottles et al⁵ (10%) Bates et al⁷ (15%) and Reid et al⁶ (2%).In the study conducted by Grossl et al⁹ mean CD4counts observed in malignant lymphomas was105/mm.In present study as we excluded patients on ATT/ART the least CD4count was 110/mm this may be correlated.In present study squamous cell carcinoma(metastatic) was identified in one case of HIV. Cytologically smears show polyhedral pleomorphic cells with hyperchromatic nuclei arranged in sheets in the background of lymphocyte (Fig.No 10&11.). The study by Saikia et al l case of squamous cell Ca (metastatic) was diagnosed in HIV cases.

In present study, out of 74 granulomatous lymphadenitis 60 cases were positive for mantoux and 14 cases were negative. In Vanisri et al out of 21 cases 10 cases are mantouxpositive.In present study, CD4+ counts was more than 200 in 81 cases. Out of 81 cases 61 were granulomatous, 16 cases of reactive lymphadenitis, 3 cases were acute suppurative lymphadenitis and 1 case of secondary deposit metastases.In remaining 19 cases CD4 count s less than 200 out of which, 13 cases were granulomatous inflammation, 6 were reactive

lymphadenitis. In the study conducted by Grossl et al⁹. CD4 counts mean in Acute suppurative inflammation, Granulomatous inflammation, Reactive lymphnodes, malignant lymphomas and suspicious for Kaposi sarcoma were 330,145,237,105,77/mm respectively. If the lymphnode is adequately sampled, one aspiration will yield enough material for diagnosis. In our study all the samples are adequate.

V. Summary

To conclude FNAC is the primary investigative procedure for mass lesions on HIV-positive patients, particularly in the assessment of lymphadenopathy. It is simple, cost effective, low risk procedure. FNAC is rapid, easily performed and in many cases obviates excision while guiding subsequent therapy or observation.

Images

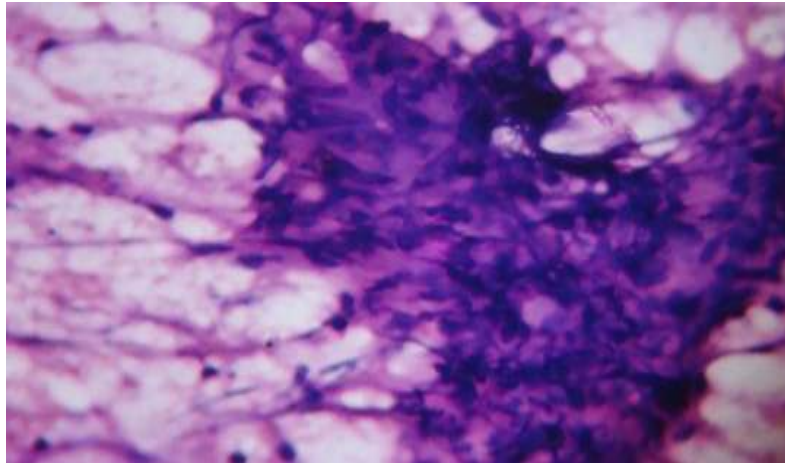


Figure:1 Granulomatous Lymphadenitis, Epithelioid Cell Clusters (High Power)

