CYTOLOGICAL SPECTRUM OF LYMPHADENOPATHY AT TERTIARY CARE HOSPITAL.

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INTRODUCTION: In countries like India Tuberculous lymphadenitis is a very common cause of superficial lymphadenopathy. FNAC is a well-established and popular diagnostic aid for patients presenting with lymphadenopathies. Frequent involvement of lymph nodes in regional and systemic diseases along with their easy accessibility makes FNAC the first line of investigation in evaluating lymphadenopathies. Lymph node enlargement occurs in a wide spectrum of diseases including reactive conditions, infections like tuberculosis, fungal and protozoal as well as primary lymphoid malignancies and secondary metastatic tumors. Tuberculosis is most common etiology in our India. FNAC is a highly acceptable, minimally invasive, cost effective and rapid investigation of choice that is feasible in our current scenario.

AIMS AND OBJECTIVES:

1) To evaluate cytopathological changes of Fine needle aspiration cytology changes of enlarged lymph node.
2) To assess the frequency of lymphadenopathy in different age groups and genders.

MATERIALS AND METHODS: Facility based study was done during june 2023 to June 2024 at Government chest hospital among patients 459 patients who attended

outpatient department of chest hospital, with lymph node enlargement and underwent FNAC (fine needle aspiration cytology) evaluation in the department of pulmonology.

RESULTS: Gender wise distribution of patients Males 218 (47.4%) Females 241 (52.6%). Cytological diagnosis of lymph node aspirations, Tubercular lymphadenitis 165 (35.9%), Reactive lymphadenitis 152 (33.1%), Acute suppurative lymphadenitis 50 (10.8%), Granulomatous lymphadenitis 35 (7.6%), Metastatic deposits 48 (10.4%), non-Hodgkin lymphoma 8 (1.7%), Hodgkin lymphoma 1 (0.2%). Distribution of cases of lymphadenopathies according to anatomical location. Cervical (67.5 %), submandibular (10.6%), supraclavicular (9.8 %), axillary (7.82%), submental inguinal (1.8 %)

CONCLUSION: The present study highlighted the various cytomorphological patterns of lymphadenopathy and revealed a huge burden of tuberculous lymphadenitis.

KEY WORDS: Fine needle aspiration (FNAC), Lymph node enlargement, Lymphadenitis.

INTRODUCTION

Lymphadenopathy refers to enlarged lymph nodes. It is the commonest clinical presentation of patients attending the out-patient Department. FNAC is the first line of investigation in evaluating lymphadenopathy due to frequent involvement of lymph nodes in regional and systemic diseases and easy accessibility. The technique is minimally invasive and gives speedy result [1]. It is highly acceptable, simple, rapid, cost effective procedure that is feasible in the current scenario [2]. It can be used as safe alternative to excision biopsy [3]. Lymph node enlargement occurs in a wide spectrum of diseases including reactive conditions, infections and malignancy [4]. Tuberculosis is a widely distributed in all over world more particularly in a country like India since an ancient time. Peripheral lymph node involvement is the commonest form of extra-pulmonary mycobacterial disease and cervical region is the most frequent site. Nowadays, due to increase in prevalence of HIV there is increased incidence of Tuberculous lymphadenitis. Even with the best treatment available, tuberculosis of lymph node still remains a problem for the clinician, because of late diagnosis, poverty and ignorance of symptoms. Patients' compliance is poor with surgical excision biopsy followed by histopathological

examination which is costly, time consuming, required hospitalization, pre and post procedure complications. While fine needle aspiration cytology is simple, rapid, cheaper and outpatient department procedure.

AIMS AND OBJECTIVES

1)To evaluate cytopathological changes of Fine needle aspiration cytology changes of enlarged lymph node.

2)To assess the frequency of lymphadenopathy in different age groups and genders.

METHODOLOGY:

Facility based cross sectional study was done from june 2022 to June 2023 at Government Chest Hospital among patients 459 patients who attended outpatient department of chest hospital, with lymph node enlargement and underwent FNAC (fine needle aspiration cytology) evaluation in the department of pulmonology. A 22–24-gauge needle and 10 ml syringe was used to perform FNAC. Two of the prepared smears were fixed in alcohol and stained with haematoxylin and eosin stain.
Sample size of 459 was achieved using the formula $4pq/l^2$, considering prevalence of tubercular lymphadenitis of 44.02% according to *Malhotra AS et.al* [5].

