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Original Research Paper

Pathology

CYTOLOGICAL ABNORMALITIES IN LYMPH NODES AT TERTIARY CARE HOSPITAL

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ABSTRACT **Objectives:** To study the cytomorphological features associated with various lymphadenopathies. **Methods:** The present prospective study was carried out in the Department of Pathology at Government medical college, Anantapur, a Tertiary Care Centre. A total of 200 patients of all age groups underwent FNAC of enlarged lymph nodes during this study period. **Results:** FNAC diagnosis was found to be as follows: Tubercular lymphadenitis in 70 cases (35%), Reactive hyperplasia in 60 cases (30%), Metastatic deposits in 40 cases (20%), Lymphomas in 20 cases (10%), Salivary gland tumors were 10 cases (5%). **Conclusion:** FNAC of lymph nodes is an excellent first-line investigation to determine the nature of the lesion. Tubercular lymphadenitis is the most common lesion followed by reactive hyperplasia.

KEYWORDS : Fine needle aspiration cytology (FNAC), Lymph node, Lymphadenopathy, Tuberculous lymphadenitis, Malignant neoplasms

INTRODUCTION:

Lymph nodes are a site for organized collections of lymphoreticular tissue and these are pink-gray bean-shaped encapsulated organs. They are located along the course of lymphatic vessels. The common sites are cervical, axillary, mediastinal, retroperitoneal, iliac, and inguinal regions.[1]

Fine Needle Aspiration Cytology is a simple procedure that is safe, rapid and inexpensive, and relatively less invasive method, which can be carried out as an out-patient procedure without anesthesia for establishing the diagnosis of pathological lesions occurring in lymph nodes on the exposed, easily accessible regions of the body.[2]

FNAC when employed along with the guidance of other diagnostic aids is very helpful in the rapid diagnosis of certain pathological conditions such as reactive lymphadenitis, tuberculous lymphadenitis, metastatic neoplastic lesions, and lymphoproliferative conditions including most lymphomas.[3]

Aims And Objectives:

The main aims and objectives of the present study are to diagnose causes of lymphadenopathies by employing fine needle aspiration cytology and study cytomorphological features of pathological lesions - non-neoplastic and neoplastic-on fine needle aspiration of lymph nodes and to characterize them into various categories of diagnostic entities such as inflammatory, reactive and various neoplastic and lymphoproliferative lesions.[4]

MATERIALS AND METHODS:

Type of study: Prospective study

Place and Duration of Study:

This prospective study was carried out in the Department of Pathology at Government medical college Ananta Puram for a period of one year from August 2021 to August 2022.

Sample size:

A total of 200 patients of all age groups underwent FNAC of enlarged lymph nodes during the study period.

Inclusion criteria:

All patients presenting with lymph node enlargement were included in the study.

Exclusion criteria:

Those patients who are not willing for FNAC and in which aspirated material was either inadequate or smears were unsatisfactory for evaluation.

Sample Collection And Method:

After obtaining the Ethical Committee Clearance from our institution, the Patient's age, sex, site, and duration were noted and a full clinical examination was done to look out for another node enlargement. FNAC was performed after taking consent and explaining the procedure to the patient. FNAC was done using a 5-10 ml disposable syringe with a 22 to 24-gauge needle. Two-three passes were done in all patients and four smears were made for each site of aspiration.

Two smears were fixed immediately in isopropyl alcohol and stained with Papanicolaou (Pap) stain and Haematoxylin & Eosin (H&E) and the other two were air-dried stained with Giemsa stain. Cytomorphological features like cell population, areas of necrosis, and pattern were assessed by examination under low power, high power, and oil immersion.

RESULTS:

A total of 200 lymph node cases were aspirated in the cytopathology section over one year from August 2021 to August 2022, there were `56 female and 44 male patients with the age of the patients ranging from 1 to 80 years. The maximum number of cases falling in the range between 21-40 years (135 cases), followed by 40-80 years (32 cases) and 13 cases in the range of 0-10 years 11 – 20 (20).

Common cytological lesions found in our study were Tubercular lymphadenitis in 70 cases (35%), Reactive hyperplasia in 60 cases (30%), Metastatic deposits in 40 cases (20%), Lymphomas in 20 cases (10%), Salivary gland tumors were 10 cases (5%). In our study, 05 cases were clinically diagnosed as lymphadenopathy. On fnac, they were salivary gland lesions.

