

Diagnostic Accuracy of Fine Needle Aspiration Cytology Followed By Excisional Biopsy In Peripheral Lymphadenopathy

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ABSTRACT

Objective To assess the diagnostic accuracy of fine needle aspiration cytology (FNAC) in patients with lymphadenopathy.

Study design Cross sectional study.

Place & Duration of study Department of General Surgery, Al Tibri Medical College Hospital and Lyari General Hospital Karachi, From July 2018 to December 2018.

Methodology Patients who presented with lymphadenopathy of any superficial nodes of more than six months duration were included in the study. FNAC and excisional biopsy were done for the same lymph nodes. Ethical approval was taken from Hospital Ethical Board. Histopathology was performed to compare the findings on FNAC and H&E staining. Data were collected on specially designed form. Descriptive statistics were used to present data.

Results A total of 56 patients with lymphadenopathy were managed. There 29 were males and 27 females. Most common anatomical area involved was cervical (n=44 - 78.6%), followed by axillary (n=8 - 14.3%) and Inguinal (n=4 - 7.1%). The most common diagnosis was tuberculosis (n=25 - 42.9%) followed by reactive hyperplasia (n=18 - 30.4%) and lymphoma was found in 2 (5.4%) cases on FNAC as concordant result with histopathology except for two cases in whom reactive lymphadenitis on FNAC turned out to be metastatic lesion and other as lymphoma on excisional biopsy. The sensitivity of FNAC for tuberculosis was found to be 98.1%.

Conclusions The usefulness and reliability of FNAC in patients of lymphadenopathy in resource constraint set up is documented through this study. FNAC was found to be reliable, cost effective and less invasive diagnostic modality. Tuberculosis was the most common cause of lymphadenopathy.

Key words FNAC, Cervical lymphadenopathy, Lymph node biopsy, Diagnostic accuracy.

INTRODUCTION:

Lymphadenopathy is one of the commonest clinical

presentations in outpatient surgical department of which cervical lymphadenopathy outnumbers the rest.¹The etiology is multifactorial ranging from infectious to primary lymphatic and metastatic malignancy. FNAC over the years has emerged as the reliable, inexpensive and minimally invasive procedure with hardly any complication.² For everyday surgical practice FNAC remains the most reliable first hand diagnostic investigation, whereas excisional biopsy needs local or general anesthesia which is more expensive.³ Lymphadenopathy with clinical symptoms provides a strong clue to the diagnosis of disease process such as rubbery in consistency for lymphoma, matted in tuberculosis

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(TB) lymphadenitis and hard discrete in metastatic disease.^{4,5} In certain conditions in addition to cytology, histopathological confirmation is also required. For lymphoma gold the standard approach is excisional biopsy to study cell structure and architecture of node as well as for histochemical markers.⁶ Although FNAC with adjunctive test as flow cytometry increases the sensitivity for primary lymphatic malignancy but H&E stained specimens are still required.⁷

Tuberculosis is still prevalent in our society due to poverty, malnutrition and overcrowding with drug resistant strains of mycobacterium tuberculosis as well.⁸ Cervical lymphadenopathy with evening pyrexia, weight loss and lethargy strongly suggest TB and with the FNAC confirmation treatment can be initiated. For metastatic lymphadenopathy with primary site as nasopharynx, oropharynx, lips and oral cavity etc where primary disease is apparent, FNAC is useful modality to detect its metastasis and in some cases where primary disease is not found it helps in making a working diagnosis. Because of its reliability, FNAC has extended use in other diseases such as thyroid and breast pathologies.⁹ The aim of our study was to assess the diagnostic accuracy of FNAC in lymphadenopathy in a resource constraint set up by comparing its findings with excisional lymph node biopsy.

METHODOLOGY:

This was a case series conducted on patients with superficial lymphadenopathy recruited from surgical outpatient department and referrals from medical units at Al Tibri Medical College Hospital and Lyari General Hospital Karachi, From July 2018 to December 2018. All patients above 3 years were included. Patients with lymphadenopathy already diagnosed and on treatment for the various diseases were excluded. Patients who were judged unfit for excisional biopsy or high-risk cases with bleeding disorders, were also excluded.

Patients included in the study were assessed clinically and detailed local examination of enlarged lymph nodes were done. All relevant investigations as blood CP, ESR, chest x-ray and viral markers were sent. Written and informed consent for the procedure FNAC followed by excisional biopsy was taken. To minimize error both FNAC and histopathology were carried out by same histopathologist. A specially designed form was made for data collection. For FNAC the local area was cleaned with spirit and node fixed with left hand. A 21-23 gauge, 1.5 cm long needle mounted on 10ml syringe was used. Aspirated material was put

on slide and fixed with 70-90% methyl alcohol and Giemsa, Hematoxylin and Eosin stains were used for cell study. Excisional biopsy was performed in each subject case on same lymph node depending on accessibility and fitness under general and local anesthesia. Specimen was preserved in 20% formalin and sent to histopathologist for reporting. The data was entered on SPSS version 20, results generated and analyzed using descriptive statistics.

