

Cytological Evaluation of Lymphadenopathies - A Study of 115 Cases

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Abstract: ***Introduction:** Lymph nodes are common sites of clinical presentation of many of the manifestations non-neoplastic and neoplastic diseases. FNAC a simple relatively non-invasive procedure which can be employed in diagnosis of superficial lesions of the body. **Materials & methods:** The current study is a prospective study performed on a total of 115 patients over duration from 1st March 2022 to 30th April 2022. The data was collected in cytopathology section of tertiary care teaching hospital, Ahmedabad from the patients referred from OPDs or indoor during the period of study. **Result:** In present study, Out of 115 cases maximum cases are of Tuberculosis Lymphadenitis 36 (31.3 %) followed by Reactive lymphadenitis 23 (20%). Cases of Chronic non-specific lymphadenitis are 21(18.2 %).11 (9.5%) cases are suspicious for TB,10 (8.6%) cases are of metastatic SCC,8 (6.9%) cases of abscess , 2 cases of necrotizing squamous cell carcinoma, 1 case of Poorly Differentiated Carcinoma,Hodgkin lymphoma, Non-Hodgkin lymphoma and Malignant Epithelial Carcinoma. **Conclusion:** FNAC is a simple, safe, reliable, and inexpensive method that could be employed in cytological study and early detection of inflammatory, reactive and neoplastic conditions leading to clinical lymphadenopathy.*

Keywords: Fine Needle Aspiration Cytology (FNAC), Lymphadenopathy

1. Introduction

Enlarged lymph nodes were first organ to be biopsied by fine needle aspiration; today they are frequently sampled tissues.¹ Fine needle aspiration (FNAC) is a simple and rapid diagnostic technique. Due to early availability of results, minimal trauma and complication, fine needle aspiration cytology is now considered a valuable diagnostic aid.¹ Lymph node is an inevitable part of the body's defense system. Lymph nodes are local circumscribed collections of lymphoreticular tissue covered by a fibrous capsule and located at invariable anatomical points along the course of lymphatics.² Enlargement of lymph nodes due to stimulation by infectious agents or the involvement of metastasis or malignant diseases, such as lymphoma, is common.¹ The patient's age, whether the affected lymph node is painful or not, and the growth rate, as well as its ultrasonographic dimensions, shape, internal structure as visualized on grayscale ultrasound, and the vascular pattern observed in Doppler mode, provide preliminary information whether or not an affected lymph node may be benign or malignant.³ The present study is done to evaluate the usefulness of FNAC as a diagnostic tool in cases of lymphadenopathy and study the different cytomorphological patterns associated with various lymphadenopathies. The clinical value of FNAC is not only limited to neoplastic conditions but also valuable in diagnosis of inflammatory, infectious and degenerative conditions in which sample can be used for microbiological and biochemical analysis in addition to cytological preparations.¹

Aims and Objectives

The main aims and objectives of the present prospective study are as follows

- 1) To diagnose clinical lesions of enlarged lymph nodes.
- 2) To study cytomorphological features of various lesions of lymph nodes- non-neoplastic and neoplastic.
- 3) To study the incidence of inflammatory, other non-neoplastic and neoplastic lesions.

2. Material and Methods

The current prospective study was carried out in the Department of Pathology of a tertiary care teaching hospital, Ahmedabad. The duration of study was two months between 1st March 2022 to 30th April 2022 and during which a total 115 cases of lymphadenopathy were evaluated by fine needle aspiration cytology (FNAC). After proper history, consent from the patient was taken for the procedure, fine needle aspiration cytology was performed under strict aseptic conditions. FNAC was conducted by 10 ml disposable syringes connected with 22 to 24 bore hypodermic needles and aspirating cytological material from lesions of lymphadenopathy. The air dried cytological smears prepared from the aspirate were stained with May-Grunwald-Giemsa stain and alcohol fixed smears were stained by Haematoxylin & Eosin stain and Papanicolaou stain. Special stain such as modified Ziehl-Neelsen stain, for acid-fast bacilli (AFB) was used wherever necessary. The aspiration smears after staining were then studied under microscope to arrive at diagnosis.