Table 1 Age Distribution Of Cases

S.NO	AGE GROUP	NO. OF CASES
1	0-10 years	13
2	11 - 20 years	20
3	21-40 years	135
4	41-80 years	32

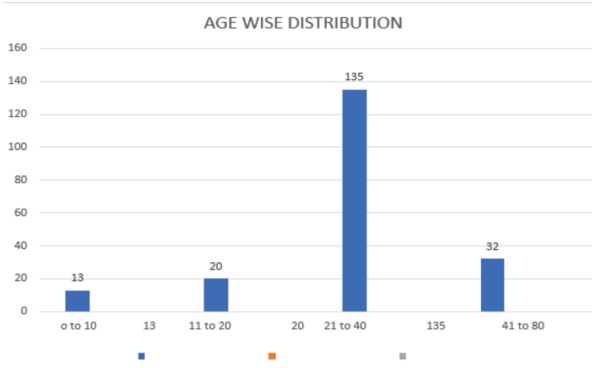


Table 2: Cytological diagnosis of lymphadenopathy

CYTOLOGIC DIAGNOSIS	NUMBER OF CASES	PERCENTAGE
Tubercular lymphadenitis	70	35%
Reactive hyperplasia	60	30%
Metastatic deposits	40	20%
Lymphomas	20	10%
Salivary gland tumors	10	5%

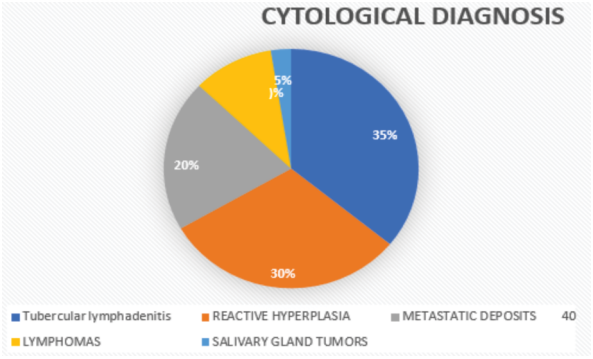
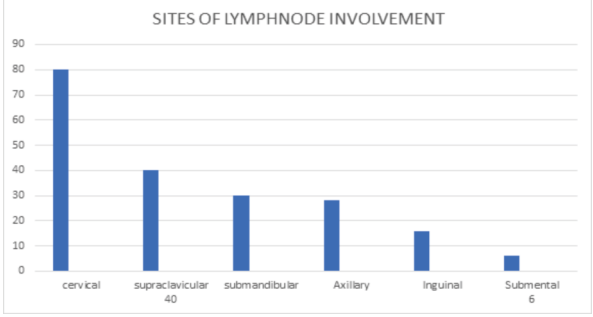


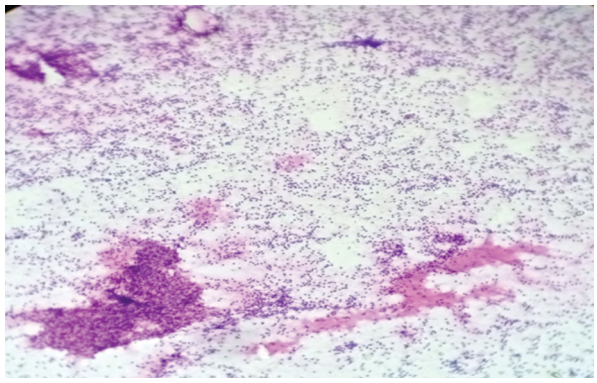
Table 3 Sites of Lymph Node Involvement

SITE	NUMBER OF CASES	PERCENTAGE(%)
Cervical	80	40
Supraclavicular	40	20
Submandibular	30	15
Axillary	28	14
Inguinal	16	8
Submental	06	3

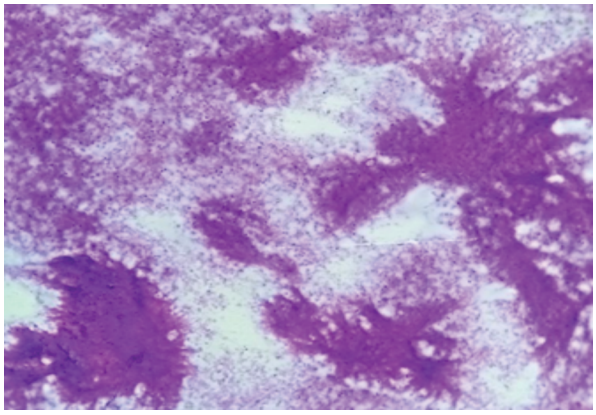
In our study from table 3, the most common site of involvement was Cervical lymphnodes which constituted 40%, followed by supraclavicular, submandibular, Axillary, inguinal, and submental lymph nodes.



