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Original research article

Spectrum of lesion in lymph nodes- A cytological retrospective analysis

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Abstract

Background: Fine Needle Aspiration Cytology (FNAC) is simple, rapid, cost effective and reliable technique which can be used as a routine outpatient department (OPD) procedure and first line of investigation in diagnosing a variety of superficial and deep lesions (USG or CT Guided). Lymphadenopathy is of great clinical significance and the underlying cause may range from infectious etiology to malignant neoplasms. In this study, we describe the diagnostic utility of FNAC in the diagnosis of lymph node lesions with an emphasis on the diagnosis of non-neoplastic, benign and malignant neoplastic lymp node lesions.

Methods: This was a retrospective study and a total of 376 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 1 year were included in our study. FNAC was conducted with 22-24 Gauge disposable needles attached to 20c.c syringes. Smears were fixed in 95% ethyl alcohol and stained with Papanicolaou stain. Leishman stain was done on air dried smears. ZiehlNeelsen (ZN) staining was done wherever required.

Results: Out of 376 aspirations from lymph nodes, the most frequent cause of lymphadenopathy was found to be Tuberculosis with 152 cases (40.42%). The next frequent diagnosis was reactive lymphadenitis with 129 cases (34.30%) followed by malignant lymphadenopathy in 53 cases (14.09%). A diagnosis of suppurative lymphadenopathy in 39 cases (10.37%). In 03 cases (0.79%) diagnosis was Rosai-Dorfman disease.

Conclusion: In our study, the predominant cause of lymphadenopathy was tuberculous lymphadenitis, followed by reactive lymphadenopathy and malignant neoplasms. FNAC of lymph nodes is an excellent first line investigation to determine the nature of lesion.

Keywords: FNAC, Lymphadenopathy, Tuberculous lymphadenitis.

Introduction

Lymph nodes are an integral component of the immune system and are affected by a multitude of pathological lesions which manifest most commonly as lymphadenopathy in clinical practice.

Lymphadenopathy is a commonly encountered clinical problem which has multitude of causes varying from non-neoplastic to neoplastic conditions like inflammation, infection, primary or metastatic tumors [1]. In cases of lymphadenopathy, FNAC when employed along with guidance of other ancillary diagnostic aids is very helpful in rapid diagnosis of certain pathological conditions such as reactive lymphadenitis, tuberculous lymphadenitis, metastatic neoplastic lesions and lymphoproliferative conditions including most of the lymphomas with near relative precision. [2-4.

Aims and Objectives

Our study highlights the cytomorphological spectrum of lymph node lesions and diagnostic utility of FNAC in arriving at early diagnosis and prompt treatment. We have undertaken this study to reveal the spectrum of diagnosis and burden of the disease in our institute.

Materials &methods

The current retrospective study planned to be carried out in the Department of Pathology of a tertiary care teaching hospital in Jhalawar. The duration of study was one year between may 2021 to april 2022. In this retrospective study, we have included patients of all age groups and both genders who gave consent for FNAC.

Fine needle aspiration cytology was conducted by using 10 ml disposable syringes connected with 22 to 24 bore hypodermic needles and aspirating cytological material from lesions of lymphadenopathy. The cytological smears prepared from the aspirate were stained with standard cytological stains. Special stains such as modified ZiehlNeelsen stain, PAS were used wherever necessary.

Inclusion criteria: Patients of all age groups and both genders who underwent FNAC of enlarged lymph node were included in the study.

Exclusion criteria: FNAC cases with inadequate material were excluded from the study.

Variables: Age, sex, anatomical group of lymph nodes, laterality, single or multiple groups of lymph nodes and spectrum of lesions were taken into consideration.

Data source: Data was retrieved from the requisition forms in cytology section of department of pathology and the slides were reviewed for all cases during the period from may 2021 to april 2022.

Statistical analysis Data obtained were tabulated and expressed as percentages and proportion.

