



Cytomorphological Evaluation of Enlarged Lymph Node: A Tertiary Hospital Based Study

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Abstract

Background & Aims: Lymphadenopathy is one of the commonly encountered clinical presentation and the early targets for aspiration, therefore providing an important clue towards the diagnosis to find out the underlying etiology.

Materials & Method: The present cross-sectional prospective study was conducted in the tertiary care hospital in the North India among 201 lymphadenopathy patients on whom fine needle aspiration cytology (FNAC) was performed after the informed consent.

Results: In the current study, majority of the patients were male (52.73%) with male-to female ratio of 1.1:1. The age group ranged from 1 to >80 years with majority of the patients in the age group of 21 to 30 years followed by 0 to 10 years and least in >80 years. Non-neoplastic cases were 121, neoplastic cases were 67, and inadequate were 13 of the total 201 cases.

Conclusion: FNAC of the enlarged lymph node yields an important diagnostic clue to arrive the final diagnosis.

Keywords: Lymphadenopathy, Fine Needle Aspiration Cytology (FNAC), Neoplastic, Non-neoplastic

Received 23 June 2021; accepted for publication 10 February 2022

Introduction

Lymph node is one of the major anatomic components of the immune system (1). One of the commonly encountered clinical presentations of it is lymphadenopathy, which in turn has multiple causes (1). Lymphadenopathy (LAP) is defined as an abnormality in size and character of lymph nodes, caused by invasion or propagation of either inflammatory or neoplastic cells into the nodes (2). Enlarged lymph nodes are the easy target for the fine-needle aspiration, which in turn

provides an important diagnostic clue to the underlying etiology. Various lesions of lymph nodes which are diagnosed by fine needle aspiration (FNA) include non-neoplastic lesions (reactive lymphadenopathy, granulomatous lymphadenitis like tuberculosis, sarcoidosis), neoplastic lesions (lymphoma, non-hodgkins lymphoma and hodgkins lymphoma, and metastatic deposits), and other rare lesions like sinus histiocytosis, silicon adenopathy, dermatopathic lymphadenopathy, benign epithelial inclusions, and toxoplasmosis (3).

Tuberculosis is the commonest cause of lymphadenopathy in the developing countries like India, and should be considered in every case of granulomatous lymphadenopathy unless proven otherwise (4). Being the simplest, least invasive and cost-effective method, FNA is used as a triage to distinguish between the causes of LAP with a high or low level of suspicion of significant disease. As FNA is the simple, safe, quick, and minimal invasive procedure, it also reduces the need of surgical intervention in the individuals who are not fit for surgery.

The use of FNAC in the diagnosis of LAP has become an acceptable and widely practiced minimally invasive procedure which is safe, rapid, relatively pain-free and highly cost-effective as well as accurate. Furthermore, the aspirated sample can be utilized for additional studies such as Immunomarkers and histochemical studies⁵.

The present study was conducted with the aim to study the different cytomorphological features associated with various LAPs and also to study the utility of FNAC in diagnosing the cause of LAPs.

Material & Method

The present is a prospective study in which a total of 201 patients were included. After explaining the procedure and obtaining the informed consent from the patient, FNAC of lymph nodes was performed. Patients

were placed in the comfortable position in the couch depending on the location of the lesion, and lymph nodes were examined and palpated properly. The size of the swelling ranged from 0.1 cm to few centimeters. Some of the swelling were single, some were multiple, and some others were matted. Under all aseptic precautions, a 23G needle was introduced into the mass lesions and aspirates were obtained by to and fro movement of the needle within the lesion. Smears were made immediately from the aspirate and stained by Giemsa and Papanicolaou (PAP) stains, using standard methods. Records of all the patients were reviewed for pertinent clinical history, details of other investigations performed. Relevant clinical history and details were noted and correlated accordingly.

