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Study of fine needle aspiration cytology of cervical Lymph nodes in tertiary care Hospital

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Abstract

AIM: To evaluate the Cytomorphological patterns in cervical lymph nodes by using fine needle aspiration cytology, and analyze the usefulness of the fancy procedure.

Materials and methods: In this study total 100 patients with cervical lymph node swelling were included in the study, who had presented to the department of pathology in our tertiary care center.

Results: Out of 100 clerical lymphadenopathy cases majority were Tuberculous lymphadenitis 32 (32%), Reactive lymph adenitis 30(30%), Granulomatous lymphadenitis 22(22%), Nonspecific lymph adenitis 7(7%), Necrotizing Lymph adenitis (5%), Metastatic Deposits 2(2%), Lymphoma 2(2%).

Conclusion: FNAC is a cheap, reliable, easy procedure for the early detection of disease pathology in lymph nodes.

Keywords: Fine Needle aspiration cytology (FNAC), Tuberculous Lymphadenitis

Introduction

Fine needle aspiration cytology (FNAC) technique was first introduced by Grieg and Grey ^[1]. Since 1960's it has been used exclusively as a diagnostic tool for rapid evaluation of mainly superficial lesions, especially lymph nodes. It is more cost effective and relatively non-invasive ^[2]. FNAC evaluation may prevent a patient from unnecessary surgery and permit the treating clinician to offer conservative therapy instead.

Lymphadenopathy is one of the most common clinical presentations of patients attending the outpatient department. Lymph nodes are among the commonly aspirated organs for diagnostic purposes ^[3]. In 1927, Dudgeon and Patrick were the first to use FNAC in diagnosing tubercular lymphadenitis ^[4]. Tuberculosis is an important and frequent cause of cervical lymphadenopathy and is more prevalent in low-income countries ^[5].

The present study is undertaken to evaluate the Cytomorphological patterns of FNAC of Cervical Lymph nodes and utility of FNAC in establishing diagnosis in tertiary care settings.

Materials & methods

This study was a retrospective study carried out at Kakatiya medical college, Warangal for the period of 2 years from January 2011 to December 2012. A total 100 patients of all age groups were included in this study.

Inclusion Criteria: All patients presenting with cervical lymph node enlargement were included in the study.

Exclusion Criteria: Those patients with inadequate material on FNAC or unsatisfactory smears were excluded from the study.

FNAC was performed to all patients with Cervical Lymph nodes after taking informed consent, history and clinical examination using sterile, disposable 22 gauge needle and 10ml syringe. Alcohol fixed and Air dried smears were prepared and stained with H&E, PAP, MGG stains. Special stains like PAS, ZN were used whenever required. Smears were analysed by cytopathology's.

Results

Total number of patients included in this study were 100. Age of patients ranges from 2 years to 80 years with mean age of presentation 40 years. Age and Sex distribution of patients is shown in table 1, with male preponderance. 30-40 year age group shows more case incidence than other groups. Out of 100 lymph node cytology study, lateral group of cervical lymph

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nodes (95%) are commonly involved followed by submental group (3%), posterior cervical lymph nodes (2%).

The size of Lymph node ranges from 1cm to 3cms, some cases shows matted lymph nodes.

Table 1: Age & sex wise distribution of lymphadenopathy

Age group (in yrs.)	Males (%)	Females (%)	Total (%)
<10	02(2%)	04(4%)	06(6%)
11-20	10(10%)	11(11%)	21(21%)
21-30	12(12%)	08(8%)	20(20%)
31-40	15(15%)	10(10%)	25(25%)
41-50	07(7%)	09(9%)	16(16%)
51-60	05(5%)	04(4%)	09(9%)
>60	02(2%)	01(1%)	03(3%)
Total	53(53%)	47(47%)	100(100%)

Table 2: Shows Cytomorphological diagnosis in 100 patients

Sr. no.	Cytological diagnosis	Total (%)
1.	Tuberculous lymphadenitis	32(32%)
2.	Reactive lymphadenitis	30(30%)
3.	Granulomatous lymphadenitis	22(22%)
4.	Nonspecific lymphadenitis	07(7%)
5.	Necrotizing lymphadenitis	05(5%)
6.	Metastatic deposits	02(2%)
7.	Lymphomas	02(2%)

Cytomorphological distribution of cases shown in table 2 with Tuberculous lymphadenitis constituting 32/100 (32%),

Cytomorphology of these cases shows 3 different patterns: 1) Predominantly showing Epithelioid granulomas with necrosis in 20/32(62.5%) cases and AFB stain Positive in 12/20 cases, 2) Gaseous Necrosis only in 8/32 (25.0%) cases with AFB positive in 6/8 cases, 3) Epithelioid granulomas and no necrosis 4(12.5%) with no AFB positivity. Total 18/32 (56.2%) shows AFB positivity. For AFB reporting we followed the standard protocol. Most of the patients presented with clinical complaints of cough with sputum, evening rise of temperature, anorexia, loss of weight, fatigue. In our study 6 had past history of tuberculosis, 3/6 patients had history of drug default.