RESULTS

A total of 376 FNACs were studied and the ages of the patients ranged from 9Months to 80 years with the male to female ratio of 1.05:1. The youngest patient had acute suppurative lymphadenopathy whereas the oldest patient had Malignant lymphadenopathy. Cervical lymph nodes were enlarged in 314 of 376 cases (83.51%) followed by axillary lymph nodes in 27 cases (7.18%), inguinal lymph nodes in 15 cases (3.98%) , supraclavicular lymphnodes in 14

cases (3.72%), chest wall lymph nodes in 03cases (0.79%) . Multiple sites were involved in 3 cases (0.79%) . The size of the lymph nodes varied from 0.5cm to 6 cm.
The lymph nodes in tuberculosis were multiple, soft to firm and matted; while they were discrete in reactive lymphadenitis and firm to hard and fixed in majority of metastatic lesions. Tuberculous lymphadenitis was the most frequent diagnosis with 152 cases (40.42%) . Out of 376 cases, maximum number of cases were recorded in the age group 11-20 years . The tuberculous lymphadenitis cases were further divided into three groups on the basis of cytomorphological analysis; group1: Granulomas without necrosis - 43/152 (28.28%), group 2: Caseating epithelioid granuloma - 100/152 (65.78 %) and group 3: Necrotizing lymphadenitis - 09/152 (5.92%). Acid fast bacilli positivity on ZN staining was seen in 35 out of 152 cases (23.02%) of tuberculous lymphadenitis. Next frequent diagnosis was reactive lymphadenitis with 129 out of 376 cases (34.30%). Malignant lymph node lesions were seen in 53 out of 376 cases (14.09%). These comprised of metastatic lymphadenopathy 47/376 (12.5%), malignant lymphomas 04/376 (1.06%) and myeloproliferative lesion in lymph node 2/376 (0.53%). Metastatic lesions were more common in cervical lymph nodes . Out of 4 cases of lymphoma, 3 were Non- Hodgkin's lymphoma and 1 were Hodgkin's lymphoma. Acute suppurative lymphadenopathy was seen in 39 out of 376 cases (10.37%). Three case of Rosai-Dorfman disease was also reported 3/376(0.79%).

TABLE 1. SITES OF LYMPHNODE INVOLVEMENT (n=376).

SITE	Number of cases	Percentages
CERVICAL	314	83.5%
AXILLARY	27	7.18%
INGUINAL	15	3.98%
SUPRACLAVICULAR	14	3.72%
CHEST WALL	03	0.79%
MULTIPLE	03	0.798%

TABLE 2. GENDER DISTRIBUTION OF THE CASES

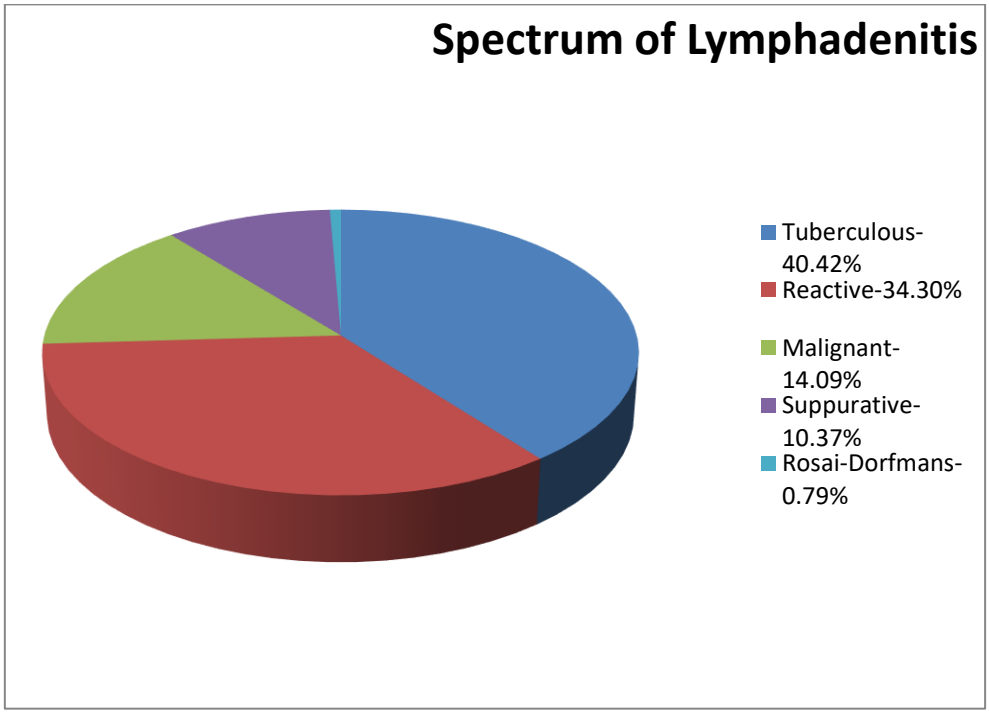
GENDER	Number of cases	Percentages
MALE	193	51.32%
FEMALE	183	48.67%