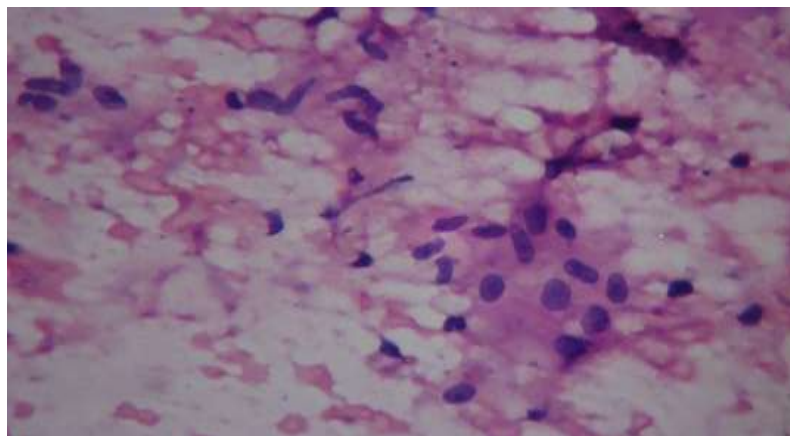


Figure:2 Granulomatous Lymphadenitis with Epithelioid Cells in Caseous Necrotic Background

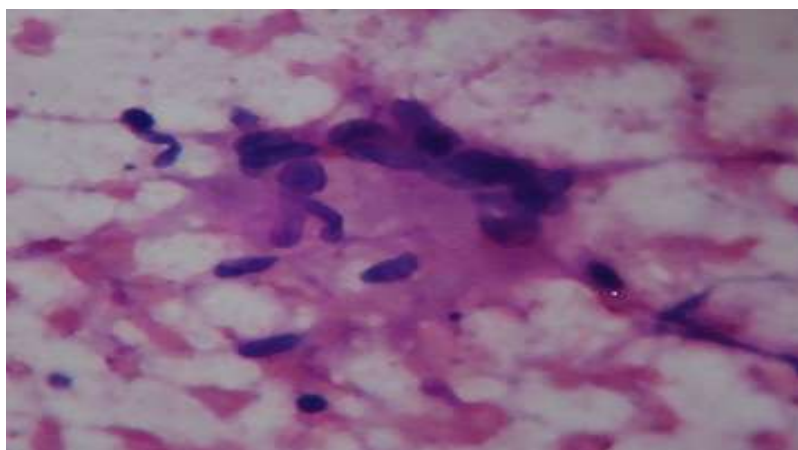


Figure:3 Granulomatous lymphadenitis showing Langhans giant cells

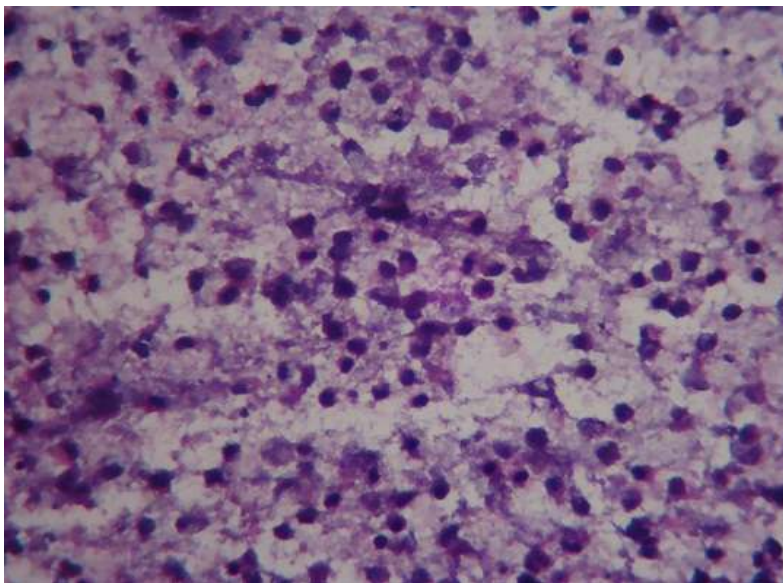


Figure:4 Reactive Lymphadenitis, Showing Sheets Of Lymphocytes (HP)