No. of AFB seen	CDC guideline ^a	Study definition
0	Negative	Negative
1-2 per whole smear	Doubtful positive	Scanty
1-9		
Per 100 fields	1+	Positive
Per 10 fields	2+	Positive
Per single field	3+	Positive
>9 per single field	4+	Positive

NOTE. CDC, Centers for Disease Control and Prevention.
^a From Kent and Kubica [15].

AFB positivity in fine needle aspiration smears of Tuberculous lymphadenitis varies between 40.6% and 56.4% [6], Caseous necrosis on Cytosmears is more sensitive and specific to tuberculosis along with epithelioid granulomas, lymphocytes, polymorphs, eosinophils. The neutrophils indicates the immune response of the host to the tubercle bacilli antigen.

Second most common diagnosis was Reactive lymphadenitis 30/100(30%). Cytomorphology of this shows polymorphic population of lymphocytes, Immunoblasts, enterocytes, Centro blats and Tingible body macrophages in the background, and correlating history like tooth problems, dental caries, ear pathology otitis media, boils on scalp was seen in most of the cases.

Granulomatous lymphadenitis 22/100 (22%), Nonspecific lymphadenitis 7/100(7%), Necrotizing lymphadenitis 5/100 (5%).

Metastatic Deposits were seen in 2/100(2%) cases with squamous cell carcinoma deposits, shows monolayer sheets

of pleomorphic clusters of squamous epithelial cells with hyper chromatic nuclei and Karyorrhectic Debris in the background. (Figure 3).

Lymphoma were seen in 2/100(2%) cases with male preponderance both are Non-Hodgkin's Lymphoma, Cytomorphological shows the high cellularity with relatively monomorphic population of lymphoid cells, whereas its differentiation or grading is predicted by cell size and shape, presence of nucleoli and mitotic activity (Figure 4a &4b).

Discussion

In the present study we are presenting our experience of total 100 cases with palpable cervical lymphadenopathy and samples were processed in cytology department. Spectrum of lymph node lesions was made by the Cytomorphology. FNAC is a safe, quick, reliable invasive procedure, inexpensive and important diagnostic tool to establish the diagnosis in various palpable lesions in the body [7-11].

Palpable and enlarged lymph nodes were the first organ to be sampled by fine needle aspiration ^[12], and this procedure also have its limitations.

There are several etiological causes for the lymphadenopathy ranging from infection to malignancy, inflammatory processes whether symptomatic or asymptomatic are most common cause.

In our study age group ranges from 2 years to 80 years with mean age of presentation being 40 years with slight male preponderance. Male to Female ratio 1.1:1 as compared with the Patel's AS *et al.* ^[13] study and Khajuria *et al.* ^[14]. But in Sharma *et al.* ^[15] and Dura swami *et al.* ^[16] showed that females were affected more commonly than males with male: female ratio of 0.87:1 and 1:1.6 respectively. Age group commonly showing maximum number of cases was 31-40 yrs compared to other groups.

In the present study, Size of lymph node ranges from 1cm - 3cm, in Shruthi Vishal *et al.* ^[17] study size of the lymph node ranges from 1-2cm, in cervical region >2cm lymph nodes seen. Reddy *et al.* study showed that cervical and axillary group had 1-2cm size, > 1.5cms in the inguinal region and >0.5 cm at any other site are to be considered significant ^[18].

In our study tuberculosis lymphadenitis was the most common cause with most of the cases seen in the age group 30-50 years as compared with other studies Patel's AS *et al.* study ^[13], it was seen in third and fourth decade. The study done by Shilpa *et al.* ^[19] and Kochhar *et al.* ^[20] also found the highest incidence of Tuberculous lymphadenitis.

Highest incidence of tuberculosis lymphadenitis cases due to the low socioeconomic status, poverty, illiteracy. Cervical group of lymph node involvement commonly seen and the age group involved is second and third decades ^[21].

Our study shows Reactive Lymphadenitis as the second cause for cervical lymphadenopathy, causes for it include bacterial, viral. Cytomorphology of the reactive lymph node depends on the site of the sampling of the reactive lymph node. Due to sampling error or disease portion which may involve a focal area of lymph node, it results in false negative results. Khajuria *et al.* and Narang *et al.* ^[22, 23] also showed the same findings.