TABLE 3. AGE WISE DISTRIBUTION OF CASES

Age group (years)	Number of cases	Percentages
0-10	45	11.96%
11-20	95	25.26%
21-30	89	23.67%
31-40	47	12.5%
41-50	38	10.10%
51-60	25	6.64%
61-70	31	8.24%
71-80	06	1.59%

TABLE 4. CYTOLOGICAL DIAGNOSIS OF LESIONS

DIAGNOSIS	Number of cases	Percentages
TUBERCULOUS LYMPHADENITIS	152	40.42%
REACTIVE LYMPHADENITIS	129	34.30%
ACUTE SUPPURATIVE LYMPHADENITIS	39	10.37%
METASTATIC LYMPHADENOPATHY	47	12.5%
MALIGNANT LYMPHOMA	4	1.06%
MYELOPROLIFERATIVE DISORDER	2	0.53%
ROSAI-DORFMAN'S DISEASE	03	0.79%



DISCUSSION

FNAC is an important diagnostic tool to aid in the diagnosis of lymph node lesions. It is inexpensive, safe and quick and reduces the need for surgical biopsy. 5 Aspiration of lymph nodes was first done by Griey and Gray in 1904, in a patient with sleeping sickness6 . It was Dudgeon and Patrick in 1927, who first used FNAC in diagnosing tuberculous lymphadenitis7. In the present study, an attempt has been made to study the cytomorphological spectrum and epidemiological pattern of lymph node lesions. In this study, maximum number of cases were recorded in the age group 11-20 years. Cevical lymph nodes were the most common group of lymph nodes involved, which is similar to that observed by Pavithra et al8 , Chandanwale et al9. Kochhar et al10. and Mohanty et al11.

The female preponderance of Tuberculous lymphadenitis which is similar to that observed by Pavithra et al.8 Fatima et al5 and Chand et al12. This may be because of malnutrition and overall low living standards among females in this area.

Necrosis alone was seen in 9 cases and all of these were positive for acid fast bacilli. It has been observed that the foci of necrosis are associated with marked proliferation of tubercle bacilli whereas lymphocytes, epithelioid cells and multinucleated giant cells have a role in limiting the proliferation of AFB. 13,14 Therefore, it is expected that FNAC from a tuberculous abscess yields more AFBs than early tuberculous lymphnodes. 15 The characteristic necrotic background comprising of eosinophilic granular material containing nuclear debris was described as 'tubercular diathesis'. Those cases lacking the typical finding and showing scattered epithelioid cells with or without granulomas or only necrotic material with neutrophilic infiltration were diagnosed as tuberculous lymphadenitis when this tubercular diathesis was found cytologically, even though AFB were absent in these smears. 16 Granulomas can be seen in a variety of other conditions causing lymphadenopathy including sarcoidosis, carcinoma, lymphoma, fungal diseases, cat scratch disease, collagen vascular disease and disease of the reticuloendothelial system. 17 But, in a region where tuberculous infection is common and other granulomatous diseases are rare, the presence of a granulomatous feature in FNAC is highly suggestive of tuberculosis. 15

Reactive lymphadenitis was seen in 34.30% cases. Wheras, in other studies reactive lymphadenitis was the most frequent diagnosis and its incidence ranged from 18.9% to 42%. 10,11,18,19,20.

Acute suppurative lymphadenopathy was observed in 10.37% cases in our study which is comparable with the study done by other workers, Patra et al21 (5.8%).

Lymph node aspirates in 12.5% cases showed metastatic deposits and males outnumbered females in these cases, (M: F= 3.4: 1). Maximum cases were seen in age groups 41-60 years and predominant deposits were of squamous cell carcinoma (51.55% of all metastatic lymph nodes). This correlates with findings of studies by Pavithra et al8 (56.25%). The high incidence of squamous cell carcinoma may be due to the high incidence of smoking and tobacco chewing in this area.

CONCLUSION

In ther present retrospective study Tuberculous lymphadenitis is found to be the most common cause of lymphadenitis in Jhalawar medical college, Jhalawar, Rajasthan, while reactive lymphadenitis is the second most common cause of lymphadenopathy. Cervical group of lymph nodes are most commonly affected lymph node in most pathological lesions, followed by Axillary group of lymph nodes in present study.

