

## Assessment of enlarged lymph nodes by aspiration cytology- An experience with 222 cases

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### Abstract

**Introduction:** Lymphadenopathy is the commonest cause of multitude of aetiologies ranging from innocuous reactive lesion to lymph proliferative disorders and metastatic malignancy. FNAC (Fine needle aspiration cytology) is simple, quick, inexpensive method for investigating the cause of lymphadenopathy in developing countries like India. This study is carried out to evaluate the role of FNAC in lymphadenopathies and to assess the various aetiologies of it.

**Materials and Method:** A study was carried out during a period of one year from July 2015 to July 2016, at Government Medical College, Latur. FNAC of 222 patients presenting with lymphadenopathy was done, and were analysed.

**Results:** Maximum patients were diagnosed with Reactive Lymphadenopathy(46.85%), followed by Tuberculous Lymphadenopathy(24.32%), Granulomatous Inflammation(9.91%), Metastatic Lymphadenopathy(9.46%), Suppurative Lymphadenopathy(6.76%) and Primary neoplasm(2.7%).

**Conclusion:** FNAC is most reliable, preliminary screening test to differentiate neoplastic from non-neoplastic cause of lymphadenopathy and therefore preventing unnecessary surgery.

**Keywords:** Lymphadenopathy, FNAC, Reactive, Tuberculous

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### Introduction

Lymph nodes are most widely distributed and major component of immune system. Lymphadenopathy is commonly encountered problem which has multitude of causes. The commonest cause of peripheral lymphadenopathy is non-specific reactive hyperplasia in which the underlying cause is infrequently found.<sup>(1)</sup> The management of various causes of lymphadenopathy is very different and hence the determination of the etiology is of paramount importance. FNAC is a reliable and an inexpensive method, and suitable in the developing countries like India for investigating of any accessible superficial swelling, especially lymphadenopathies.<sup>(2)</sup> Overall, infective conditions (reactive and tuberculous) are responsible for the majority of lesions. M. tuberculosis is the most common cause of granulomatous lymphadenitis in India.<sup>(3)</sup> Hence FNAC gives the opportunity to the earliest, accurate diagnosis of tuberculosis with the help of ZN stain done on the same FNA slides.

### Materials and Method

This study was carried out over a period of one year (July 2015 to July 2016) at Government Medical College, Latur, a tertiary care institute in Maharashtra. In each studied case, a brief clinical history was carried out including age, sex, size, and site of enlarged nodes. FNAC was performed after taking consent and explaining the procedure to the patient. A total of 222 patients with lymphadenopathy were subjected to

FNAC using 22 G needle and a 10ml disposable syringe. The slides were wet fixed with alcohol and stained with Papanicolaou stain. FNAC aspirates were also stained with ZN stain.

### Results

Among the 222 studied cases with lymphadenopathy that had undergone FNAC, 110 cases (49.55%) were females and 112 cases (50.45%) were males. The age at presentation ranged from 1 year to 80 years. We received the maximum number of patients (23.87%) in the 21-30 years age group (Table 1).

**Table 1: Age wise distribution of patients with lymphadenopathy**

Age Range	No. of patients
0-10 yrs	35
11-20yrs	46
21-30yrs	53
31-40yrs	31
41-50yrs	19
51-60yrs	8
61-70yrs	23
71-80yrs	7

The commonest site of the involved lymph nodes was the cervical lymph node constituting 142 (63.96%) cases followed by involvement of the submandibular lymph nodes in 25 cases (11.26%). Multiple lymph nodes were involved in only 3 cases.

104 (46.85%) lymphadenopathies were showing reactive hyperplasia with unknown cause. Microscopically smears showed the polymorphous lymphoid population in various stages of maturation with predominance of mature lymphocytes.

This was followed in frequency by tubercular; 54 cases (24.32%) and Chronic granulomatous; 22 cases (9.91%) lymphadenopathies. Tubercular lymph node studied showed well or ill-defined granulomas with caseous necrosis. ZN staining was done in all 54 cases of tuberculous lesions and showed positivity for acid fast bacilli in 43 cases. Remaining 11 cases were given impression of tuberculous lesion, as microscopic examination shows abundant caseation and clinical history of the patient correlates with tuberculosis. Acute suppurative lesions constituted 6.76%.

Malignancy was diagnosed in 27 (12.16%) cases. Of the 27 malignant lesions, 21 cases (9.46%) were of metastatic lesions and only 6 (2.70%) were lymphomas. The most common metastatic deposits was from primary of squamous cell carcinoma (9cases), followed by adenocarcinoma (4cases). 3 cases of metastatic lesions were from melanoma and 2 from testicular malignancy. In remaining 3 cases primary can't be located. Among the lymphomas all are non-Hodgkin's lymphoma.