RESULTS

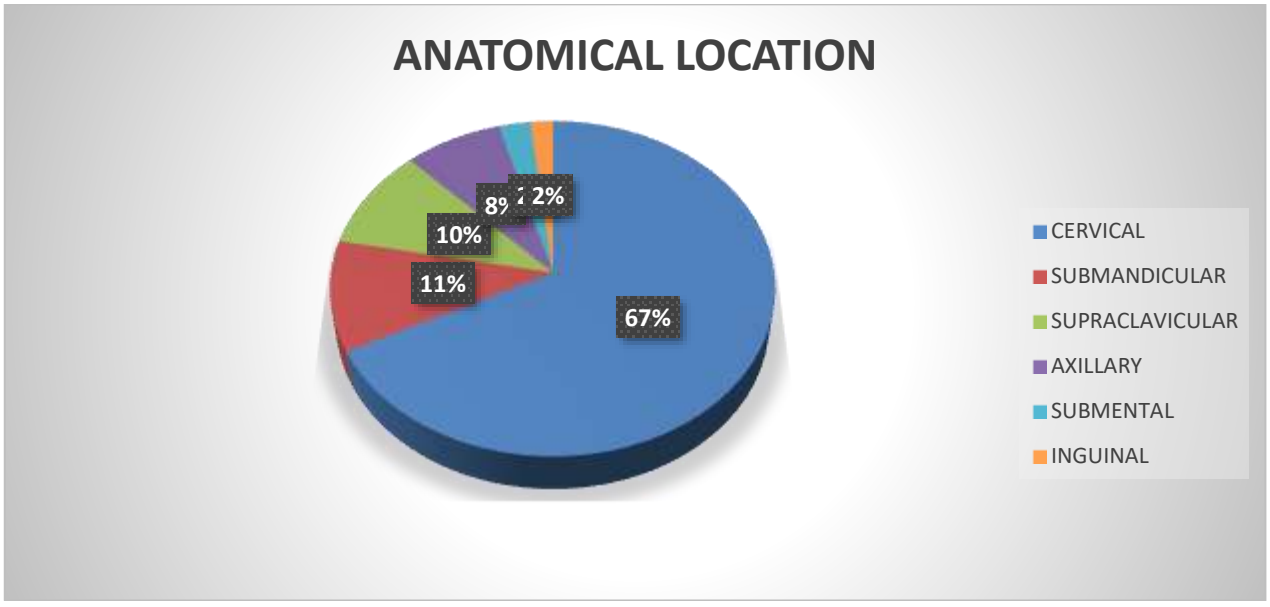
Out of 459 cases ,57were neoplastic and 402 were found to be inflammatory. Tuberculosis was the most common disease found in 165(35.9%) patients followed by reactive nonspecific lymphadenitis in 152(33.1%), acute suppurative lesions in 50(10.8%), granulomatous lymphadenitis in 35(7.6%) cases, metastatic tumors in 48 (10.4%) and lymphomas in 9 patients and most commonly involved arecervical group of lymph nodes.

Table 1. Descriptive analysis

Variable	Total(n)	Percentage (%)
Gender		
Male	218	47.4%
Female	241	52.6%
Age in years		

0-20	151	32.8%
21-40	181	39.4%
41-60	75	16.3%
61-80	52	11.3%
Cytomorphological changes		
Tubercular lymphadenitis	165	35.9%
Reactive lymphadenitis	152	33.1%
Acute suppurative lymphadenitis	50	10.8%
Metastatic deposits	48	10.4%
Granulomatous lymphadenitis	35	7.6%
Non-Hodgkin lymphoma	8	1.7%
Hodgkin lymphoma	1	0.2%
Association between tubercular and non-tubercular changes of the Lymph node enlargement based on gender		
Gender	Tubercular	Non tubercular
Male	53	165
female	112	129
Total	165	294
P value = 0.00000038 Odd ratio=0.37 Male population were found to be less effected with tubercular lymphadenitis compared to female population		