Results

A total of 201 cases were included in our study. Of these 106 (52.73%) were male and 95 (47.26%) were females as depicted in Table 1 with M:F ratio.

The age group ranged from 1 to >80 years. Of these, majority of the patients were in the age group of 21-30 years followed by the age group of 0 -10 years whereas least were in the age of >80 years. Among the male patients, majority were in the age group of 0-10 followed by 51-60 years whereas majority of the female patients were in the age group of 21-30 years followed by 31-40 years (Table 1).

Table 1: Depicting age and sex wise distribution of lymph node lesions

Age (in years)	Male	Female	Total
0-10	24	10	34
11-20	15	12	27
21-30	17	27	44
31-40	07	21	28
41-50	07	07	14
51-60	22	10	32
61-70	10	05	15
71-80	03	03	06
>80	01	00	01
Total	106	95	201

Some of the lymph nodes were single, some were multiple whereas others were matted and the size of the lesions ranged from 0.1 cm to fewcentimeters. The

cervical lymph node was the most common site involved in the study (n=127) followed by the supraclavicular lymph node whereas suprasternal was the least involved lymph node ([Table 2](#)).

Table 2: Depicting the sites of lymph node aspirated

Site	Male	Female	Total
Supraclavicular	17	20	37
Submandibular	02	05	07
Cervical	70	57	127
Inguinal	11	02	13
Suprasternal	01	00	01
Axillary	03	09	12
Preauricular	02	02	04
Total	106	95	201

Out of the total 201 cases, non-neoplastic cases were 121, neoplastic were 67 and inadequate smears were 13 of the total cases ([Table 3](#)).

Table 3: Depicting the distribution of lymph node lesions

Type of lesion	Male	Female	Total
Non neoplastic	51	70	121
Neoplastic	45	22	67
Inadequate	10	03	13
Total	106	95	201

Of the total of 121 non-neoplastic cases, 58 were reported as reactive lymphadenitis, 30 cases were of tubercular lymphadenitis, 26 were of granulomatous lymphadenitis and 7 cases were of abscess ([Table 4](#)).

Table 4: Depicting the distribution of non neoplastic lesions

Type of non neoplastic lesion	Male	Female	Total
Tubercular lymphadenitis	10	20	30
Granulomatous lymphadenitis	08	18	26
Reactive Lymph node	33	25	58
Abscess	00	07	07
Total	51	70	121

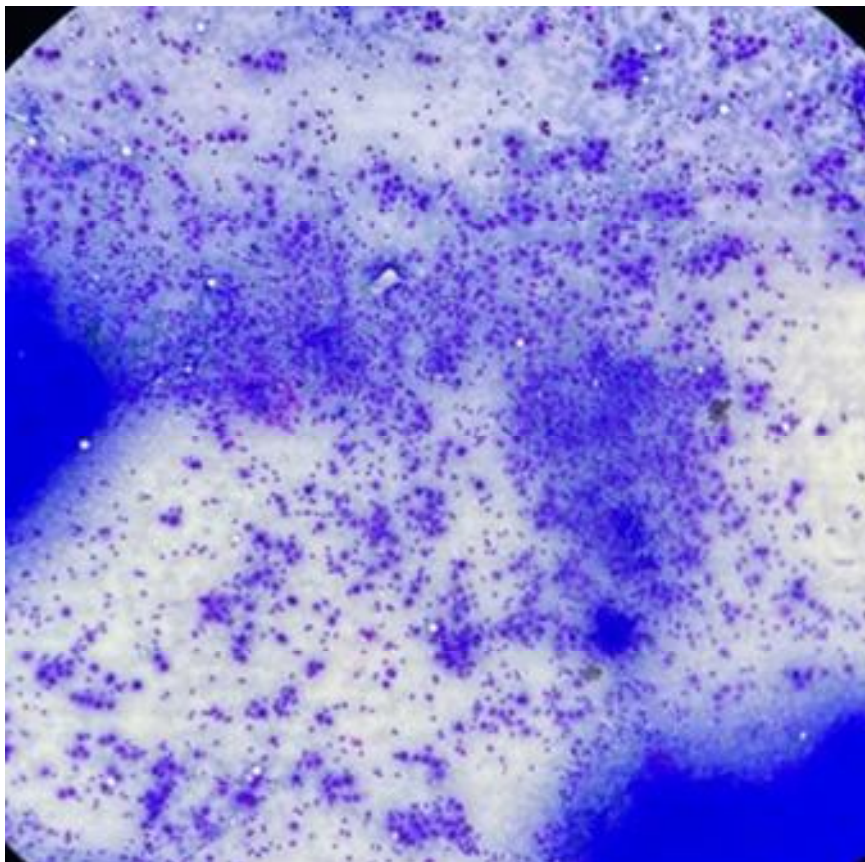
Out of the total 67 neoplastic cases, 50 were metastatic, 16 were of non-hodgkins lymphoma and 1 was of hodgkins lymphoma ([Table 5](#)).