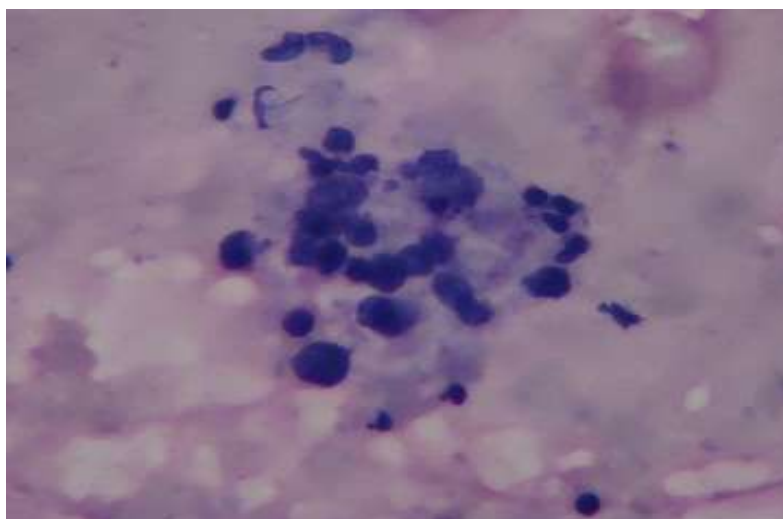


Figure:5 Reactive Lymphadenitis Showing Follicular Centre Cells

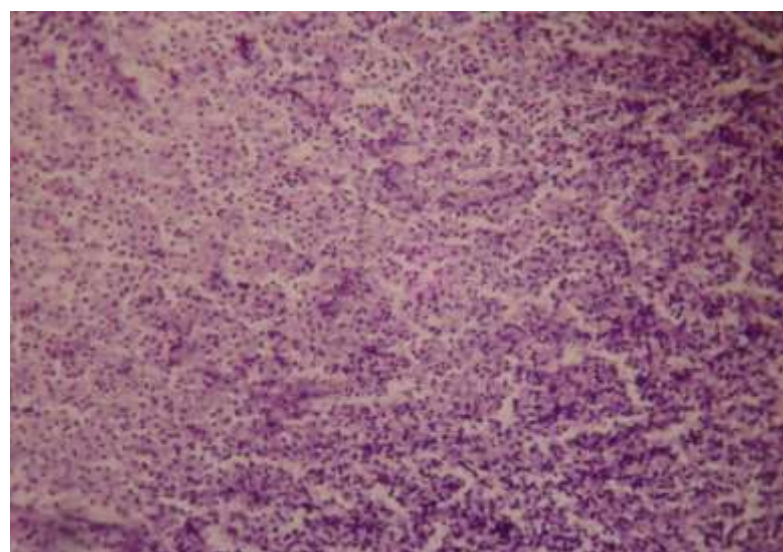


Figure:6 Reactive Lymphadenitis Showing Sheets Of Lymphocytes (LP)

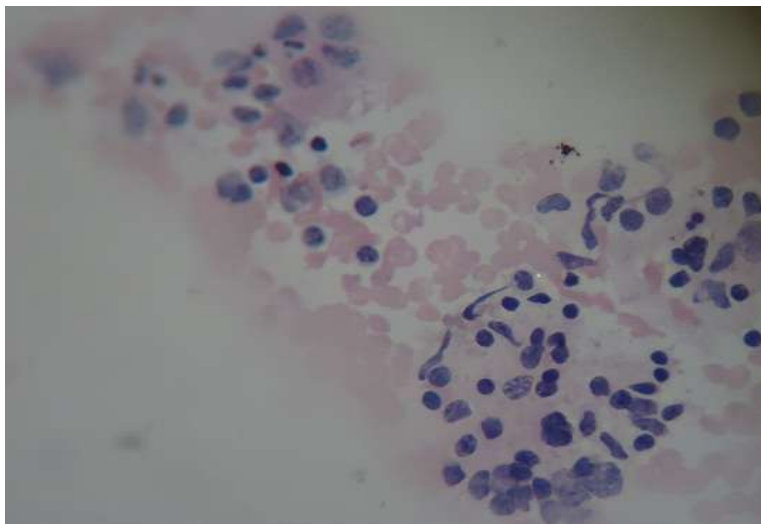


Figure:7 Reactive Lymphadenitis Showing Tingible Body Macrophages (HP)

