

## Cytomorphological Spectrum of Enlarged Lymph Nodes at Tertiary Care Centre: A Study of 205 Cases

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### Abstract:

**Introduction:** Lymph node enlargement is frequent presentation in all age groups with a wide spectrum of diseases, ranging from infections to malignancy. Therefore, management of cases depends on lymph node pathology, which can be studied by collecting material through fine needle aspiration method that can be used as an outpatient procedure.

**Objectives of Study:** To study the cytomorphological spectrum of enlarged lymph nodes to aid in diagnosis and treatment.

**Material and Methods:** A prospective study undertaken on 205 patients who had presented with lymph node enlargement at the Department of Pathology for a period of 6 months.

**Results:** Most common lesion observed in our study was reactive lymphadenitis, followed by granulomatous lymphadenitis, metastatic malignancies, necrotizing lymphadenitis, acute suppurative lymphadenitis, and lymphomas respectively.

**Conclusion:** Lymphadenopathy is most commonly superficial, palpable, and therefore easily accessible to sampling by palpation or ultrasound guided FNA, which usually results in a fast, reliable, and relatively inexpensive diagnosis. In the current study, reactive lymphadenitis was recorded as the most common presentation of lymphadenopathy in the cervical region. It not only confirms the presence of metastatic diseases but also, in most cases, gives the clue regarding the origin of the primary tumour.

**Keywords:** Fine-needle Aspiration Cytology; Lymph Node; Lymphadenitis; Metastasis, Lymphomas.

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### Introduction

Enlargement of the lymph node known as lymphadenopathy and inflammation of the lymph node known as lymphadenitis. [1] Lymphadenopathy is one of the commonest clinical presentations of all age groups attending out-patient departments (OPD). The etiology can vary from an inflammatory process to a malignant condition. Most common tool used in the present day is Fine needle aspiration cytology. FNAC is used routinely as a first line of investigation in the evaluation of patients with lymphadenopathy. [2] It is a simple, safe, reliable, rapid and inexpensive method of establishing the diagnosis of lesions and masses in various sites and organs. [3] Lymph node aspiration is of great value for the diagnosis of lymphadenitis, lymphomas and metastatic carcinoma. Lymph nodes aspirates are usually cellular and interpretation from them varies from clear diagnosis to a firm request for histopathology. [4]

### Objectives of study

To study the Cytomorphological spectrum of enlarged Lymph Nodes to aid in diagnosis and treatment.

### Materials and Methods

This is a prospective study and a total of patients including all age groups and both sexes presenting with palpable or deep lymph nodes in FNAC clinic of our institute over a period of 6 months are included in our study. FNAC was conducted with 24 Gauge disposable needles attached to 5 cc syringes. Smears were fixed by air drying and in 95% ethyl alcohol and stained with field stain and papanicolaou stain. Field stain was done on air dried smears. Ziehl-Neelsen(ZN) staining was done wherever required.

### Place of Study

Cytology section, Department of pathology, Jhalawar Medical College, Jhalawar.

**Sample size**

205 cases.

**Inclusion Criteria**

1. All age group patients with enlarged lymph nodes.
2. Lymph nodes of any sites and any size are included.

**Exclusion Criteria**

1. Inadequate sampling.

**Statistical Analysis**

Retrieved data from the cytology records, cytology section of dept. of Pathology which was tabulated according to age, sex, site, and different categories were expressed in percentage.

**Results****Table-1 Gender wise distribution of patients (n = 205)**

Gender	No. of Cases	Percentage
Male	97	47.32
Female	108	52.68

In the present prospective study total, no of 205 patients with palpable lymph nodes were studied among them 108 (52.68%) were females & 97 (47.32%) were males. Slight female preponderance was seen with M: F ratio of 0.9:1. (Table-1)

**Table 2: Age wise distribution of patients (n=205)**

Age Group (Years)	No. of Cases	Percentage
0-20	81	39.51
21-40	72	35.12
41-60	31	15.12
61-80	21	10.25

The age of patients ranges from 1 year to 80 years among 205 cases maximum cases were recorded in the age group of less than 20 years i.e. 81 (39.51%) cases followed by 21-40 years of age i.e. 72 (35.12%) cases. (Table -2)