3. Result

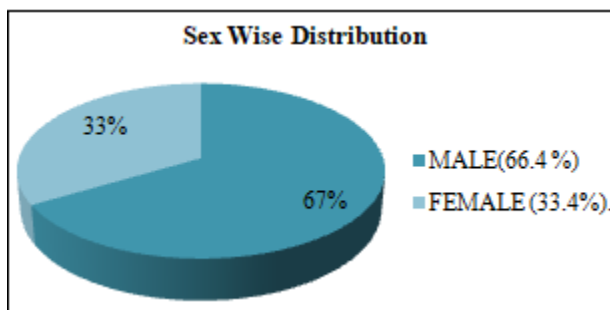


Chart 1: Sex wise distribution

Out of 115 patients, Males were 77 (67 %) and females were 38 (33%). A Male predominance was observed with a male to female ratio of 2.02:1.

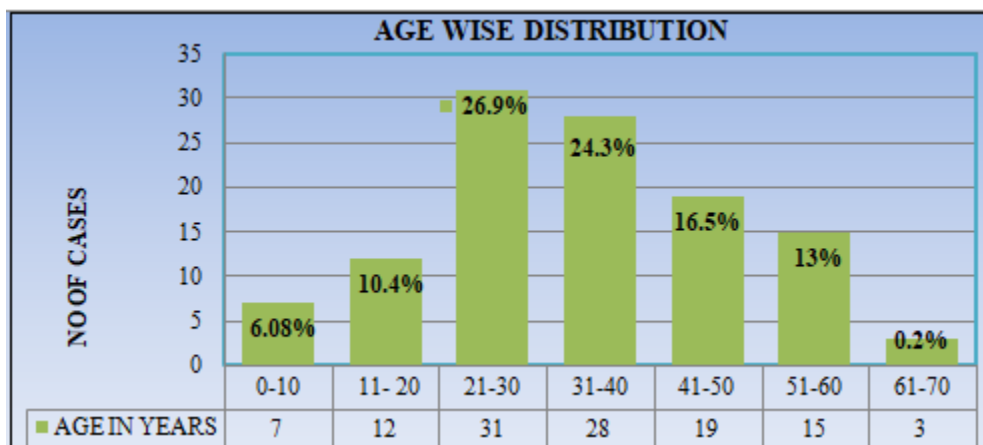


Chart 2: Age wise distribution

The age of the patients varied from 6 months to 70 years. (26.9 %) followed by patients in the age group 31-40 years (24.34 %). Maximum patients were seen in the age range of 21-30 years (26.9 %).

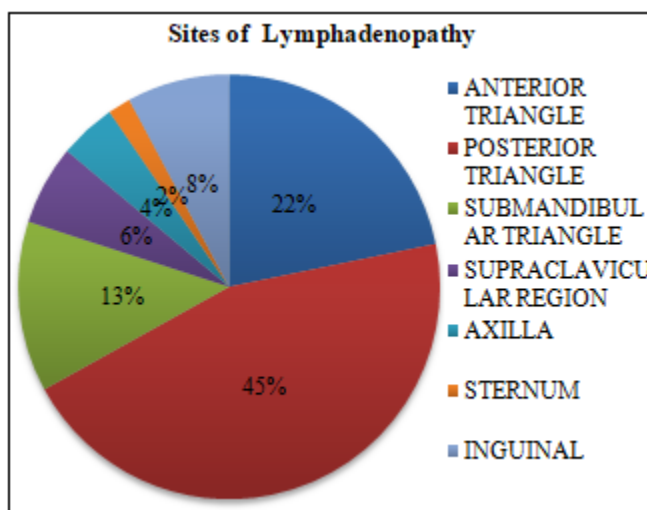


Chart 3: Sites of Lymphadenopathy

Most common group of lymph nodes involved were the posterior group of lymph nodes (45 %) followed by anterior group of lymph nodes (22%). Submandibular triangle was involved in (13%), inguinal lymph nodes in (8%) supraclavicular region in (6 %) and axilla in (4 %) and sternum involved in (2%).