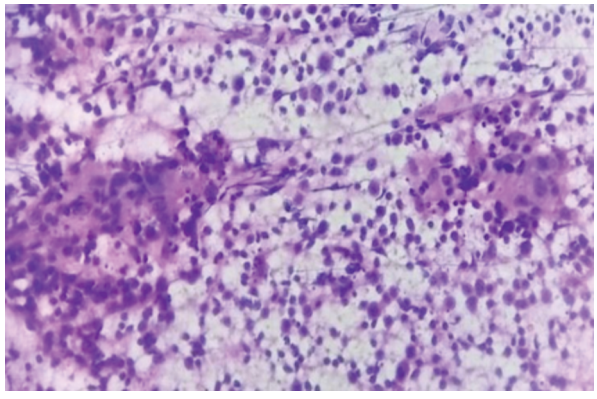
The lymph node aspirates were diagnosed as tubercular lymphadenitis based on the presence of epithelioid cell granulomas and caseous necrosis with or without Langhan's giant cells. Granulomatous lymphadenitis was diagnosed based on the presence of epithelioid cell granuloma with or without giant cells and an absence of necrosis. Suppurative lymphadenitis cases showed predominantly polymorphs, necrotic debris, and other lymphoid cells.



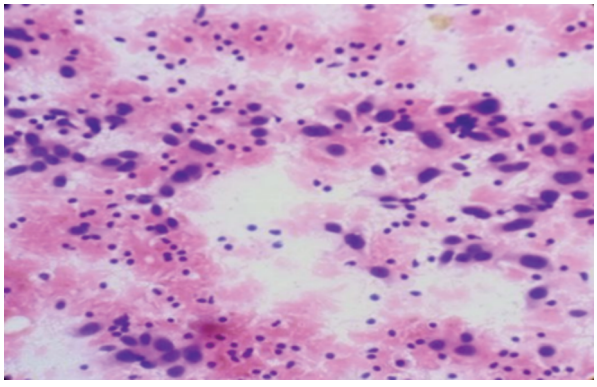
H & E stained smear showing epithelioid granulomas and caseous necrosis (10 x view).



A case of caseating tuberculous lymphadenitis showing lymph node completely replaced by caseous necrosis H & E (10x)



H & E stained cellular smear showing granulomas (40 x view).



H & E (40 x) showing metastatic deposits in the lymphnode

DISCUSSION

FNAC is an important tool to aid in the diagnosis of lymphadenopathy. Lymphadenopathy is one of the commonest clinical presentations of various disease processes. This study was carried out to find out the relative frequencies of various etiology factors presenting lymphadenopathy in different age groups and cytomorphological changes in the different lesions.

The age group which was studied ranged from 1-80 years with maximum cases ranged 21-40years which is comparable with those of Shreshtha et al [5], A. B. Pandav et al [6], and A. K. Kochhar et al [7]. In our study, a male preponderance was noted and similar male preponderance was correlated with Hirachand et al [8]and Shreshtha et al [9].

In our study cytomorphological pattern was Epithelioid cell granulomas with caseous necrosis (59.18%) the present study, which is closely comparable with Goswami et al [10] (50%). AFB positivity was maximum with necrosis without granulomas pattern (61.67%) followed by epithelioid cell granulomas with necrosis pattern (23.3%) which correlated with the findings of Goswami et al.[10]

The second most common cytological diagnosis was reactive hyperplasia was seen in 35 cases (16.67%). Similar findings were also observed in A K Kochhar et al [11]. Granulomatous lymphadenitis was seen in 29 cases (13.8%) correlates with studies by Hirachand et al [8] (9.2%). Granulomatous lymphadenitis can be classified as non-infectious and infectious.

Non-infectious causes include sarcoidosis and sarcoid-like reaction. Infectious causes can be classified as suppurative and non-suppurative. Suppurative granulomatous disorders include tularemia, cat scratch disease, Yersinia, etc. Non-suppurative granulomatous disorders include tuberculosis, BCG, toxoplasma, lepra bacilli, brucellosis, and syphilis [12].

In our study lymph node aspirates in 27 cases (12.85%) showed metastatic deposits that correlate with the studies by Malukani K (16.6%) & Mandakini M Patel et al (27.06%). The most common age group affected by a metastatic tumor, in the present study was 41-50 years which correlates with another study by A.K. Kochhar et al [13].

The current study reported 4 (1.8%) cases of lymphoma which correlated with the findings of Abdul Haque Khan et al [14] (2%). Though their prevalence is low, they pose a great diagnostic challenge.

CONCLUSION:

FNAC is a simple, low-cost, non-invasive and inexpensive method that can be done in various sites in the body and useful diagnostic tool in determining the nature of lymphadenopathies. FNAC helps in the etiology of lymph node enlargement as reactive change, infective/ inflammatory, lymphoma, metastatic, etc.

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