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Cytomorphology of lymphadenopathy on fine needle aspiration cytology: A retrospective study in a tertiary health center in Tribal District of Odisha

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Abstract--Introduction: FNAC is widely accepted the most accurate sensitive, specific, cost-effective minimally invasive OPD technique to establish the basic diagnostic information not only to relieve the anxiety of the patients but also to provide materials for microbial culture, and decrease unnecessary surgery from the visibly accessible superficial masses. It also distinguishes a benign from a malignant entity that can obtain tissue for immuno-phenotyping & molecular studies and obtain cellular & genetic material for storage also useful for staging and follow up including response to treatment in patients with known malignancies. Our study was conducted on 796 Outpatients including all age groups & sexes presenting with palpable enlarged lymph nodes not only for early diagnosis & treatment but also to reveal the burden of various categories of diseases in tribal areas where our institution is situated. Material & methods: FNAC was performed under aseptic precaution using a 22 to 24Gauge needle attached to a 20 CC syringe (disposable). The aspirated material after smearing was treated with 95% ethyl alcohol for fixation & stained with H& E and Papanicolaou stain & air-dried smears are stained with Leishman stain. Modified Z-N stain was done wherever necessary followed by diagnosis based on clinic cytomorphological features. Result: Out of 796 cases the most common cause of lymphadenopathy in our study was found to be Tubercular lymphadenitis with 360 (45.22%) cases, the second most frequent entity was reactive lymphadenitis in 277(34.79%) cases followed by metastatic lesions in 47 (5.90%) cases and lymphoma 17 (2.13%) cases. Conclusion: FNAC is a simple, safe, reliable, and inexpensive method for early detection of various non-neoplastic (lymphadenitis) & neoplastic lesions (lymphoma & metastatic carcinoma) of enlarged lymph nodes which helped diagnose approximately 99% of cases.[3,4]

Keywords--FNAC, lymphadenopathy, Tubercular lymphadenitis, reactive lymphadenitis, metastatic lesions.

Introduction

Lymph nodes are integral components of the immune system. These are nodular aggregates of lymphoid tissue located along the lymphatic channel throughout the body and categorized into cervical, axillary, inguinal, retroperitoneal & so on depending on lymphatic draining in particular topographic lesions.[1] Lymphadenopathy which is a commonly encountered clinical problem is the term referred to as the swelling of lymph nodes of abnormal size. The lymphatic system is involved in filtering substances in the body. Lymphocytes are integral agents involved in searching for target proteins & travel through lymph nodes present throughout the body. The immune system fights against infection & other diseases. Substances present in the interstitial space including infectious microorganisms, antigens & cancer cells enter the lymphatic vessel to form lymphatic fluid. The Lymph node filters the fluid to remove these materials as it passes towards the Central venous circulation where the antigens are presented to Lymphocytes present in the node leading to cellular proliferation, ultimately

leading to node enlargement. This enlargement is a great clinical problem in both adult & paediatric settings which has a multitude of causes varying from non-neoplastic to neoplastic conditions like inflammation, infection, and primary or secondary tumors. FNAC has an important diagnostic role in determining the cause of lymphadenopathy based on its cytomorphological features which are usually confirmed by a histopathological study in many cases wherever required, thereby decreasing the morbidity and mortality due to early therapeutic implementation.[2]

Aim: To find out the various cytomorphological categorized lymphadenopathy in patients of tribal areas of the southern part of Odisha who is attending the OPD, a tertiary center.

Material & Methods

Retrospective study was conducted in a tertiary institution for a period of two years (2019-2021)

1. Place of study: Study was done in the cytology section, Dept. of Pathology SLNMCH, Koraput.

2. Sample size: 796 cases attending the OPD.

3. Inclusion criteria:-

- All age groups of both genders with enlarged lymph nodes

- Lymph node of any site and size included.

4. Exclusion criteria:-

- Inadequate sampling not included.

5. 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.

