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Review Article

Fine Needle Aspiration Cytology of Lymphnodes: A Hospital Based study in a Tertiary Health Care Center in Southern 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. ***Material & methods:*** FNAC was performed under aseptic precaution using a 22 to 24Gauge needle attached to a 20CC disposable syringe. 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.

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

INTRODUCTION

Fine needle aspiration cytology (FNAC) is one of the widely accepted, accurate, sensitive, specific and cost effective minimally invasive out patient department (OPD) technique to establish the basic diagnostic information of a superficial palpable swelling. It not only to relieves the anxiety of the patients but also provides materials for microbial culture, other specific tests and decrease unnecessary surgical interventions. It also distinguishes a benign from a malignant entity, provides tissue for immunophenotyping& molecular studies, provide cellular & genetic materials for storage and also useful for staging and follow up including response to treatment in patients with known malignancies.

Our study conducted on 796 out patients including all age group & sexes presenting with palpable enlarged lymphnode 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

Retrospective study 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,SaheedLaxman Nayak Medical College &Hospital, Koraput, Odisha
2. Sample size: 796 cases with palpable lymphnodes referred from OPD
3. Inclusion criteria:-
   - All age groups of both genders with enlarged lymphnodes
   - Lymphnode of any site and size included.
4. Exclusion criteria:-
5. Inadequate sampling not included.

Results

In the present retrospective study, a total number of 796 patients with palpable lymphnodes were undergone FNAC procedure, 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-1: Gender wise distribution of patients (n= 796)

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

The age of patients range 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-2: Age wise distribution of patients (n=796)

Age group	No of cases	Percentage
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

In our study, cervical lymphnodes were the commonest group of affected lymphnode comprising of 554 (68.34%) cases followed by sub mandibular group of lymphnodes 77 (9.67%), axillary lymphnodes 55 (6.90%), supraclavicular lymphnode 39 (4.89%), inguinal lymphnode 30 (3.76%), submental 29 (3.64%) and few less common pre auricular lymphnode 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 lymphnode group of right side 376 (47.23%) are commonly affected than left side lymphnode 339(42.58%) followed by bilaterally affected lymphnode 81 (10.17%) of lesions.

Table-3: Sites of lymphnode 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

The frequent cause of lymphadenopathy was found to be tubercular origin 360(45.22%) followed by next 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 suppurativelymphadenitis23(2.8%) cases and necrotizing lymphadenitis in 14 (1.75%) cases (Table-4).

Table-4: Cytological diagnosis of lymphnode 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

Discussion

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

In the present study maximum patients were in the age group of 0-20 years 339(42.58%) similar to observation of Gupta et al (52.26%)[7]. The lesions of lymphnodes seen to be in different age group i.e. in our study the youngest patient was 2 months old with an 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 were slightly common in female 409(51.38%) in comparison to male 387(48.61%) showing a femalepredominance a finding compares with study conducted by Patro et al[5] and Smitha P Bhide et al.[9]

The present study revealed that common group of lymphnode involved were cervical group of lymphnode 544 (68.34%) comparison 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%).

Majority of cases were due to benign lesions 728 (91.45%) that correlates the study conducted earlier in which 86.4% 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%) where in other studies reactive lymphadenitis was most frequent diagnosis. Tuberculous lymphadenitis was diagnosed basing on cytomorphological criteria i.e. presence of scattered or clusters of epithelioid cells caseous necrosis background with neutrophilic infiltration or degenerated leukocytes in spite of AFB being absent in smears [14].

Granulomatous lymphadenitis comprising of 6.78% of lesion where only epithelioid granuloma without necrosis 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 showing only non caseating 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 in accordance with studies done by Kochhar et al [4]. About 47 (5.90%) aspiration 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) detected in 17 (2.13%) cases which was with 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 Shrama et al [16] where NHL (2.3%) and HL (0.4%).

Conclusion

FNAC is the most accurate 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 lymphnode aspirates where in our study the most common cause for enlarged lymphnode found to be tubercular origin and reactive lymphadenitis followed malignant lesion of metastatic one. FNAC facility should be developed in all evolving health care centre to provide quick diagnosis & early treatment.

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