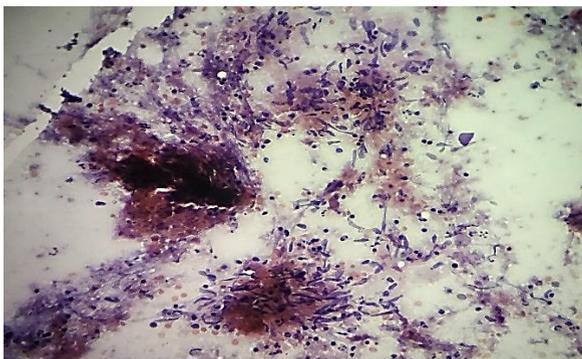
The aspirates from lymph nodes were diagnosed as reactive lymphadenitis based on the presence of polymorphous population of lymphoid cells, in all stages of maturation and tingible body macrophages.

The criteria by which a diagnosis of tuberculous lymphadenitis was established included epithelioid cell granuloma and caseous necrosis with or without presence of giant cells.

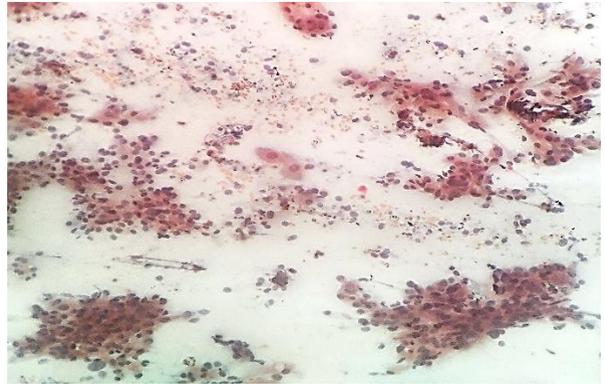
Granulomatous lymphadenitis cases showed epithelioid cell granuloma with absence of necrosis, with or without giant cells.

Acute suppurative lymphadenitis cases microscopically showed predominant polymorphonuclear leukocytes and necrotic debris.

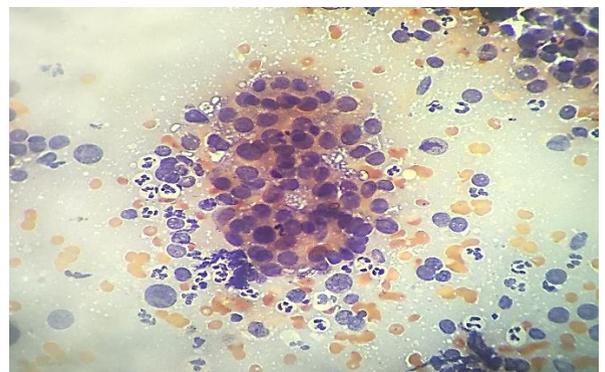
Most of the non-Hodgkin's lymphoma cases showed high cellularity and monomorphous population of lymphoid cells.



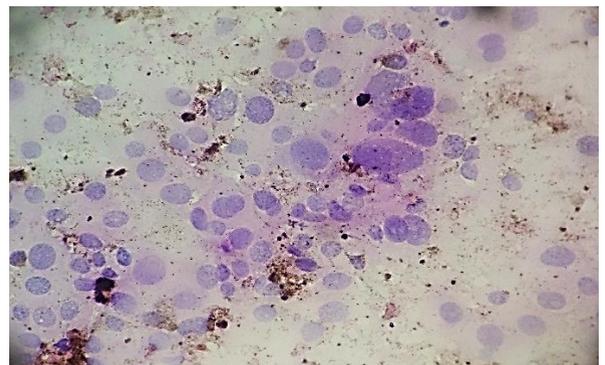
**Fig. 1: Epithelioid granuloma with caseous necrosis**



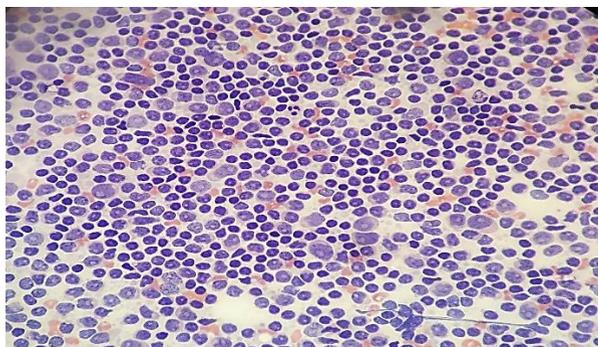
**Fig. 2: Metastatic squamous cell carcinoma showing clusters of and singly scattered malignant squamous cells**