Table 5: Depicting the distribution of neoplastic lesions

Type of neoplastic lesion	Male	Female	Total
Hodgkins lymphoma	00	01	01
Non hodgkins lymphoma	10	06	16
Metastatic deposits			
Poorly differentiated carcinoma	09	06	15
Adenocarcinoma	05	04	09
Squamous cell carcinoma	20	03	23
Plamacytoma	00	01	01
Anaplastic carcinoma	01	00	01
Malignant Melanoma	00	01	01
Total	45	22	67

Figures 1 to 4 represents FNA smears of enlarged lymph nodes. Figure 1 represents FNA smears of metastatic deposits of malignant melanoma, figure 2 represents FNA smears of tubercular lymphadenitis showing caseous necrosis and granulomas, figure 3

represents FNA smears of metastatic deposits of squamous cell carcinoma to lymph node, and figure 4 represents FNA smears of metastatic deposits of poorly differentiated carcinoma to a lymph node (Figure 1 to 4).

**Fig 1:** FNA smears of metastatic deposits of malignant melanoma in a lymph node

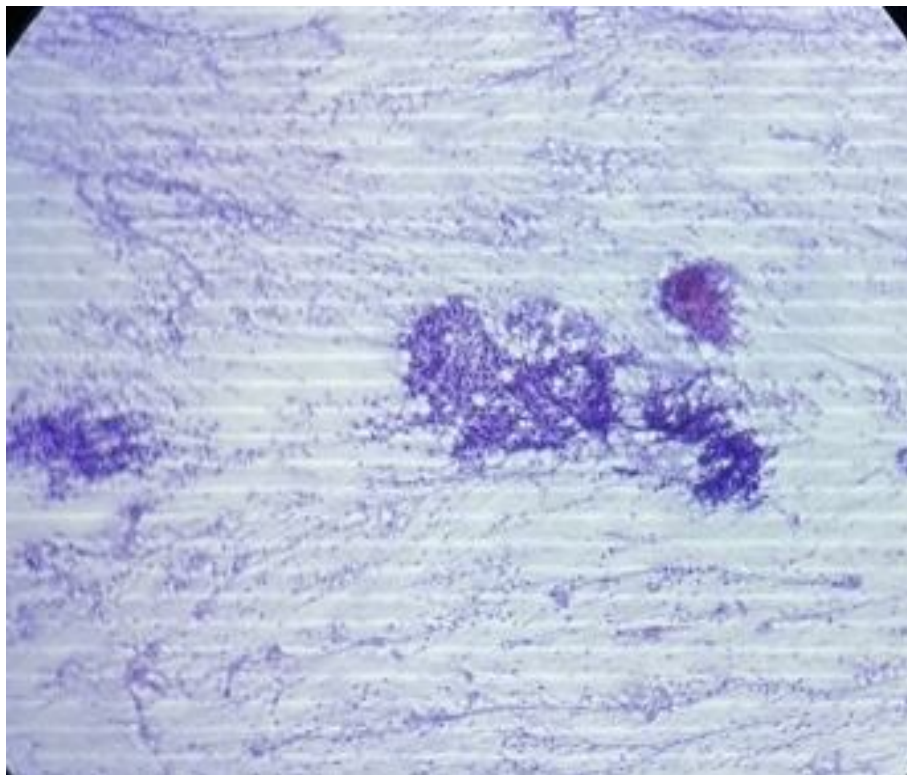


Fig 2: FNA smears of tubercular lymphadenitis showing caseous necrosis and granulomas

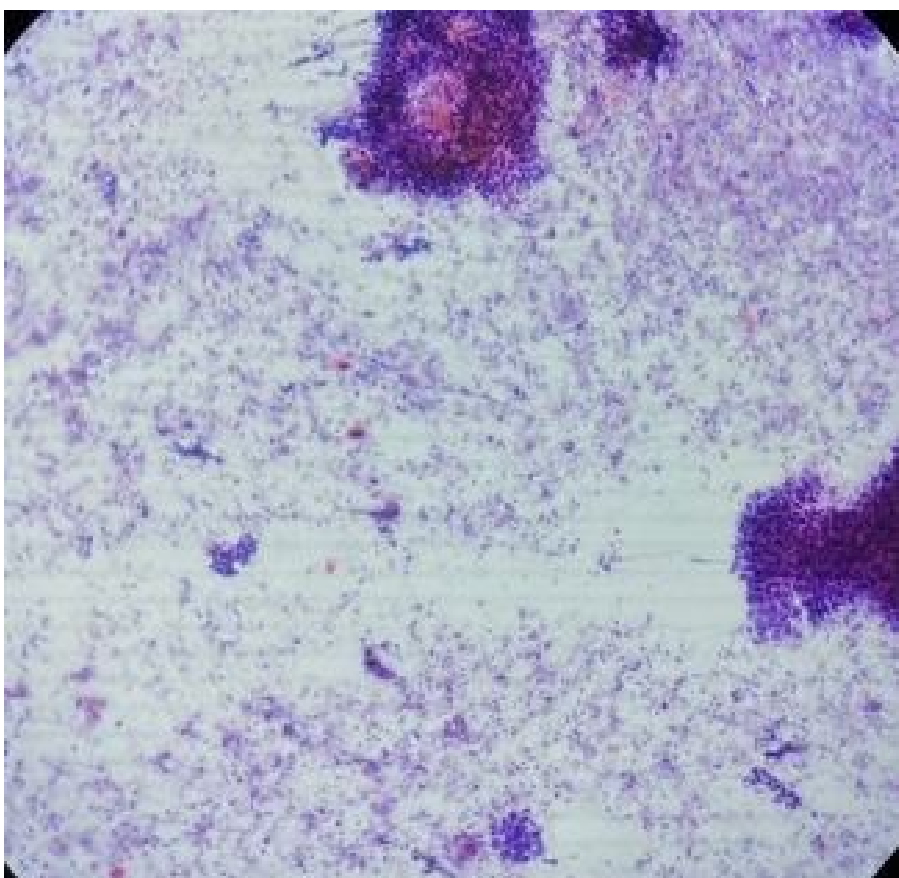


Fig 3: FNA smears of metastatic deposits of squamous cell carcinoma to lymph node