6. Has ethical clearance been obtained from your institution: - Yes.

Results

Table-1. Gender wise distribution of patients (n= 796)

Gender	No of cases	Percentage
Male	387	48.6%
Female	409	51.4%

In the present retrospective study total, no of 796 patients with palpable lymph nodes were studied among them 409 (51.4%) were females & 387 (48.6%) were males. Slight female preponderance was seen with M: F ratio of 0.7: 1. (Table-1)

Table-2 Age wise distribution of patients (n=796)

Age group	No of cases	Percentage
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0-20	339	42.58
21-40	308	38.61
41-60	127	15.95
61-80	21	2.63
81-100	1	0.12

The age of patients ranges from 2 months to 85 years among 796 cases maximum cases were recorded in the age group of less than 20 years 339 (42.48%) followed by 21 to 40 years of age i.e. 308 (38.69%) cases (Table -2)

Table-3 Sites of lymph node involvement (n=796)

Site	No of cases	Percentage
cervical	544	68.34
Sub mandibular	77	9.67
Axillary	55	6.90
Supraclavicular	39	4.89
Inguinal	30	3.76
Sub mental	29	3.64
Pre auricular	18	2.26
Occipital	04	0.50

In our study, cervical lymph nodes were the commonest group of affected lymph nodes comprising of 554 (68.34%) cases followed by the submandibular group of lymph nodes 77 (9.67%), axillary lymph nodes 55 (6.90%), supraclavicular lymph node 39 (4.89%), inguinal lymph node 30 (3.76%), submental 29 (3.64%) and few less common pre-auricular lymph node 18 (2.26%) and occipital 4 (0.50%) cases (Table- 3). These findings are approximately comparable to studies done by Patro et al ^[5] & Sharma et al.^[6] The lymph node group of right side 376 (47.23%) are more commonly affected than left side lymph node 339(42.58%) followed by bilaterally affected lymph node 81 (10.17%) of lesions.

Table-4 Cytological diagnosis of lymph node aspiration (n=796)

Types of lesions	No of cases	Percentage
Tubercular	360	45.22
Reactive	277	34.79

Granulomatous	55	6.78
Metastatic	47	5.90
Suppurative lesion	23	2.88
Lymphoma	17	2.13
Necrotizing lymphadenitis	14	1.75
Inadequate	04	0.50

The frequent cause of lymphadenopathy was found to be tubercular origin 360(45.22%) followed by the next most frequent diagnosis as reactive lymphadenitis 277 (34.79%), granulomatous lymphadenitis in 54 (6.78%). Metastatic lesions from other primary tumors were seen in 47 (5.90%) cases with primary lymphoma 17(2.13%). Acute suppurative lymphadenitis 23(2.8%) cases and necrotizing lymphadenitis in 14 (1.75%) cases (Table-4)

Discussion

Lymphadenopathy is the clinical manifestation of underlying systemic diseases where FNAC is the most preferable test that highlights the different categories of lymph node lesions after the material is obtained through a fine needle under negative pressure in a safe reliable, rapid,& inexpensive manner.

In the present study maximum patients were in the age group of 0-20 years 339(42.58%) similar to the observation of Gupta et al (52.26%)[7]. The lesions of lymph nodes were seen to be indifferent age group i.e. in our study the youngest patient was 2 months old with the oldest one of 85 years of age which is at par with the study carried out by Tilak V et al.[8] The overall lesion was slightly common in females 409(51.38%) in comparison to males 387(48.61%) showing a female predominance a finding compared with the study conducted by Patro et al[5] 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 544 (68.34%) compared with other study done by Pavithra et al (85.27%)[10] & Kochhar et al (80.22%)[4], Uma et al [11] where the cervical node involved in (62.9%). The majority of cases were due to benign lesions 728 (91.45%) which correlates with the study conducted earlier in which 86.4% of cases were benign lesions. [12]

Tubercular lymphadenitis was the most common lesion reported in 360 (45.22%) followed by reactive lymphadenitis 277 (34.79%) as the second most common cause of lymphadenopathy similar to the study by Smita et al [9] and Malhotra et al[13] who found tubercular lymphadenitis (44.02%) followed by reactive lymphadenitis 42.64%) wherein other studies reactive lymphadenitis was the most frequent diagnosis. Tuberculous lymphadenitis was diagnosed based on cytomorphological criteria i.e. presence of scattered or clusters of epithelioid cells

caseous necrosis background with neutrophilic infiltration or degenerated leukocytes despite AFB being absent in smears [14].

Granulomatous lymphadenitis comprising 6.78% of the lesion where only epithelioid granuloma without necrosis was seen and found to be AFB positivity in Z-N stain was very low and patients were advised for follow up. A small percentage of cases 1.79% diagnosed as necrotizing lymphadenitis which showed only noncaseating necrosis similar to the study done by Duraiswami et al[15] 3(1.1%) cases and Sharma et al[16] 18(4.29%) cases.