**Fig. 3: Metastatic adenocarcinoma showing tumor cells arranged in glandular pattern with vacuolated cytoplasm**



**Fig. 4: Metastatic malignant melanoma with highly pleomorphic cells and melanin pigment**



**Fig. 5: Non-Hodgkin's lymphoma showing many prolymphocytes with prominent nucleoli (blood smear examination of this patient showed feature of CLL)**

### Discussion

Lymphadenopathy is the major clinical problem, requiring prompt and accurate diagnosis, so that proper treatment protocol can be started as early as possible. In developing countries like India, where facilities for biopsy are not readily available, FNAC is easiest, accurate, inexpensive and less invasive method for quick diagnosis of lymphadenopathy. Hence, thereby it reduces the need for hospitalization, anaesthesia and unnecessary surgery for defining the cause of enlarged nodes. Herein we have presented our experience with 222 cases of lymphadenopathy over a period of one year.

In our study, male to female ratio was 1:0.9, with slight male preponderance, which was also seen in the study by Hirachand S et al.<sup>(4)</sup>

Enlarged lymph nodes are found in any age group patients, ranging from pediatric to advanced age. Our youngest patient was 3 months old and oldest was 80 years of age. Maximum number of cases, i.e., 53(23.87%) were reported in third decade of life whereas second highest number of cases were seen in the second decade. Similarly, Chawla N et al.<sup>(5)</sup> found the maximum patients in the third decade of life. The high incidence of lymphadenopathy in the younger age group may be due to the predominance of inflammatory lesions in the present study. Inflammatory lesions like non-specific reactive hyperplasia and tuberculosis are more common in younger age group. Second peak of lymphadenopathy was observed in the sixth decade, this may be due to higher rate of malignant lesions in the older age group.

Cervical lymph node was the commonest site of involvement, which is similar to the observations made by other workers.<sup>(6,7)</sup> Cervical lymph node enlargement is seen in the infections of oral cavity, nose, ears and upper respiratory tract infections. In our study, there is

predominance of inflammatory lesions which may be cause of cervical lymph node enlargement in most cases.

Out of total 222 cases, 195(87.84%) lesions were benign and 27(12.16%) lesions were malignant (Table 2: Pattern of cytological diagnoses in present and other studies). These findings correlate well with the results reported by Hirachand S et al.<sup>(4)</sup> Incidences of malignant lesions were ranged from 4.8% to 22.24% in various studies. However Steel et al.<sup>(8)</sup> reported 58.6% malignant and 33.5% benign lesions in their studies. These results were attributable to the more incidences of malignant lesions over benign lesions, in western countries. In our study, bulk of lesions was contributed by inflammatory and tubercular lesions which are less common in western countries.

In our study, reactive lymphadenopathy was the most frequent diagnosis with 104/222 cases (46.85%). It was also the most frequent diagnosis in other studies and its incidence has been seen to range from 34.36% to 50.4%.<sup>(4,9,10,11)</sup> This result contrasted with the findings of Fatima S et al, Khajuria R et al.<sup>(12,13)</sup> where tuberculous lesions were the most common cause of lymphadenopathy.

The second most frequent diagnosis in this study was the tuberculous lymphadenitis (24.32%). The incidence of tuberculous lymphadenitis was observed to range from 22.4% to 28% in other studies.<sup>(4,9,10)</sup>

Among the neoplastic lesions(12.16%), metastatic deposits(9.46%) in the lymph nodes outnumbered the lymphoma(2.7%) cases, which correlated well with findings of other workers.<sup>(4,9,10,11)</sup>

In our study, the cervical group was the most common to be involved by metastasis (7/21 cases about one third cases). This may be due to the metastasis of carcinomas of oral cavity (tongue, buccal mucosa), pharynx, oesophagus and larynx, which are very common in India.

In our study, squamous cell carcinoma (42.86%) was the most common primary for metastatic deposits. These findings were similar to the studies by other groups.<sup>(5)</sup> The high incidence of squamous cell carcinoma may be due to the bad habit of smoking and tobacco chewing in this area. Metastatic deposits from the adenocarcinoma were seen in 4 cases and from malignant melanoma in 3 cases. In 3 cases primary can't be located by cytomorphological features or history of the patient.

In our study, 2.7% cases were of lymphoma and this is correlated well with study by Shakya G et al<sup>(9)</sup> and Perigela H.<sup>(10)</sup> Among lymphoma cases all were of non-Hodgkin lymphoma.