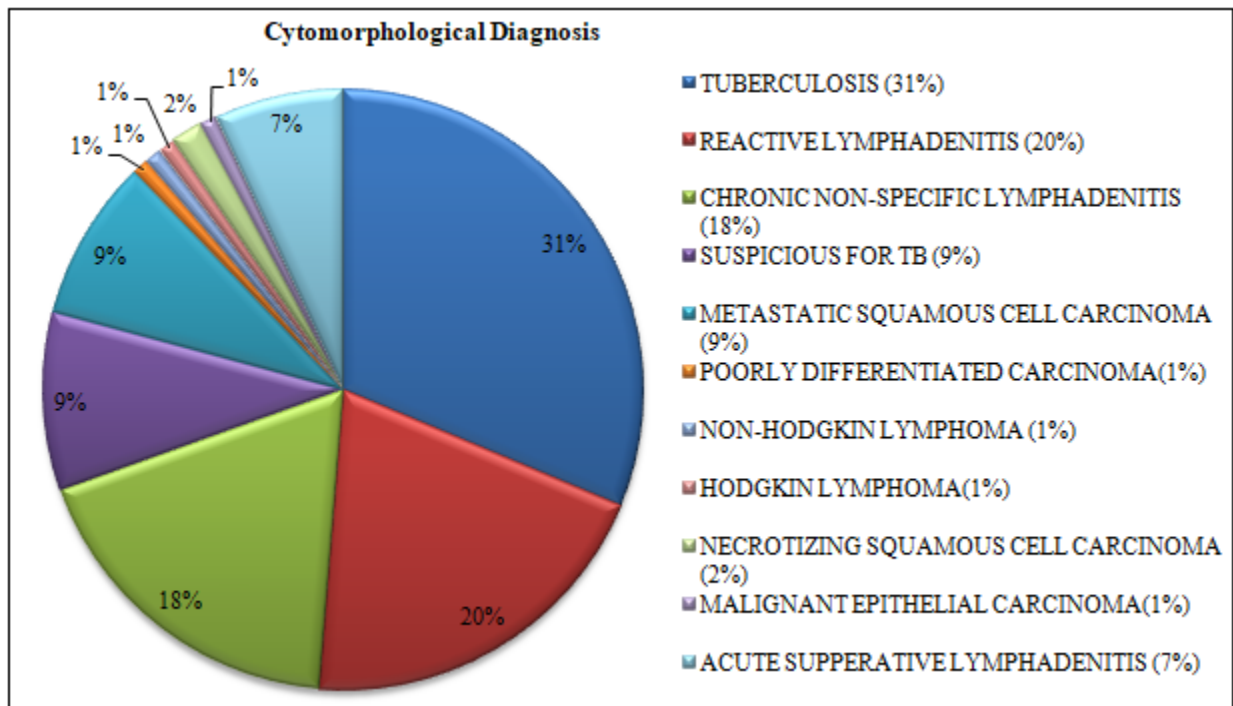


Chart 4: Pie diagram showing cytological diagnosis in lymphadenopathy

Out of 115 cases maximum cases were of Tuberculosis Lymphadenitis 36 (31.3%) followed by Reactive lymphadenitis 23 (20%). Cases of Chronic non-specific lymphadenitis were 21 (18.2%). 11 (9.5%) cases were suspicious for TB, 10 (8.6%) cases were of metastatic SCC, 8 (7%) cases of Acute suppurative lymphadenitis, 2 cases of necrotizing squamous cell carcinoma, 1 case of Poorly Differentiated Carcinoma, Hodgkin lymphoma, Non-Hodgkin lymphoma and Malignant Epithelial Carcinoma.