Fig 1: DISTRIBUTION OF CASES OF LYMPHADENOPATHIES ACCORDING TO ANATOMICAL LOCATION



Based on anatomical location majority of lymphadenopathy was seen among cervical group of lymph node constituting to 67%followed by submandibular constituting 11%, supraclavicular lymph nodes10%,axillary 8% submental and inguinal constituting 2% each

Fig 2. Bar diagram showing distribution of cytopathological changes of lymph nodes

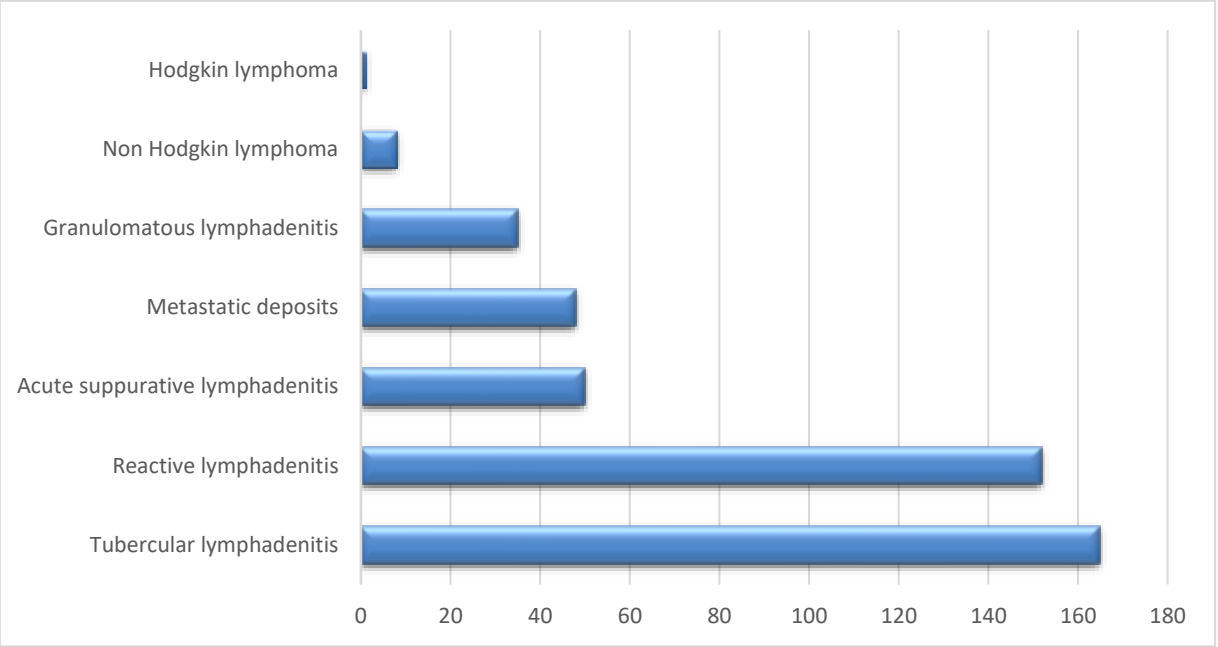
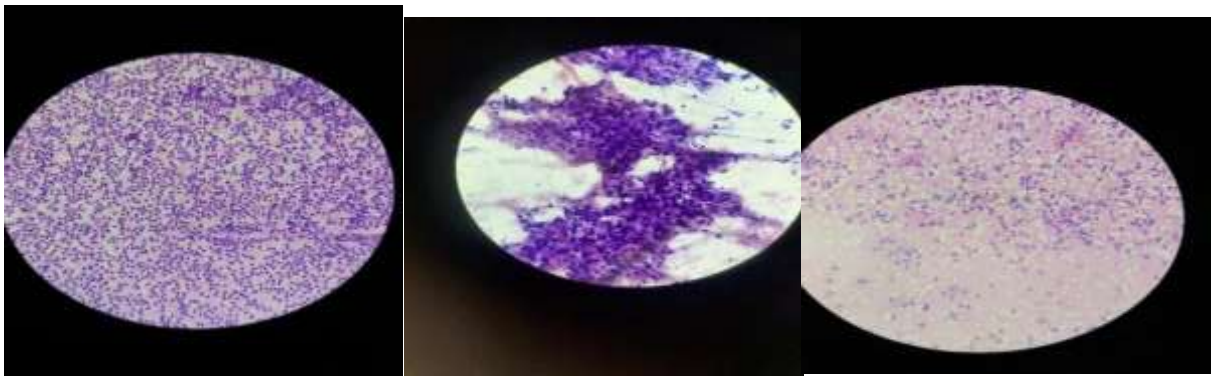