**Table 2: Pattern of cytological diagnoses in present and other studies**

	<b>Present study</b>	<b>Shakya G et al<sup>(9)</sup></b>	<b>Hirachand S et al<sup>(4)</sup></b>	<b>Perigela H<sup>(10)</sup></b>	<b>Mohanty R et al<sup>(11)</sup></b>
Reactive	46.85%	50.4%	41.55%	50.4%	34.36%
Tuberculosis	24.32%	22.4%	28%	22.4%	7.88%
Granulomatous	9.91%	10%	9.2%	10%	20.28%
Suppurative	6.76%	12.4%	3%	12.4%	11.26%
Metastatic	9.46%	2.8%	12.3%	2.8%	18.3%
Lymphoma	2.70%	2%	6%	2%	3.94%

The current study highlights the usefulness of FNAC that helps to arrive at early diagnosis in the cases presenting with lymphadenopathy. This is also helpful to plan the early interventions in case of malignant lesions. FNAC is not only important in neoplastic conditions but also to diagnose inflammatory, infectious and degenerative conditions. Materials aspirated can be subjected to ZN and PAS staining, to look for acid fast bacilli and fungal infections, respectively. In recent years, FNAC of lymph node lesions is supplemented by ancillary studies which are an increasingly accepted approach for primary diagnosis of reactive lymphoid lesions and lymphomas.

### Conclusion

FNAC is the very simple, least invasive and important screening method for the diagnosis of lymphadenopathies. FNAC helps in determining the aetiology of lymph node enlargement as reactive, infective/inflammatory, lymphoma, metastatic etc. It serves as a rapid, highly sensitive and cheap method for diagnosing tuberculous lymphadenopathies in developing countries like India. FNAC helps not only to pick up the unsuspected metastatic deposits but also provides the clue regarding the site of primary. In majority of patients, FNAC alone is enough for diagnosis and also helps to avoid the surgical procedures like biopsy. Thus primary aim of the FNAC is to help the clinician in arriving at an early diagnosis in patients with lymphadenopathies.

### References

- Miliauskas J. Lymph nodes. Orell and Sterrett's Fine needle aspiration cytology, 5<sup>th</sup> ed. Gurgaon: Elsevier;2012.p.77-117.
- Kumar H, Chandanwale SS, Gore CR, Buch AC, Satav VH, Pagaro PM. Role of fine needle aspiration cytology in assessment of cervical lymphadenopathy. Med J DY Patil Univ 2013;6:400-4.
- Dandapat MC, Mishra BM, Dash SP, Kar PK. Peripheral lymph node tuberculosis: A review of 80 cases. Br J Surg 1990;77:911-12.
- Hirachand S, Lakhey M, Akhter J, Thapa B . Evaluation of fine needle aspiration cytology of lymph nodes in Kathmandu Medical College, Teaching hospital. Kathmandu Univ Med J (KUMJ). 2009 Apr-Jun;7(26):139-42.
- Chawla N, Kishore S, Kudesia S. FNAC of Lymph Node Disorders. Indian Med Gazette 2012;312-315.
- Pandey P, Dixit A, Mahajan NC. The diagnostic value of FNAC in assessment of superficial palpable lymph nodes: a study of 395 cases. Al Ameen J Med Sci 2013;6(4):320-7.
- Ahmad SS, Akhtar S, Akhtar K, Naseen S, Mansoor T. Study of fine needle aspiration cytology in lymphadenopathy with special reference to acid fast staining in cases of tuberculosis. J K Sci 2005;7(1):1-4.
- Steel BL, Schwartz MR, Ramzy I. Fine needle aspiration biopsy in the diagnosis of lymphadenopathy in 1,103 patients: Role, limitations, and analysis of diagnostic pitfalls. Acta Cytol. 1995;39(1):76-81.
- Shakya G, Malla S, Shakya KN, Shrestha R. A Study of FNAC of Cervical Lymph Nodes. J Nepal Health Res Counc 2009 Apr;7(14):1-5.
- Perigela H. A Study of Fnac of Cervical Lymph Nodes in Tertiary Hospital, Kurnool. Ind J Appl Research 2015;5(10):92-93.
- Mohanty R, Wilkinson A. Utility of Fine Needle Aspiration Cytology of Lymph nodes. IOSR Journal of Dental and Medical Sciences 2013;8(5):13-18.
- Fatima S, Arshad S, Ahmed Z, Hasan SH. Spectrum of cytological findings in patients with neck lymphadenopathy-experience in a tertiary care hospital in Pakistan. Asian Pac J Cancer Prev 2011;12(7):1873-5.
- Khajuria R, Goswami KC, Singh K, Dubey VK. Pattern of Lymphadenopathy on Fine Needle Aspiration Cytology in Jammu. J K Sci 2006;8(3):157-9.