

Original Research

Evaluation Of Peripheral Lymphadenopathy By Fine Needle Aspiration Cytology In A Tertiary Care Centre: Cross Sectional Study

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ABSTRACT

Background: Peripheral lymphadenopathy is commonly due to infectious or benign disease. Fine needle aspiration cytology (FNAC) is simple, quick, inexpensive and minimally invasive technique that can be used as an outpatient procedure to diagnose them.

Aim: This study was undertaken to assess the various causes of peripheral lymphadenopathy through FNAC, and to see the distribution of lesions with respect to age and gender.

Methods: This cross sectional study was conducted in the Department of Pathology, in a tertiary care center, India. A total 300 peripheral lymph node was studied. Aspirated material was routinely stained with Hematoxylin & Eosin and Papanicolaou stains. The cytomorphological features seen in the aspirates were analyzed and correlated with their etiology.

Results: In this study 300 cases of peripheral lymphadenopathy were analysed. Majority of the participants (56.4%) were male, maximum numbers of cases (28.4%) were in the age group of 21-30 years. The most common lesion encountered was tuberculous lymphadenitis 44% followed by chronic reactive hyperplasia 30%. Cervical lymph node (69%) were most common followed by axillary (11%), chronic reactive hyperplasia was common in first and second decade whereas tubercular lymphadenitis common in second and third decade of life.

Conclusions: FNAC is a rapid, cost effective, valuable and reliable screening tool in outpatient department forevaluating the etiology of peripheral lymphadenopathy. It can distinguish inflammatory from malignant lesion so that unnecessary surgery can be avoided.

Keywords: Fine Needle Aspiration Cytology, peripheral Lymphadenopathy, tuberculous lymphadenitis, metastatic carcinoma

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INTRODUCTION

Peripheral lymphadenopathy (LAP) is a frequent finding caused due to a local or systemic, benign, self-limited, infectious condition. It is a most commonly encountered clinical problem in all age group [1]. Lymphadenopathy refers to the conditions in which lymph nodes become abnormal in size, consistency, and number. Normal lymph nodes usually measure less than one cm in diameter [2]. Enlarged peripheral lymph

nodes are common and may be asymptomatic. Peripheral lymph nodes, located deep in the subcutaneous tissue are an important part of immune system as they clean antigens from the extracellular fluid [3]. Seventy-five percent of all peripheral lymphadenopathies are localized, with more than 50% being seen in the head and neck area. Cervical lymph nodes are involved more often than the other lymphatic regions [2]. The most common etiology can

vary from place to place depending upon the incidence and prevalence of main underlying pathological condition in different geographical areas. Tuberculosis the commonest cause of lymphadenopathy in developing countries, like in our country India, in young age group populations. In old age group, metastatic lymphadenopathy is commonest cause [4]. Lymph nodes become secondarily involved in virtually all infectious diseases and in many neoplastic disorders[5]. Enlarged lymph nodes are easily accessible for fine needle aspiration (FNAC) and hence FNAC is a very simple and important diagnostic tool for lymph node lesions [6]. Surgical biopsy is the gold standard for diagnosis. However, it has several drawbacks: costly, time consuming and requiring more precautions. FNAC is comparatively less invasive and cost effective than surgical biopsy [7]. The diagnostic yield of FNAC can be improved by radiological guidance and proper clinical assessment of lesion. FNAC of lymphadenopathy has become essential part of initial diagnosis and management of patient [8, 9].

The dilemma to approach a patient with peripheral lymphadenopathy, its evaluation and management, considering various differential diagnoses, prompted us to take up this study.

Aims & objectives: The present study evaluates etiology of peripheral lymphadenopathy cases through FNAC and their age and gender wise distribution.

MATERIALS AND METHODS

This was a cross sectional observational carried out in the cytology section of pathology department in a tertiary care center, India. Total 300 patients presenting with palpable peripheral lymphadenopathy, over a period of 1 year were included in this study. Written informed consent was obtained from all the study participants.

In all cases a brief socio-demographic data (age, gender, residence, socio-economic status) clinical history, physical examination along with evaluation of relevant investigations if available was carried out. The FNAC was performed by cytopathologist, using a 22-24G needle attached to 5 ml syringe. If needed multiple sites were aspirated. The aspirated material was smeared on slides. Prepared slides were stained with May GrunwaldGiemsa (dry fixation), Hematoxylin& Eosin (wet fixation) and Papanicolaou's (PAP-wet fixation). Whenever required special stain like ZiehlNeelson (Z & N) stain for acid fast bacilli was done. Immunocytochemistry was also used for typing of malignancy. At the end of the study data were analysed. Diagnosis for etiology was established on the basis of FNAC findings. Cytological findings were correlated with lymph node or primary tumor biopsy.