FNAC of lymph nodes is an excellent first line investigation to determine the nature of lesion. It is quick, safe, minimally invasive, and cost effective out-patient procedure with minimal significant complications, which could be employed as first line of clinical investigation in the ideal setting of evolving health care facilities of developing countries to establish a conclusive diagnosis in most cases of lymphadenopathy.

References

1. 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 AprJun; 7 (26):139-42.
2. Khajuria R, Goswami KC, Singh K, Dubey VK. Pattern of lymphadenopathy on fine needle aspiration cytology in Jammu. JK Sci. 2006; 8(3):157-59.
3. Rajiv Jadhav et al, Archana. Cytomorphological profile of lymphadenopathies at Tertiary health care Institute. MVP journal of Medical sciences Vol 3(2),96-100,July- December 2016
4. Patil R. K, Anubrolu I. P, Kittur S. K, Haravi R. M, Aruna S, Jadhav M. N. Cytological spectrum of lymph node lesions-our institute experience. Trop J Path Micro 2017;3(3):354- 361.doi:10.17511/jopm.2017.i3.22.

5. Fatima S, Arshad S, Ahmed Z, Hasan SH. Spectrum of cytological findings in patients with Neck lymphadenopathy - experience in a tertiary hospital in Pakistan. Asian Pac J Cancer Prev. 2011;12:1873-5.
6. Cohen MB, Miller TR, Bottles K. Classics in cytology: note on fine needle aspiration of lymphatic glands in sleeping sickness. Acta Cytol. 1986;30(4):451-2.
7. Singh JP, Chaturvedi NK, Das A. Role of Fine needle aspiration cytology in the diagnosis of tuberculous lymphadenitis. Indian J Pathol Microbiol. 1989;32:100
8. Pavithra P, Geetha JP. Role of fine needle aspiration cytology in the evaluation of the spectrum of lymph node lesions. Int J Pharm Bio Sci. 2014;5(4):377-84.
9. Chandanwale S, Buch A, Verma A, Shruthi V, Kulkarni S, Satav V. Evaluation of granulomatous lymphadenitis on fine needle aspiration cytology - diagnostic dilemma. Int J Pharm Bio Sci. 2014;5(4):377-84.
10. Kochhar AK, Duggal G, Singh K, Kochhar SK. Spectrum of cytological findings in patients with lymphadenopathy in rural population of South Haryana, India - experience in a tertiary care hospital. Internet J Pathol. 2012;13(2):8.
11. Mohanty R, Wilkinson A. Utility of fine needle aspiration of lymph nodes. IOSR J Dent Med Sci. 2013;8(5):13-8.
12. Chand P, Dogra R, Chauhan N, Gupta R, Khare P. Cytological pattern of tubercular lymphadenopathy on FNAC: analysis of 550 consecutive cases. J Clin Diagn Res. 2014;8(9):FC16-9.
13. Das DK. Fine needle aspiration cytology in the diagnosis of tuberculous lesions. Lab Med. 2003;31(11):625-32.
14. Bhardwaj K, Goyal T, Bhardwaj BL. Fine needle aspiration cytology in lymph node disorders with special reference to tuberculosis. J Cytol. 2000;17(3):155-9.
15. Lau SK, Wei WI, Hsu C, Engzell UCG. Efficacy of fine needle aspiration cytology in the diagnosis of tuberculous cervical lymphadenopathy. J Laryngol Otol. 1990;104(1):24-7.
16. Paul PC, Goswami BK, Chakrabarti S, Giri A, Pramnik R. Fine needle aspiration cytology of lymphnodes - an institutional study of 1448 cases over a five year period. J Cytol. 2004;21:187-90.
17. Finfer M, Perchick A, Barstein DE. Fine needle aspiration biopsy diagnosis of syndrome. Tuberculous lymphadenitis in patients with and without the acquired immune deficiency. Acta Cytol. 1991;35:325-32.
18. Khajuria R, Goswami KC, Singh K, Dubey VK. Pattern of lymphadenopathy on fine needle aspiration cytology in Jammu. JK Sci. 2006;8(3):157-9.
19. 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. 2009;7:139-42.
20. Adhikari P, Sinha BK, Baskota DK. Comparison of fine needle aspiration cytology and histopathology in diagnosing cervical lymphadenopathies. Australas Med J. 2011;4:97-9.
21. Patra AK, Nanda BK, Mahapatra BVK, Panda AK. Diagnosis of lymphadenopathy by fine needle aspiration cytology. Indian J Pathol Microbiol. 1983;26:272-8.