

FNAC Diagnosis of Lymph Nodes: An Institutional Experience

Mangala Goneppanavar MD¹, Rajendra Singh Dhaka MD, PhD²

¹Associate professor and ²Professor, Department of Pathology, MGMC&RI, Puducherry – 607402, India

Abstract: ***Introduction:** Fine needle aspiration cytology is a simple, cost effective, out-patient diagnostic procedure done for palpable lumps in the body. Chronic lymphadenopathy is local manifestation of a systemic disease and Tuberculosis is the most common cause for lymphadenopathy accounting for increased number of Extrapulmonary Tuberculosis in both developing as well as developed countries. Coupling the cytomorphological features with acid fast bacilli, immunocytochemistry, culture and PCR not only increases the diagnostic specificity but also helps in identifying Non-tuberculous mycobacterial infection thereby altering the mode of treatment. **Aim and Objective:** 1. To study the pattern of disease in lymph nodes using FNAC 2. To study the cytomorphological pattern of TB lymphadenitis and 3. To study the diagnostic algorithm used for diagnosis of TB lymphadenitis **Material and Methods:** Retrospective study of lymph nodes aspirated in between January 2012 to July 2013 were included for the study. Results: Fifteen of 65 cases were inadequate for opinion after the aspiration, so excluded from the study. TB was the most common cause for lymphadenopathy in the present study followed by reactive pattern and metastatic deposits. TB lymphadenitis was common among adolescents and young adults, whereas metastatic deposits were common among elderly as usual. Most common cytomorphological pattern observed was granulomatous lymphadenitis with necrosis, followed by granulomatous lymphadenitis without necrosis and only necrotic material. Acid fast bacilli were identified in only two cases. **Discussion:** Common diagnostic algorithm for cytologic diagnosis is used in present study like in other studies. Acid fast bacilli were detected in only two cases. But studies have demonstrated mycobacterial antigen in necrotic debris where it was negative for acid fast bacilli. **Conclusion:** Procuring the aspirate material for immunocytochemistry, culture, PCR in case of suspected Mycobacterial infection, not only increases the diagnostic specificity but also helps in differentiating tuberculous from non-tuberculous lymphadenitis. It is also a useful tool in primary diagnosis and classification of lymphoma by providing material for ancillary studies. But immunocytochemistry and culture are not done in the present study, which would have improved the diagnostic accuracy.*

Keywords: Lymph node, EPTB, Cytomorphology

1. Introduction

Lymphadenopathy is a major manifestation of number of diseases like tuberculosis, mycoses, sarcoidosis, lymphoma and metastatic lymphadenopathy. Fine needle aspiration is indicated for lymph nodes to confirm a clinical impression of reactive hyperplasia, diagnose a suspected infection, diagnose a suspected malignancy like Hodgkin lymphoma, Non-Hodgkin lymphoma or metastatic tumor of unknown primary, to document metastasis in a patient with known malignancy and to confirm transformation of known lymphoma to that of higher grade. FNA is particularly useful in patients with deep seated lymphadenopathy (Mediastinal, retroperitoneal, abdominal), where in surgical intervention carries the risk of significant morbidity^[1]. The Revised National Tuberculosis Control Programme (RNTCP) follows international classification for the definition of Extrapulmonary Tuberculosis (EPTB). EPTB is defined as TB of organs other than lungs like pleura, lymph nodes, abdomen, genitor-urinary tract, skin, joints, bones, tubercular meningitis and tuberculoma of brain etc.^{[2]-[3]}. In India EPTB accounts for 10-15% of all types of tuberculosis (TB) and lymph node tuberculosis (LNTB) is the commonest type of EPTB. Lymph node TB comes under “Not seriously ill” category and needs to be treated with RNTCP Category III regimen. Selection of diagnostic procedures depend on the organs involved in EPTB. Fine needle aspiration of lymph nodes, cytological examination plus AFB smear, Immunocytochemistry and culture examination appears to be the diagnostic procedure of choice in superficial TB lymphadenitis. If FNAC results are inconclusive, excision biopsy is required.

2. Aim and Objectives

- 2.1 To study the pattern of disease in lymph nodes using FNAC
- 2.2 To study the cytomorphological pattern of TB lymphadenitis and
- 2.3 To study the diagnostic algorithm used for diagnosis of TB lymphadenitis

3. Material and Methods

Retrospective study from January 2012-July 2013 was conducted at department of Pathology, MGMC&RI. Inclusion criteria – All the lymph nodes aspirated by FNA technique were included. Either needle only technique or fine needle aspiration technique was done as per decision of cytopathologist. Small guage (22 or 23) and 10 ml syringe used. Technique was performed by postgraduate or faculty member of pathology. Haematoxylin and Eosin(H&E), May Grunwald Giemsa(MGG) and AFB stains were used as per requirement.

4. Results

Total of 165 cases came for FNAC during the study period, of which 15 cases were found inadequate for opinion after aspiration. Distribution of lymphadenopathies according to cytologic diagnosis is depicted in figure 1.