Other frequent diagnostic finding was granulomatous inflammation of lymph node with 22/100 (22%). Differential diagnosis includes Sarcoidosis, carcinoma,

lymphoma, fungal disease, cat Scratch disease, collagen vascular disease. Nonspecific lymphadenitis was seen in 7/100(7%) of our cases, in Shruthi Vimal *et al.* ^[17] study it was 1.2% and Mohan *et al.* study it was 2.81%, however Gayatri *et al.* ^[7] study found to have high incidence with 18.5%.

Other diagnosis in our study was Necrotizing lymphadenitis with incidence of 5/100(5%) cases, Inshruthi Vimal *et al.* ^[17], Duraiswami *et al.* ^[16] it was 0.8%, 1.1% respectively.

Metastatic deposits seen in 2/100 (2%) cases, both cases were seen in elderly age group more than 60 years with male preponderance, both showing squamous cell carcinoma deposits in cervical lymph nodes, with primary from oral cavity. In studies from Singh *et al.* ^[23], Kochhar *et al.* ^[20], Patel *et al.* ^[24], Shilpa *et al.* ^[19], Gayatri *et al.* ^[7] Mohanty *et al.* ^[11] showed the high incidence of 75%, 83.78%, 27%, 23%, 21%, and 18.3% respectively. It was due to the genetic, environmental, regional variations, personal habits like smoking. In India most of the metastatic deposits are due to the cancers of oral cavity, pharyngeal cancers, oesophageal cancers and laryngeal cancers.

In our study, Lymphoma was seen in 2/100 (2%) cases, one patient's age was 30 years and other patient was 28 years both are Males. Cytomorphological diagnosis was Non Hodgkins Lymphoma in comparison with Mohanty *et al.* ^[11] showing 3.66% and Patel's A.S *et al.* ^[13] study 2.07% respectively. Flow cytometer and immunohistochemistry in adjunct to FNAC will help in the diagnosis of NHL.

Conclusion

FNAC is an ideal, quick and inexpensive procedure and first line investigation with proper technique and clinical correlation. It not only helps in diagnosing the benign lesions like reactive lymphadenitis, Tuberculous lymphadenitis, necrotizing lymphadenitis, Suppurative lymphadenitis, but also helps in diagnosing Neoplastic lesions like Lymphoma, Metastatic deposits and helps to reach the diagnosis by giving the clue regarding the origin of primary tumor and it can be confirmed with recent advanced techniques like IHC on cytology smears. With proper skill and technique FNAC is the one of the best useful procedure coupled with Ziehl-Neelson stain to diagnose Tuberculous lymphadenopathy which is common in our country.

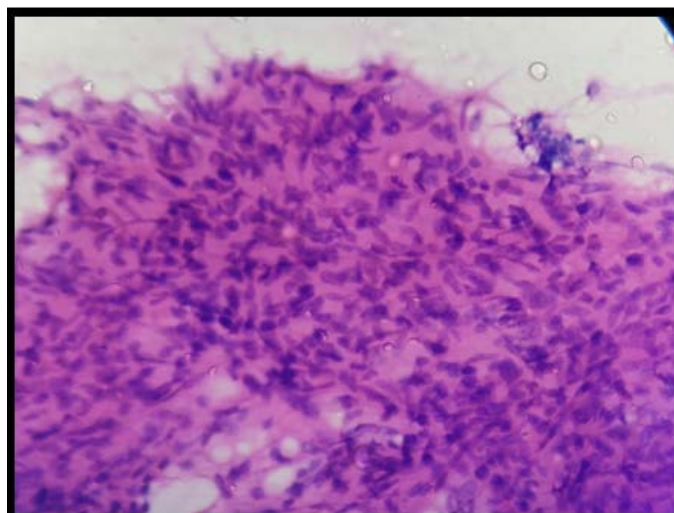


Fig 1: Cytosmears shows well-formed granulomas consisting of epithelioid Histocytes .40x