Acute suppurative lesions were observed in 2.88 cases in our study which is in accordance with studies done by Kochhar et al[4]. About 47 (5.90%) aspirations were revealed as metastatic deposits comprising mainly squamous cell carcinoma which correlates with the findings of the studies by Pavithra et a,[10]], Sharma et al[16], and Natchimuthu et al.[17]

The primary malignant lesion (lymphoma) was detected in 17 (2.13%) cases which were in accordance with the study by Sharma et al (2.7%)[16] and Giri et al 2.7%[18]. In present study NHL 14 (1.75%) cases and HL 3 (0.37%) cases comparable to the study conducted by Sharma et al[16] where NHL (2.3%) and HL (0.4%).

Conclusion

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 nonneoplastic to neoplastic lesions, especially in the lymph nodes aspirates wherein our study the most common cause for enlarged lymph nodes found to be the tubercular origin and reactive lymphadenitis followed malignant lesion of metastatic one. FNAC facilities should be developed in all evolving health care centers to provide quick diagnosis & early treatment.

References

1. Vimal S, Dharwadkar A, Chandanwale SS, Vishwanathan V, Kumar H. Cytomorphological study of lymph node lesions: A study of 187 cases. *Med J DY Patil Univ* 2016;9:43-50
2. Kushtagi A. V., Husain K. W., & R, V. K. Spectrum of diseases presenting with lymphadenopathy in elderly: Fine needle aspiration cytology of 60 cases. *Arch Cytol Histopathol Res*, 2018;3(2):65-8. doi:10.18231/2456-9267.2018.0014.
3. Malhotra AS, Lahori M, Nigam A, Khajuria A. Profile of lymphadenopathy: An institutional based cytomorphological study. *International J Appl Basic Med Res* 2017;7(2):100.
4. 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.
5. Patro P, Lad P, Hoogar MB. Spectrum of lesions in lymph nodes- a cytological study. *Int J Health Sci Res* 2018;8(11):75-81.

6. Sharma, Namrata. Study of Pathological Spectrum of Neck Lesions with Cytohistopathological Correlation. *Natl J Lab Med* 2016;5(3):58–63. doi:10.7860/NJLM/2016/20415.2147.
7. Gupta AK, Nayar M, Chandra M. Reliability and limitations of fine needle aspiration cytology of lymphadenopathies. An analysis of 1,261 cases. *Acta Cytol* 1991;35:777-83.
8. Tilak V, Dhadel AV, Jain R. Fine needle aspiration cytology of the head and neck masses. *Ind J Pathol Microbiol.*2002;45(1):23–30.
9. Smita. Bhide et al. Cytological Evaluation of Fine Needle Aspiration Cytology in Lymph node lesion. *JMSCR Volume 05 issue 08 August 2017: 26869-26876.*
10. 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):377-384.
11. Uma P. Lymph Node Lesions in Underserved Population of Andhra Pradesh: A Prospective Study. *Int J Sci Stud* 2015; 3(7):172-175.
12. Ahmad S, Akhtar S, Akhtar K, Naseem S, Mansoor T. Study of Fine needle aspiration cytology in lymphadenopathy with special reference to acid-fast staining in cases of tuberculosis. *JK science* 2005;7 (1):1-4.
13. Malhotra AS, Lahori M, Nigam A, Khajuria A. Profile of lymphadenopathy: An institutional based cytomorphological study. *International J Appl Basic Med Res* 2017;7(2):100.
14. 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;21:187-190.
15. Duraiswami R, Margam S, Chandran P, Prakash A. Spectrum of pathologies on FNAC evaluation of peripheral lymph nodes at a tertiary care center in hyderabad: a retrospective study. *Int J Adv Med* 2017;4:27-33.
16. Sharma P, Rana S, Gill MK, Singh P, Satarkar RN, Kalhan. Spectrum of lymph node lesions on cytology in rural Haryana: a retrospective analysis. *Int J Res Med Sci.* 2015; 3(5): 1125-30. doi: 10.5455/2320-6012.ijrms 20150518.
17. Natchimuthu V, Ramasamy R. a study of a spectrum of lesions in fine needle aspiration smears of cervical lymph node among workers in a textile industry area. *J Evid Based Med Healthc* 2017;4(1):50-4.
18. Giri S, Singh K. Role of fine needle aspiration cytology in evaluation of patients with superficial lymphadenopathy. *Int J Biol Med Res.* 2012; 3(4): 2475-9.