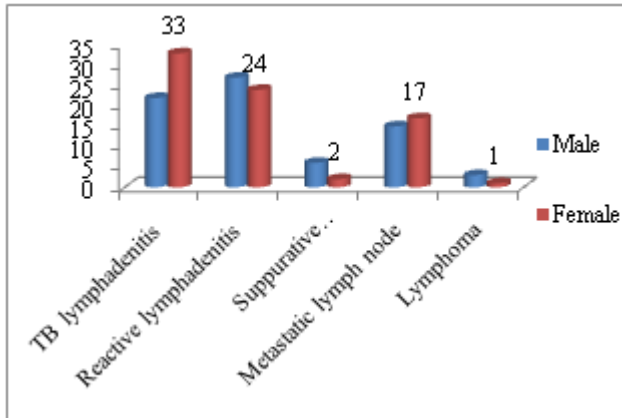


Figure 1: Cytological diagnosis of Lymphadenopathy

Tuberculosis was the most common cause for lymphadenopathy in the present study followed by reactive pattern and metastatic deposits. Table 1 represents age wise distribution of various lymph node disorders. TB lymphadenitis was common among adolescents and young adults compared to children and elderly.

Table 1: Age and Incidence of lymphadenopathy

	0-10	11-20	21-30	31-40	41-50	51-60	>60
TB lymphadenitis (55)*	5 (9%)	11 (20%)	14 (25%)	8 (14%)	9 (16%)	3 (5%)	1 (1%)
Reactive lymphadenitis (51)*	7 (13%)	6 (11%)	15 (29%)	5 (9%)	6 (11%)	7 (13%)	1 (1%)
Suppurative lymphadenitis (8)*	1 (12%)	2 (25%)	3 (37%)				
Metastases (32)*				2 (6%)	11 (35%)	9 (29%)	8 (25%)
Lymphoma (4)*	1 (25%)				3 (75%)		

*Age was not mentioned in 4 cases of both TB lymphadenitis and reactive lymphadenitis. Age was not known in 2 cases of suppurative lymphadenitis and metastases.

Cytomorphological pattern of TB lymphadenitis is given in table 2.

Table 2: Cytomorphological pattern of TB lymphadenitis

1.	Granulomatous lymphadenitis with necrosis	35 (63%)
2.	Granulomatous lymphadenitis without necrosis	13 (23%)
3.	Necrotic material without granuloma	5 (9%)
4.	Only inflammatory material with occasional cells suspicious of epithelioid macrophages	2 (3%)

Staining for AFB was done for all TB lymphadenitis cases diagnosed cytologically, but AFB were detected in only 2 cases. Whereas metastases was common in elderly as usual. Metastases due to adenocarcinoma was more common than due to squamous cell carcinoma. In case of metastatic lymph nodes, primary was known in 21 cases (Carcinoma of breast-9, gastric-1, colon-1, anal-1, oesophagus-1, check-1, tongue-1, lip-1, index finger-2, larynx-2) and primary was not known in remaining 11 cases. Due to lack of facilities for ancillary studies in our centre, all cases of lymphoma and metastatic lymph nodes were referred to higher centre for further work up.

5. Discussion

Major drawbacks in diagnosis of EPTB is atypical presentation and lack of diagnostic resources in developing countries like India, leading to overdiagnosis and

unnecessary empirical treatment based on clinical grounds alone without histopathological or bacteriological confirmation. Only 34% of 373 biopsies of clinically diagnosed LNTB had histopathological confirmation in a study conducted at TRC, Chennai^[4]. According to a study conducted by RNTCP in 16 districts of India, 28% of EPTB cases were diagnosed on clinical grounds alone, without confirmatory laboratory or radiological investigation and 43% of Lymph node TB were diagnosed on clinical grounds alone.

FNA is not only simple, cost effective but also useful for procuring sample to do ancillary studies for rapid identification of mycobacteria, species determination and drug susceptibility testing. Most of studies have followed a similar pattern of approach for cytodagnosis of TB like ours. According to Das et al., when AFB is positive in a smear containing epithelioid granuloma and / necrosis, it is diagnostic of TB lesion. When AFB is negative in the presence of epithelioid granuloma, in India it is considered a granulomatous lesion likely to be tuberculous etiology and culture for mycobacterium is advised. When smear contains only necrotic material with or without inflammatory cells and AFB is negative, it is advised to exclude TB by mycobacterial culture, PCR or other methods^[5]. In the present study, AFB was positive in only two cases, both had necrotic material which is similar to observation done by Malakar et al., who also found higher AFB positivity in smears containing necrotic materials^[6]. But studies have with immunostaining techniques have demonstrated MTB antigen in areas where acid fast bacilli were absent or scarce, indicating that even debris derived from mycobacteria retained its antigenic property although it had lost its AFB staining property^{[7]-[8]}

In the western literature, according to study done by Margileth and associates, chronic lymphadenopathy due to mycobacterial infection is more frequently caused by Non-tuberculous mycobacteria (NTM) than by M.Tuberculosis^[9]. But very little is known regarding lymphadenitis due to NTM from India. Correct identification of these two species is important because ATT is effective for TB adenitis, while excision is the treatment of choice for NTM adenopathy. FNA is a valuable tool in the primary diagnosis and classification of lymphoma if the cytopathologist understands modern classification, does ancillary studies like immunophenotyping and molecular genetics and works in close association with a hematopathologist.

6. Conclusion

FNAC is a simple, non-invasive cheap tool with high sensitivity in tuberculous cases and can replace excision biopsy for diagnosing tuberculosis in developing countries like India. But coupling FNAC with Zeihl-Neelson staining, Immunocytochemistry, culture and PCR technique not only increases the specificity, diagnostic accuracy but also useful for identifying atypical mycobacteria, determining drug sensitivity or resistance, because emergence of mutant tubercle bacilli poses a great challenge.

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