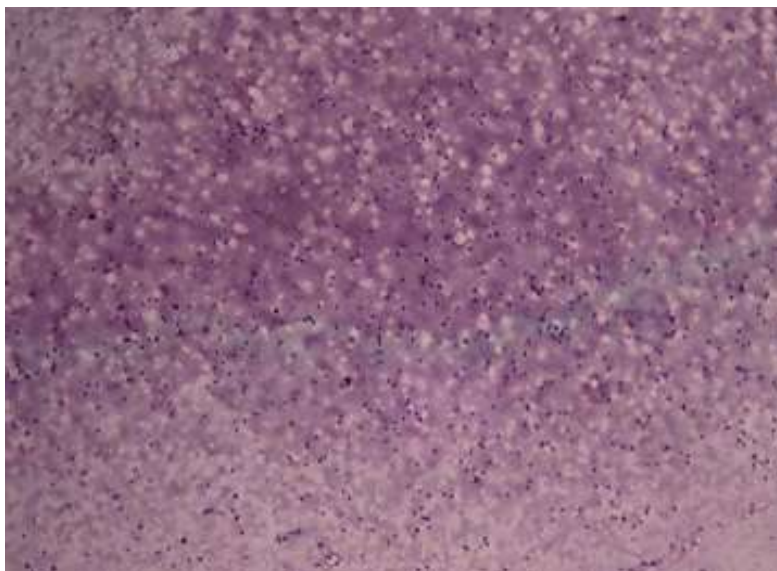


Figure:8 Acute suppurative lymphadenitis showing neutrophils and cellular debris (Low-Power)

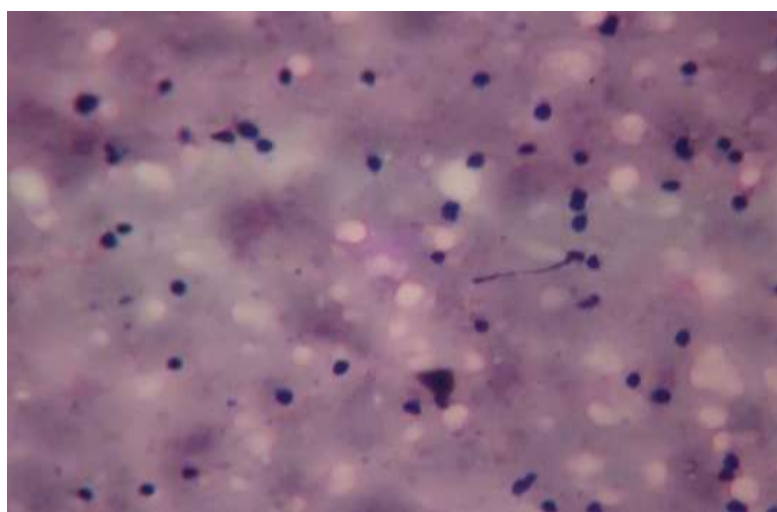


Figure:9 Acute suppurative lymphadenitis showing neutrophils (HIGH POWER)