4. Discussion

Histopathology is most rewarding for diagnosis of cervical lymphadenitis, its feasibility is limited due to non-acceptability, being an invasive procedure. Previously, biopsy was used for diagnosis of tubercular lymphadenitis; now it has been greatly replaced by FNAC. FNAC is a simple, quick, accurate, low cost method of establishing the diagnosis of lesions at various sites. Lymphadenopathy is a commonly encountered clinical condition requiring prompt and accurate diagnosis to provide treatment as early as possible. FNAC is a simple procedure with minimum trauma and low cost with no complications therefore it plays an important role in the diagnosis of primary or the secondary malignancies especially in developing nations like India.⁴⁻⁶ FNAC can be used as a safe alternative to excision biopsy. In countries like India, part of a large group of developing countries, tuberculosis, acute upper respiratory tract infections and suppurative lymphadenitis are the common causes of lymphadenopathy.

A male predominance is noted in the current study. A male predominance was observed with a male to female ratio of

2.02:1. This is comparable with studies by Sravani P et al⁷ Jyoti P et al.⁸

In the current study, maximum number of patients are in the age group of 21–30 years which was similar to the study done by Smita P. Bhide et al⁹ where maximum cases were recorded in the age group of 11-30 years.

In the present study, cervical lymph nodes were the most common group of lymph nodes involved (67%). Similar findings were observed by other authors.

Table 1: Comparison of Present Study with Other Studies

	Cervical Lymph node	Supraclavicular Lymph node	Axillary Lymph node	Inguinal Lymph node
Present	67%	8%	4%	8%
Uma et al ¹⁰	62.9%	2.22%	18.5%	8.88%
Shilpa et al ¹¹	39.37%	6.25%	5%	3.12%

This present study shows that majority of the cases are of tuberculous etiology followed by reactive lymphadenopathy. Tuberculous lymphadenitis usually is the most common form of extra pulmonary tuberculosis. According to WHO tuberculosis still kills three million people every year in underdeveloped countries.¹¹ Tuberculosis still ravage in India even 100 years after the discovery of tubercle bacillus, with an annual incidence of 100/100,000 and a prevalence four times the incidence¹² Most often it involves the cervical group of lymph nodes attributed to the rich lymphatic supply of the region. In India, Mycobacterium tuberculosis infection is most common compared to other granulomatous diseases. Hence the presence of granulomas is highly suggestive of tuberculosis. Caseating granulomas are formed by infections, such as tuberculosis and fungal infections. Noncaseating

granulomas may be formed by an inflammatory condition (e.g., sarcoidosis and Crohn disease), vasculitis, and exposure to foreign objects. So, other causes of granulomas should be

ruled out before diagnosing tuberculosis. In our study Tuberculosis is the main cause of lymphadenopathy which is comparable to other studies.

Table 2: Comparison of various lesions with other studies

	Non- Neoplastic %	Neoplastic %	Most Common lesion	No. of cases %
Ahmad et al ¹³	89	11	Tuberculous Lymphadenitis	50
Chawla et al. ¹⁴	79.7	17	Reactive lymphadenitis	41.7
Qadri et al. ¹⁵	54.9	45	Reactive lymphadenitis	39.4
Priya R et al. ¹⁶	75.1	21.8	Reactive lymphadenitis	39.64
Jyoti P et al. ⁸	88.02	11.75	Tuberculous Lymphadenitis	55.55
Present Study	86.96	13.04	Tuberculous Lymphadenitis	31.03