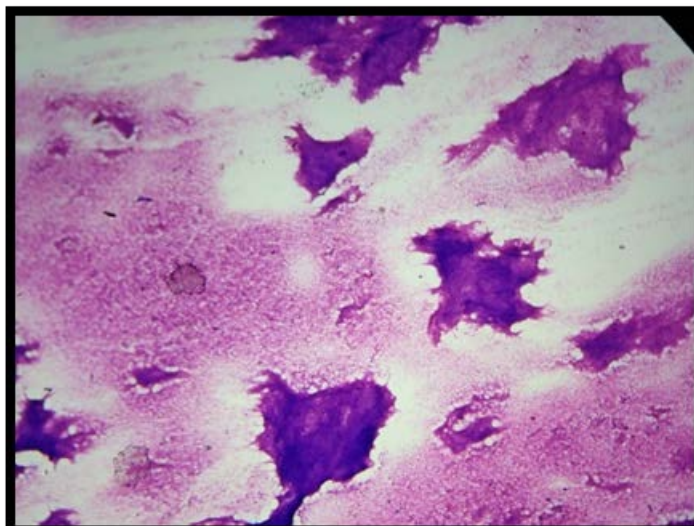


Fig 2: Cytosmears shows Caseous necrosis .40x

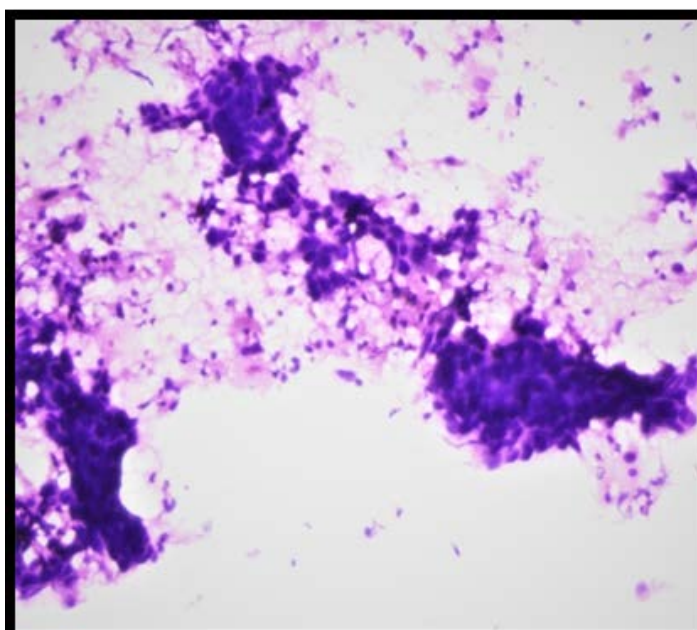


Fig 3: Cytosmears Shows Mon layered Sheets of Squamous Epithelial Cells in the Background of Karyorrhectic Debris .10x

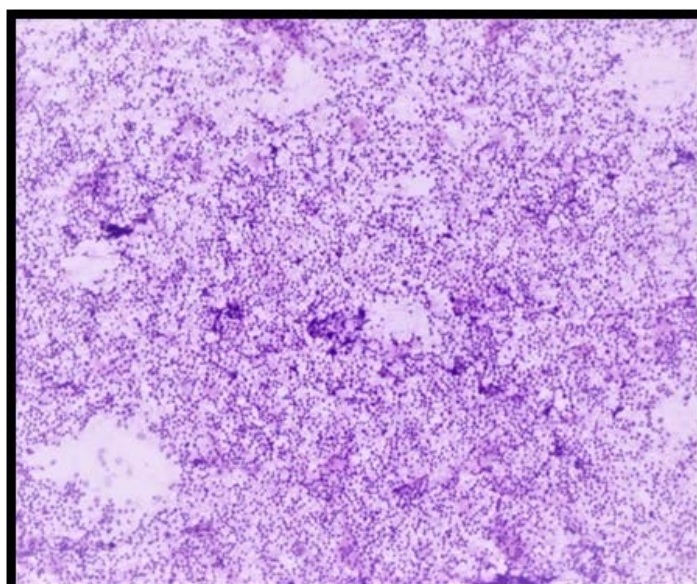


Fig 4a: Cytosmears from lymph proliferative disease shows highly cellular smear .10x

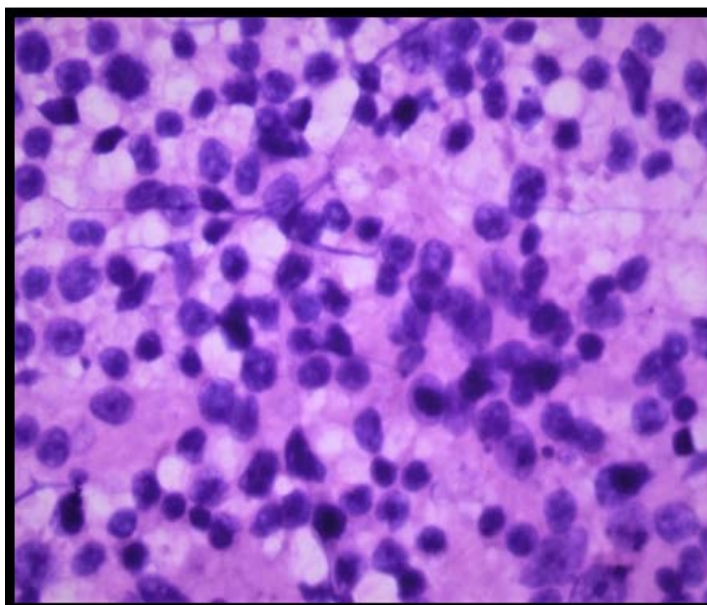


Fig 4b: Cytosmears from Lymph proliferative Disease shows monomorphic population of lymphoid Cells .40x

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Conflict of Interest: None

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