**Table 3: Sites of lymph node involvement (n=205)**

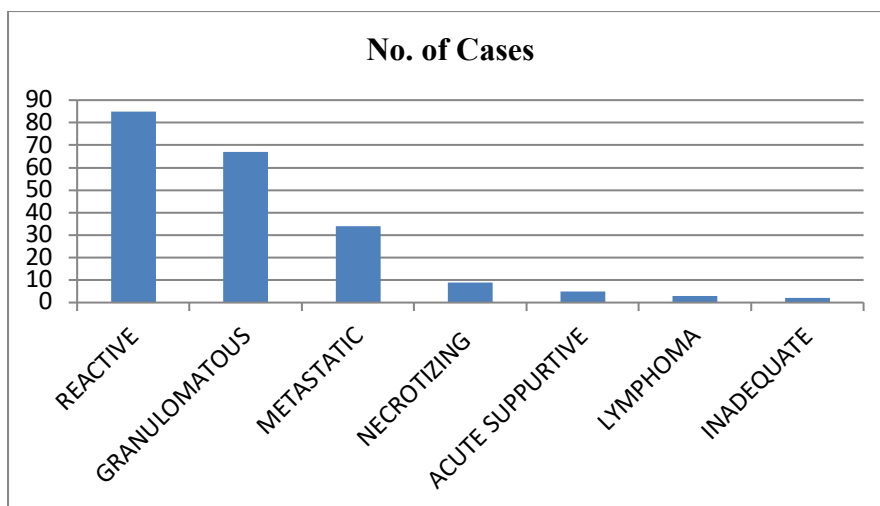
Site	No. of Cases	Percentage
Cervical	148	72.20
Submandibular	21	10.24
Supraclavicular	12	5.85
Post-Auricular	6	2.93
Submental	5	2.44
Inguinal	4	1.95
Axillary	4	1.95
Occipital	3	1.46
Pre-Auricular	2	0.98

In our study, cervical lymph nodes were the commonest group of affected lymph nodes comprising of 148 (72.20%) cases followed by the submandibular group of lymph nodes 21 (10.24%), supraclavicular lymph nodes 12 (5.85%), post-

auricular lymph nodes 6 (2.93%), sub mental lymph nodes 5 (2.44%), inguinal lymph nodes 4 (1.95%), axillary lymph nodes 4 (1.95%), occipital lymph nodes 3 (1.46%) and pre-auricular lymph nodes 2 (0.98%) cases (Table- 3).

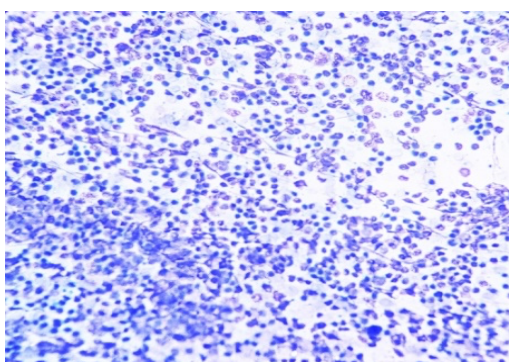
**Table 4: Cytological diagnosis of lymph node aspiration (n=205)**

Type of Lesions	No. of Cases	Percentage
Reactive	85	41.46
Granulomatous	67	32.68
Metastatic	34	16.59
Necrotizing Lymphadenitis	9	4.39
Suppurative Lesion	5	2.44
Lymphoma	3	1.46
Inadequate	2	0.98

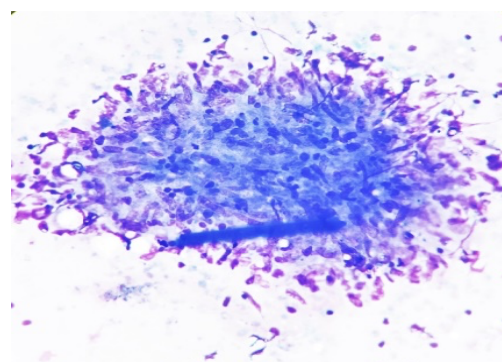


The frequent cause of lymphadenopathy was found to be reactive lymphadenitis in 85 (41.46%) followed by the next most frequent diagnosis as granulomatous lymphadenitis 67 (32.68%), metastatic lesions from other primary tumors were

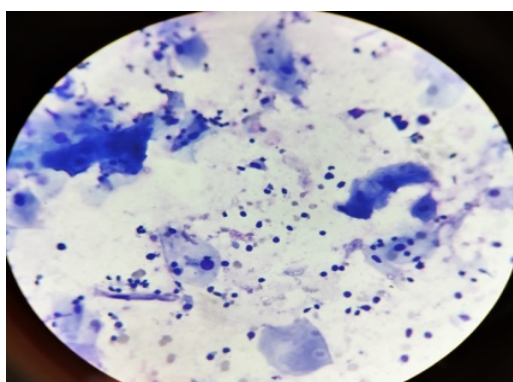
seen in 34 (16.59%) cases, necrotizing lymphadenitis in 9 (4.39%) cases, acute suppurative lymphadenitis in 5 (2.44%) cases and primary lymphoma in 3 (1.46%) cases. (Table-4)