RESULTS:

A total of 56 patients were included. There were 27 (51.8%) males and 29 (48.2%) females. The mean age of the patients was 33.5 year (from 3 year to 80 year). Cervical lymphadenopathy was the most common findings in 44 (78.6%) patients. Other anatomical groups involved were axially in 8 (14.3%) and inguinal lymph nodes in 4 (7.1 %) patients.

Among 56 patients, FNAC suggested tuberculosis in 25 (42.9%) patients followed by reactive lymphadenitis (n=18 - 30.4%) and granulomatous disease (n=4 -7.1%). In 7 (14.3%) patients diagnosis was metastatic lymphadenopathy and lymphoma was reported in 2 (5.4%) specimens. Comparison of FNAC with histopathology found concordant result in our study. However, in one patient false negative result on FNAC turned to be metastatic lesion and the other as hypercellular appearance on slide diagnosed as reactive lymphadenitis on FNAC, Non Hodgkin lymphoma was reported in excisional biopsy.

The diagnostic accuracy for tuberculosis, metastatic and reactive lymphadenopathy was 98.6%, 84.6% and 66.6% respectively. The positive predictive value for TB lymphadenitis and metastatic lymphadenopathy was 98.9% whereas in reactive lymphadenitis 97%. Details of age group and pathology is given in table I.

DISCUSSION:

Lymphadenopathy is a common medical condition and its diagnosis is always challenging. In most cases lymph nodes are usually enlarged due to benign conditions. Tuberculosis is a still prevalent in Pakistan and cervical lymphadenitis is it's common presentation. Same has been found in present study. Out of 56 cases in 45 benign etiology was noted making it 80.3% of all conditions. However malignant etiology is found in 11 (19.6%) patients. In benign pathology tuberculosis was the most frequent cause (44.6%) followed by reactive lymphadenitis (28.6%). Among the malignant pathology, metastatic diseases were found in 14.3%. Cervical lymph node was the commonest site involved in benign conditions (78.6%). The results of our study are in conformity

Table I: Age Distribution and Histopathological Diagnosis

Age	Reactive Lymphadenopathy		TB		Granulomatous		Metastatic		Hodgkin's Lymphoma		Non Hodgkin's Lymphoma	
	F	M	F	M	F	M	F	M	F	M	F	M
1-20 Year	2	6	4	4	0	2	0	0	1	1	1	0
21-40 Year	1	3	7	6	2	0	2	0	0	0	0	0
41-60 Year	1	2	0	0	0	0	2	0	0	0	0	0
61-80 Year	0	1	1	1	0	0	1	1	0	0	0	0
81-100 Year	0	0	0	2	0	0	2	0	0	0	0	0

with other local and regional studies.^{2,10}

FNAC as diagnostic modality is reported to detect cause of lymphadenopathy in most subjects.¹⁰ Sensitivity and positive predictive value of FNAC in our study were high. Same has been the findings in another study.¹¹ As pulmonary and extrapulmonary TB both are common in our part of the world so it is not surprising to find this condition affecting lymph nodes.¹² FNAC is a cost effective modality and helps to make early diagnosis and treatment can be offered without delay.¹³ In contrast to benign pathologies western literature reports more of malignant diseases in patients with lymphadenopathy. In a study by Allin et al, lymphoma and metastatic tumor were the commonest conditions diagnosed on FNAC.¹⁴

The age group mostly affected by TB lymphadenopathy was between 21-40 year with average of 33.8 year. This pattern is also reported in other local studies.^{15,16} Reactive lymphadenitis and granulomatous disease were other benign etiologies detected on FNAC. The diagnosis of reactive lymphadenitis should be correlated with clinical history and examination as FNAC findings may be misleading and sometimes actual pathology is missed. Same was noted in our study. For diagnosis of lymphoma, lymph node architecture is essential for reporting as comparative study done by Ahmed et al.¹⁷

In our study 8 cases proved as metastatic lymphadenopathy and almost all patients were above 60 year of age. FNAC can provide clue to primary tumor by cell type. The sensitivity of FNAC in diagnosis of malignant lesion is reported as high. Excision biopsy which is considered gold standard was found highly concordant with the findings of FNAC in index study. In one patient with diagnosis of reactive hyperplasia on FNAC, lymphoma was found on excisional biopsy. A thorough clinical examination in suspected cases is needed to evaluate diagnostic dilemma and be confirmed by

gold standard invasive tool as excisional biopsy as evident by Hafeez et al.¹⁸

CONCLUSIONS:

In our study the diagnostic accuracy of FNAC for benign and malignant pathologies was found to be high and same was confirmed on excisional biopsy. Tuberculosis was found to be the commonest disease causing lymph node enlargement.

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Received for publication: 22-04-2019

Accepted after revision: 22-06-2019

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Conflict of Interest:

The authors declare that they have no conflict of interest.

Source of Funding:

None

How to cite this article:

Malik SJ, Khoso MY, Bano F. Diagnostic accuracy of fine needle aspiration cytology followed by excisional biopsy in peripheral lymphadenopathy. *J Surg Pakistan.* 2019;24(1):38-41. Doi:10.21699/jsp.24.1.9.