Fig 3 showing histopathological changes of various lymph node changes

Reactive lymphadenitis	Tubercular lymphadenitis	Metastatic squamous cell carcinoma



DISCUSSION:

Lymphadenopathy is a frequently encountered clinical presentation requiring prompt and accurate diagnosis to provide treatment at the earliest possible. In the present study, total number of cases were 459 over a period of two years. The pattern of these cases varied from non-neoplastic lesions like tuberculous lymphadenitis, reactive lymphadenitis, acute suppurative lymphadenitis, granulomatous lymphadenitis to neoplastic lesions including metastatic lymphadenopathy and lymphoma. FNAC is the first line of investigation in the diagnosis of lymph node lesions. It is safe, inexpensive and highly acceptable to the patient.

In our study, an attempt has been made to study the cytomorphological spectrum and also epidemiological pattern of lymph node lesions. Cervical group of lymph nodes were the most common group involved seen in67.5% cases which is similar to that observed by Sharma P et al [6], Pavithra et al [2] and Kochhar et al [7]. It was followed by sub mandibular group of lymph nodes in 10.6% cases and least commonly involved are inguinal lymph nodes seen in only 1.8% cases.

Most of the patients in this study were inthe age group of 21-40 years similar to Pandit AA et al [8] where as in the studyof Sharma P et al [6] most of them were of 10-19yearsand in Gupta et al study [9], it is 0-20 years. In the present study, females were predominant than males with M: F of1:1.1 and in Sharma P et al [6] study, it is 0.87:1 .

Tuberculous lymphadenitis was the most common lesion reported in 35.9% cases similar to the study of Sharma P et al [6] in which it is about 56.92%. Most of these cases were seen in the age group of 21-40years with female predominance. ZN staining for acid fast bacilli were seen in 55% cases while Sharma P et al [6] reported 22.6% cases.

In cases with characteristic caseous necrotic material and scattered epithelioid with or without granulomas or only necrotic material with neutrophilic infiltration were diagnosed as tuberculous lymphadenitis even though AFB were absent in the smears [10]. The second most frequent diagnosis in our study was reactive lymphadenitis seen in 33.1% cases similar to the study of Sharma P et al [6] and Khan et al [11]. Acute suppurative lymphadenitis was observed in 10.8% cases in the present study comparable to other studies of Kocchar et al [7], Sharma P etal[6], Patra et al[12].

Granulomatous lymphadenitis was reported in only 7.6% cases in our study. Granulomas can also be seen in a variety of other conditions of lymphadenopathy like leprosy, fungal infections, sarcoidosis, cat scratch disease, lymphogranuloma venereum, collagen vascular diseases [13] Lymph node aspirations in 10.8% cases showed metastatic deposits with malepreponderance and adenocarcinoma being the most common histologic type.Maximum cases of metastatic deposits were seen in the age group of 61-80years and cervical group of lymph nodes were predominantly involved. A detailed history, clinical examination, radiological investigations and immunohistochemistry in selected cases may help to locate the primary site of malignancy.

The present study also comprised of 9 cases i.e., 1.9% which were diagnosed as lymphoma comparable to observations of Sharma P et al [6], Fathima et al [14](5.2%) and Hira Chand et al [15](6.1%)

Among these cases, non-Hodgkin's lymphoma and Hodgkins lymphoma constituted 1.7% and 0.2% respectively. This is also comparable to study by Bhaskaran et al [16] in which NHL and HL constituted2.23% and 0.74%. These cases were later confirmed by biopsy.

CONCLUSION:

Fine needle aspiration cytology is an excellent first line of investigation to determine the nature of lesion. It is quick, safe, minimally invasive, reliable and readily acceptable by patient. The present study highlighted the various cytomorphological patterns of lymphadenopathy and revealed a huge burdenof tuberculous lymphadenitis

LIMITATIONS:

1. FNAC is only suggestive of the pathological changes as biopsy is confirmatory.

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