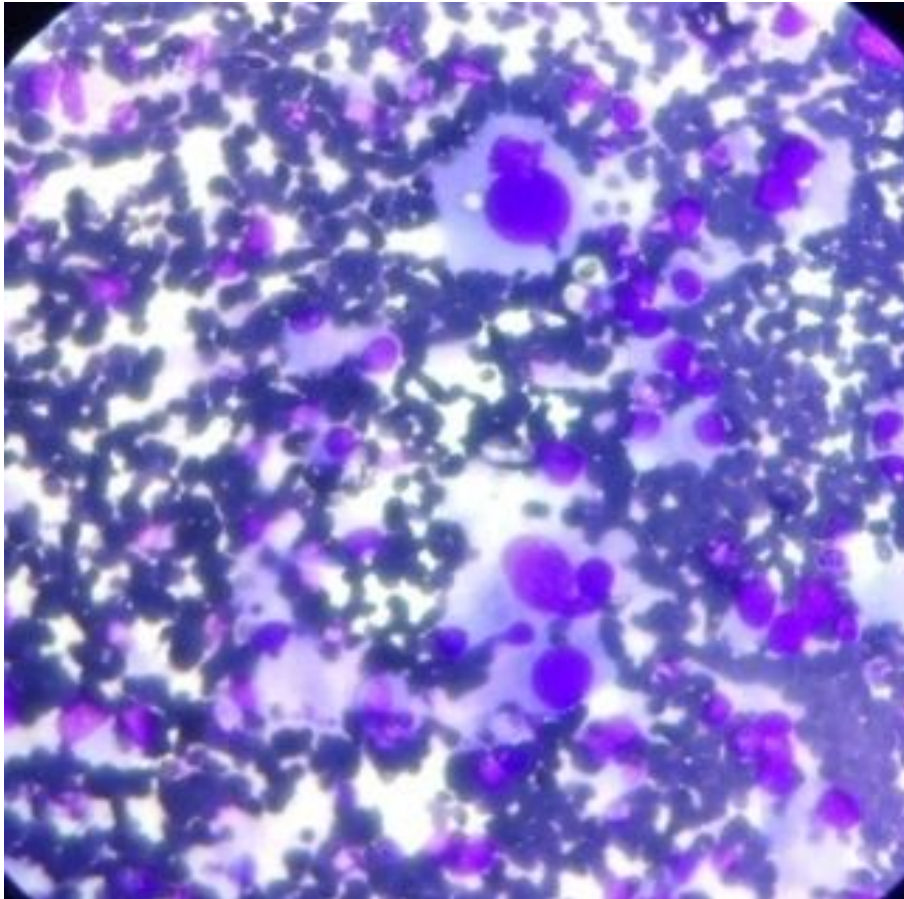


Fig 4: FNA smears of metastatic deposits of poorly differentiated carcinoma to a lymph node

Discussion

The present study included 201 cases presenting with lymphadenopathy among whom FNAC was done. Out of the total 201 cases, 106 were male and 95 were females with M:F ratio of 1.1:1. The results were in accordance with the study by Suri AK et al. (2). Also the study conducted by Patra et al. (6) and Sarda et al. (7) depicted the similar results.

In our study, majority of the cases were in the age group of 21-30 years. The results were similar with the study by Bhida SP et al. (1), Shafiulla et al. (8), and Nitin Chawla et al. (9).

Among the total of 201 cases in our study, 60.19% (n=121) were non-neoplastic and 33.33% were neoplastic. Similar results were there in the study by Naeem Ahmad et al. (10) and Rakshan et al. (11).

In our study, among the neoplastic lesions, metastatic deposits were most common (n=50) followed

by non-hodgkins lymphoma (n=16) and Hodgkins lymphoma (n=1), respectively. The results were comparable with the study by Jha BC et al. (12) and Arora et al. (13).

In our study, reactive lymphadenitis was the most common non-neoplastic lesion (n=58) followed by tubercular lymphadenitis and granulomatous lymphadenitis, respectively. The results were in accordance with the study by Bhida SP et al. (1).

Conclusion

Fine needle aspiration cytology remains the safe and gold standard investigation for arriving the final diagnosis. It is simple, easy and reliable diagnostic tool that fills the gap between clinical evaluation and final pathological diagnosis.

Conflict of interest

The authors have no conflict of interest in this study.

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