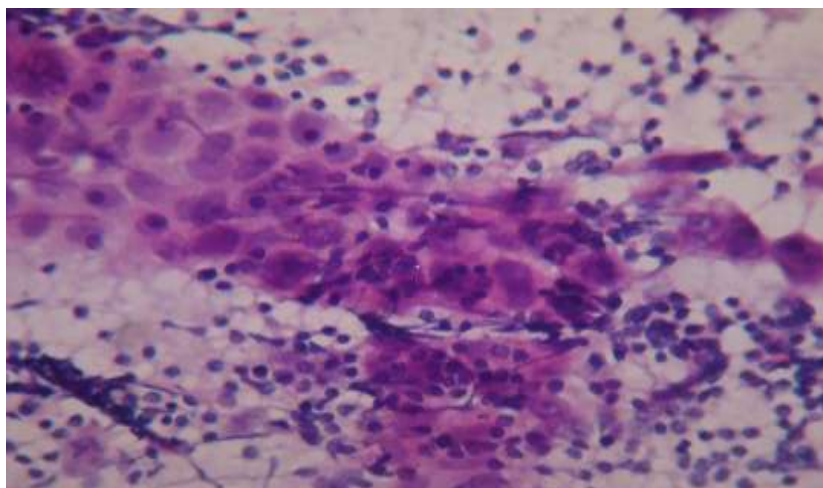


Figure:10Squamous cell carcinoma deposits in lymphnode (HIGH POWER)

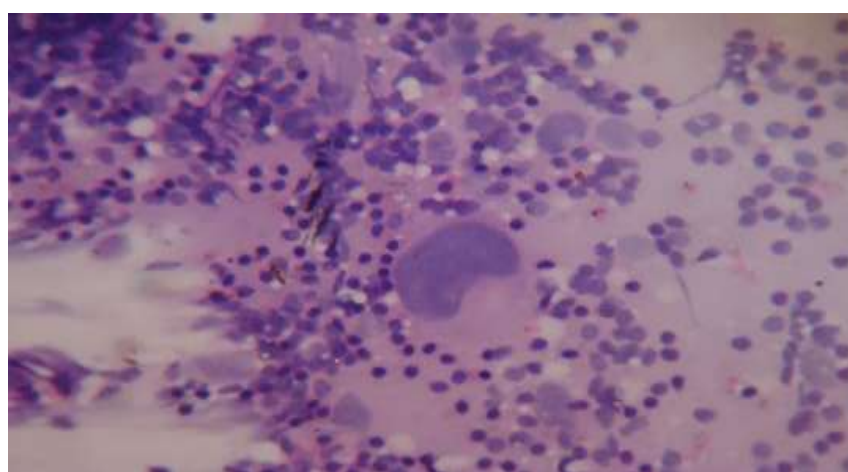


Figure:11Tumor giant cells in Squamous cell carcinoma deposits in lymphnode

References

- [1]. Vanisri H.R., Nandini N.H., Sunil R : Fine needle aspiration cytology findings in human immunodeficiency virus lymphadenopathy. IJPM 2008; Dec 51(4) : 481-484.
- [2]. Shenoy R, Kapidi SN, Pai KP, et al. Fine needle aspiration diagnosis in HIV related lymphadenopathy in Mangalore, India. ActaCytol 2001;45:589-92.
- [3]. Saikia UN, Dey P, Jindal B, Saikia B Fine needle aspiration cytology in lymphadenopathy of HIV positive cases. ActaCytol 2001;45:589-92.
- [4]. Jayaram G, Chew MT : Fine needle aspiration cytology of Lymph nodes in HIV- infected individuals. Acta cytol.2000;44:960-966.
- [5]. Bottles K, Cohen MB, Brodie H. et al. Fine needle aspiration cytology of lymphadenopathy in homosexual males. DiagnPathol 1986;2:31-35
- [6]. Reid AJC, Miller RF, Kodiyan GI. Diagnostic utility of fine needle aspiration cytology in HIV infected patients with lymphadenopathy. Cytopathology 1998;9:230-39.
- [7]. Martin- Bates E, Tanner A, Suvarna SK, GlazerG, Coleman DV. Use of fine needle aspiration for investigation lymphadenopathy in HIV-positive patients. J ClmPathol 1993;46:546-6.
- [8]. Satyanrayana S, Kalghatgi AT, Muralidhar A, Prasad RS, Jawed KZ, Trehan A, Fine needle aspiration cytology of lymph nodes in HIV infected patients. Med J Armed Forces India2002;58:33-7.