Statistical analysis: All data was compiled and presented in tabular and/or graphical form, percentages were calculated wherever relevant. Data was analysed using SSPS version 22. Fischer's exact test was used to check the association of age and sex with the cytodiagnosis. P-value <0.05 was considered as significant

RESULTS

This study analysed 300 cases of peripheral lymphadenopathy, age ranged was one to seventy years. Majority of the subjects (56.4%) were male. The maximum numbers of cases (28.4%) were in the age group of 21- 30 years followed by (18%) in 31-40 years.

It was observed that in each of age group causes of lymphadenopathy is different. Chronic reactive hyperplasia were seen most often (44.4%) in first & second decades, tuberculous lymphadenitis (60.6%) in second & third decades. Metastatic carcinoma was seen 83.3% after the age of 40 years. (Table 1).

Table1: Age and gender wise distribution of patients of peripheral lymphadenopathy

Age (years)	Acute Lymphadenitis		Reactive Hyperplasia		Tuberculous Lymphadenitis		Metastatic Carcinoma		Lymphoma		Total (%)
	M	F	M	F	M	F	M	F	M	F	
1-10	4	3	11	9	5	4	0	0	0	0	36 (12%)
11-20	3	2	10	10	15	13	0	0	0	0	53 (17.6%)
21-30	6	4	9	11	27	25	2	0	1	0	85 (28.4%)
31-40	5	3	9	7	16	10	2	1	1	0	54 (18%)
41-50	1	3	3	1	6	4	4	2	1	1	26 (8.6%)
51-60	2	1	5	2	2	2	5	4	1	1	25(8.3%)
>60	1	1	2	1	2	1	6	4	2	1	21 (7%)
	22	17	49	41	73	59	19	11	6	3	300

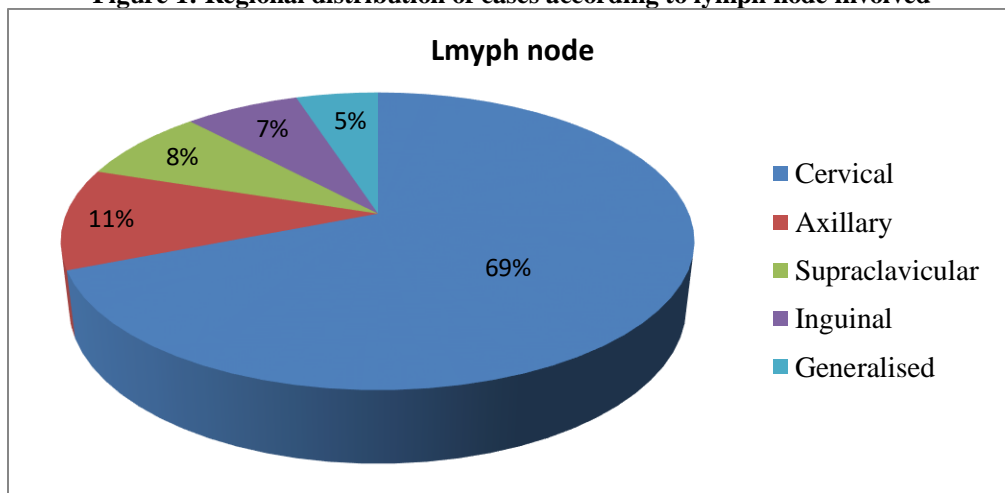
Out of total cases, 87% cases were of infective etiology and only 13% had cancers. In infective etiology maximum number (40%) of cases were of tuberculous lymphadenitis followed by chronic reactive hyperplasia (30%). Metastatic carcinoma found in 10% of cases and lymphoma in 3% of cases (Table 2).

Table 2: Cytological diagnosis of patients with peripheral Lymphadenopathy

Cytological diagnosis	No. of case	% age
Acute lymphadenitis	39	13%
Chronic reactive hyperplasia	90	30%
Tuberculous lymphadenitis	132	44%
Metastatic carcinoma	30	10%
Lymphoma	9	3%
Total	300	100%

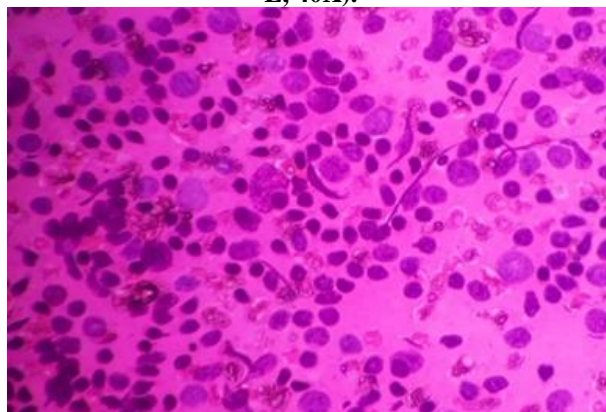
Among the various sites of lymph node involvements cervical region (69%) were most common followed by axillary region (11%), Supraclavicular (8%), inguinal region (7%) and only 5% show generalized lymphadenopathy (Table 3).