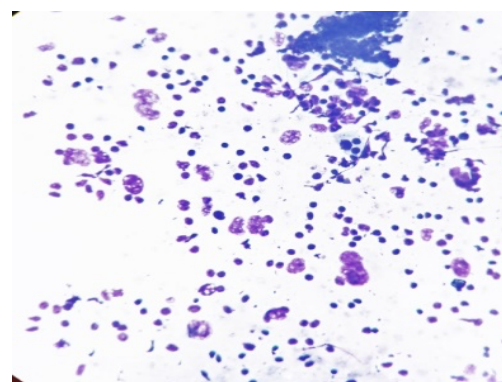
40X: REACTIVE LYMPHADENITIS



40X: GRANULOMATOUS LYMPHADENITIS



40X: METASTATIC SQUAMOUS CELL CARCINOMA



40X: HODGKIN'S LYMPHOMA

**Discussion**

Lymph nodes are an integral component of the immune system and lymphadenopathy are a common presentation in the clinical practice. Lymph nodes which are enlarged always accessible for FNAC. So, there is great importance of FNAC

in the diagnosis of lymphadenopathies. FNAC is relatively a cheap procedure, simple to perform and practically has almost no complications. A round, firm, well defined lymph node or a lymph node that is fixed to the skin, deep anatomic planes, or other lymph nodes should be considered for FNA

regardless of location, patient age, or symptoms. Viral, bacterial, or mycobacterial infections are the most common causes of benign regional lymphadenopathy. [5]

In the present study maximum patients were in the age group of 0-20 years 81 (39.51%) similar to the observation of Gupta et al (52.26%).[6] The lesions of lymph nodes were seen to be indifferent age group i.e. in our study the youngest patient was 1 year old with the oldest one of 78 years of age which is at par with the study carried out by Tilak V et al.[7] The overall lesion was slightly common in females 108(52.68%) in comparison to males 97(47.32%) showing a female predominance a finding compared with the study conducted by Patro et al[8] and Smitha P Bhide et al.[9]

The present study revealed that the common group of lymph nodes involved were the cervical group of lymph nodes 148 (72.20%) compared with other study done by Pavithra et al (85.27%)[10] & Kochhar et al (80.22%)[11], Uma et al [12] where the cervical node involved in (62.9%). The majority of cases were due to benign lesions 168 (81.95%) which correlates with the study conducted earlier in which 86.4% of cases were benign lesions. [13]

In our study, the most common lesion observed was reactive lymphadenitis which was seen in 85

cases (41.46%). The study done by Vimal s et al [4] had the similar results and the studies done by Malakar et al [3], Patel S et al[14], Shilpa et al[15] and Kochher et al[11] had the different results. Reactive hyperplasia is a common form of lymphadenitis due to a variety of causes ranging from bacterial, viral, fungal or non-specific etiology.

Granulomatous lymphadenitis comprising 67 (32.68%) of the lesion where epithelioid granuloma with and without necrosis was seen. Among some of them were found AFB positive & few AFB negative on Z-N stain. Granulomatous lymphadenitis cases with necrosis and AFB positivity 31 (out of 67) were possibly of tubercular origin. Granulomatous lymphadenitis cases with necrosis & found AFB negative 20 (out of 67), and without necrosis 16 (out of 67) were advised for follow up and further laboratory investigations to rule out/in tubercular origin.

Necrotizing lymphadenitis comprising 9 (4.39%) of the lesion which showed only non-caseating necrosis similar to the study done by Duraiswami et al [16] 3 (1.1%) cases and Sharma et al [17] 18 (4.29%) cases. Acute suppurative lesions were observed in 5 (2.44%) cases in our study which is in accordance with studies done by Kochhar et al. [11]

A total of 34 cases (17.7%) were diagnosed as metastatic deposits in the current study. A marked male preponderance was noted with a maximum number of cases recorded in the cervical group of lymph nodes followed by axillary lymph nodes. Maximum cases of metastatic deposits were those of squamous cell carcinoma which showed cluster of polygonal cells with hyperchromatic nuclei and showing pleomorphism against background of lymphoid cells followed by infiltrating ductal carcinoma of breast and adenocarcinoma. This pattern of high number of metastatic deposits of squamous cell carcinoma followed by adenocarcinomas deposits were also observed in other studies.[18],[19],[20],[21] In this study, a total of 3 cases (14.6%) of lymphoma in which 2 were diagnosed as Non-Hodgkin Lymphoma (NHL) and 1 was diagnosed as Hodgkin's Lymphoma.

### Conclusion

FNAC is a simple, inexpensive, relatively painless, rapid, repeatable and reliable method of investigation for lymphadenopathy. FNAC is the most accurate and important primary diagnostic tool having minimal complication in a clinical setting for diagnosing a spectrum of diseases ranging from non-neoplastic to neoplastic lesions, especially in the lymph nodes aspirates wherein our study the most common cause for enlarged lymph nodes found to be reactive lymphadenitis and granulomatous lymphadenitis followed by malignant lesion of metastatic one. FNAC facilities should be developed in all evolving health care centres to provide quick diagnosis & early treatment.

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