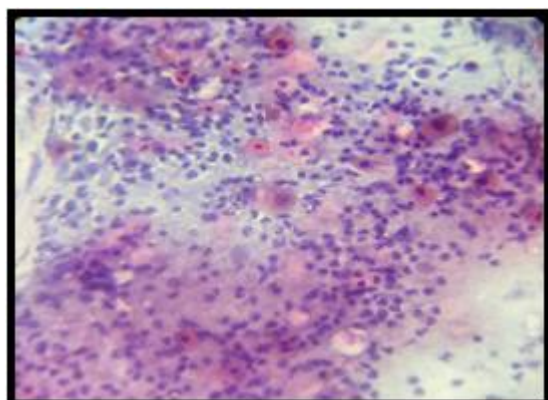
Reactive hyperplasia is the reaction of lymphoid tissue to intrinsic or environmental antigens. It is a common form of lymphadenitis due to a variety of causes ranging from bacterial, viral, fungal or non-specific etiology and a frequent finding in both children and adults and in the vast majority of cases corresponds to reactive changes that disappear spontaneously within several weeks.

Gojiya P et al found Acute Suppurative lesion in (14%) cases Shakya G et al ²¹ found acute suppurative lesion in 12.4% cases In the present study Suppurative lesion was found in 25% of cases.,out of which 7 % cases are of acute Suppurative lymphadenitis,rest 18% cases are of chronic non-specific lymphadenopathy. In present study, Hodgkin’s lymphoma was diagnosed in (1%) cases and Non-hodgkin’s lymphoma was also present in 1% cases. Both the cases were from cervical lymph nodes.

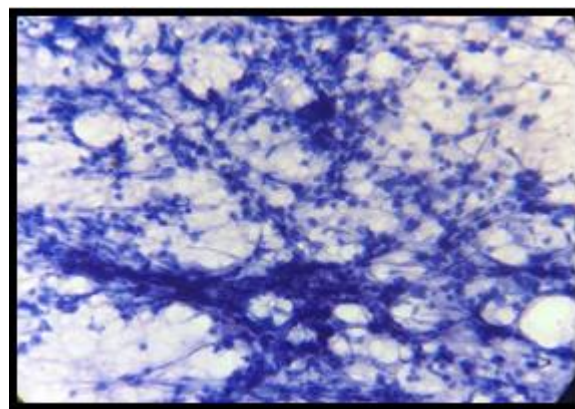
According to study done by Ahmad et al.¹³, Ameya Buli et al.¹⁹, Arul P et al ²⁰, Jyoti P et al.⁸ secondary malignancies were more in comparison to primary malignancies which is similar to our present study where malignant lymphadenopathy was seen in 13% cases among which secondary malignancy (11%) was more common than primary malignancy (2%)

Table 3: Comparison of various Lymphadenopathies

Lesions	Arun kumar et al ¹⁷	Serrano Egea A ¹⁸	Present study
Benign	67.2%	58.7%	86.96 %
Metastatic	10%	22.6%	11.34 %
Lymphoma	1.8%	9%	1.7 %



Necrotizing squamous cell carcinoma (40x)



Non-Hodgkin lymphoma (40x)

5. Conclusion

Fine needle aspiration cytology serves as a potent and accurate diagnostic tool for patients presenting with lymphadenopathy due to tuberculosis. FNAC in conjunction with radiology is a cost effective method. If the clinically suspected disease do not correlates with FNAC findings then appropriate diagnostic work-up for the disease is performed. Benign and malignant diseases are easily diagnosed by this simple diagnostic procedure. If FNAC findings or results are negative it does not rule out malignancy. In cases of discrepancy contact with the referring doctor should be made. The present study demonstrates that FNAC is a rapid, safe and valuable tool in the diagnosis of all lymphadenopathies. The accuracy and success of FNAC depends mostly on some elementary factors like proper history taking, thorough clinical palpation, adequate sampling and careful viewing of slides. Increasing use of Immunocytochemistry has improved the potential to make precise specific diagnosis.

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Ethical Clearance: All procedures performed were in accordance with the ethical standards of the institution.

Conflicts of Interest: Nil

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