Figure 1: Regional distribution of cases according to lymph node involved



* If two or more groups of lymph nodes were involved it was considered to be generalized lymphadenopathy. Reactive hyperplasia-The cytological diagnosis of reactive hyperplasia was established by the presence of high cell density, polymorphous cell population and a considerable number of tingible body macrophages in proper clinical context. The reactive pattern is quite variable depending on the degree of stimulation, the number and size of germinal centres and site from which the sample is aspirated. (Figure 1).

Figure 1: Aspirates from reactive lymphadenitis, showing polymorphous population of lymphoid cells (H & E, 40X).



Tuberculous lymphadenitis-There is two specific pathological criteria for diagnosing tubercular lymphadenitis-caseatious necrosis and granuloma formation along with Ziehl Neelson (Z&N) stain. Granuloma formation less likely to be present in tubercular lymphadenitis associated with advanced HIV disease. This is because T-cell function, which is suppressed in advanced HIV disease, is required for granuloma formation (Figure 2).

Figure 2: Aspirates from Tuberculous lymphadenitis show well-formed granuloma (PAP, 100X)



DISCUSSION

FNA cytology is highly reliable in the identification of benign lesions, metastatic carcinoma and melanoma in lymph nodes, limiting the requirement for diagnostic excision biopsy in many patients. However, the role of aspiration cytology in the assessment of primary lymph proliferative disorders has been less certain. Cytology is often difficult to differentiate Non-Hodgkin's lymphoma from reactive changes and Hodgkin's disease and also typing was not reliable by this method [10].

Our results shows that themajority of cases were 21-30 years age group, which is comparable with those of Choudhary RK et al [11] and Kumar H et al [12], however Pandey P et al [13], found maximum no. of cases in the age group 1-10 yrs.This variation may be due to different population density or geographic variation.

In the present study a male preponderance was noted. Similar male preponderance was noted by Chawla N, et al [14] and Hemalatha A, et al[15]

The most frequent site for FNAC was cervical region (69%) followed by Axillary region (11%) in current study, Similar findings were also observed by Mustaqueem SF, et al[16], Madan Y et al [17] and Paliwal N et al [18].The reason behind this may be the easy accessibility of cervical lymph nodes for examination and evaluation.

Present study reported that Chronic reactive hyperplasia were most often in first & second decades, tuberculous lymphadenitis in second & third decades and Metastatic carcinoma were most often after the age of 40 years, our results consistent with the Mishra B, et al [19] and Panchonia A, et al [20].

In our results the most common cytological diagnosis was Tuberculous Lymphadenitis (44%) in present study. Similar findings were observed by Heidi L, et al [21] and Wahid F et al [22], Tuberculous Lymphadenitis is one of the most common types of lymphadenopathy in developing countries. The high rate is due to low socio-economic status, illiteracy, incomplete treatment, resistance and increased incidence of HIV infection. Gayathri et al [23] werefound Reactive hyperplasia as the most common cytological diagnosis.This difference may be due to different study population and some of the cases were HIV positive coming to our hospital as we have VCTC (voluntary counseling and testing centre).

In present study, second most common cytological diagnosis was reactive hyperplasia (30%). Similar findings were also observed by Patel MM, et al [24] and Mamatha K, et al [25]. It was may be due to different study population, genetic factors, environmental factors and habitual factors like smoking and tobacco consumption.

Among malignant lesion metastatic carcinoma was most common variant after 40 years of age in present study. These findings correlated to study done by Babu GS et al [26] and Mohan A et al [27].

Lymphoma represents a minority of the tumors (3%) in present study. These findings were well correlated with study done by Shrivastav A et al [28] and Shah PC, et al [29]. For the malignant cases (metastatic carcinoma & lymphoma) Histopathological correlation was done with the FNAC findings

CONCLUSION

FNAC is simple, safe, rapid and cost effective diagnostic tool for differentiating inflammatory from

malignant lesions in peripheral lymphadenopathy cases. Although FNAC does not replace histological examination in the diagnosis of lymphoma, it is still of value in suspicion/suggested diagnosis lymphoma. Most common cause of lymphadenopathy in our setting was tuberculous lymphadenitis followed by reactive hyperplasia. Initial evaluation of lymphadenopathy by FNAC plays a crucial role in patient management and preventing unnecessary surgery.

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