

FNAC in the diagnosis of lymph node lesions

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Abstract

Background and Objective : Lymph node swellings are one of the commonest clinical presentation of patients. FNAC is usually the first step in evaluation of enlarged lymph node. It is simple, rapid, inexpensive diagnostic procedure. The objective of study was to correlate FNAC and histopathological findings.

Materials and Method : A total of 75 clinically diagnosed cases of lymphadenopathies referred to Dr Lal Path Lab between April 2020 to March 2022 were included in the study. FNAC results of 50 cases were compared with the histopathological findings.

Results : Maximum numbers of patients were diagnosed with Reactive Lymphadenopathy 27 (36%), followed by Tubercular lymphadenitis 16 (21%), Metastatic lymphadenopathy 11 (14.6%), Granulomatous lymphadenitis 9 (12%), Hodgkin's lymphoma 5 (6.6%), Suppurative lymphadenitis 4(5.3%) and Non- Hodgkin lymphoma 3 (4%) cases.

Conclusion: FNAC is a very safe, simple, reliable, first line diagnostic tool to investigate nature of lymph node lesions.

Keywords: FNAC, Lymph nodes, Histopathology

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I. Introduction

Lymphadenopathy is one of the commonest clinical presentation which includes wide spectrum ranging from inflammation to malignant disease, such as lymphoma or metastatic malignancy. ⁱIt serves as excellent clue to underlying disease. FNAC is a simple, rapid, inexpensive diagnostic procedure with minimal trauma and low complication. ⁱⁱ However, tissue biopsy is considered as gold standard method for diagnosis of lymph node pathologies. ⁱⁱⁱ The objective of the study was to evaluate usefulness of FNAC as a diagnostic tool in cases of lymphadenopathy and to correlate the cytological findings in cases where lymph node biopsy was done.

II. Materials And Methods

In the present study, all clinically diagnosed cases of lymphadenopathies referred to Dr Lal Path Labs, over a period of two years, from April 2020 to March 2022 were included. Written informed consent was obtained from all patients. Among the 75 cytologically diagnosed cases, only 50 cases with histopathological correlation were taken in this study. A detailed history, clinical examination and relevant investigations were documented. Aseptic precautions were taken and aspiration of the selected lymph node was done. The smears were stained with Papanicolaou and Giemsa stain. ZN stain was done for all the cases where necrotic material was aspirated or clinically suspected cases of tuberculosis. Smears were examined and cytological diagnosis was offered. Lymph node of the patients who underwent subsequent surgical biopsy were fixed in 10% formalin and gross examination was done. After the processing and paraffin embedding, sections of 3 to 6 microns were taken. Clearing of the slides was done, followed by Hand E staining. Special stain like ZiehlNeelsen stain and PAS stain were done whenever indicated. Histopathological study was done and compared with cytological results.

III. Results

In all, 75 patients were considered for FNAC in the study and out of these 50 (66.6%) biopsies were evaluated for histopathology study. Out of 75 patients, 39 (52%) of them were male and 36 (48%) were female. The mean age of the patients was 42 years (min-max: 7-82 years). The specimens were obtained from cervical (n=32), axillary (n=28), submandibular (n=7), supraclavicular (n=4), inguinal (n=3) and submental lymph nodes (n=1).

Table 1: Cytological diagnosis of lymph node lesions (n=75)

Lymph node lesions	Number of cases	Percentage
Reactive lymphadenitis	27	36%
Tubercular lymphadenitis	16	21%
Granulomatous lymphadenitis	09	12%
Suppurative lymphadenitis	04	5.3%
Metastatic lesions	11	14.6%
Non Hodgkin lymphoma (NHL)	03	4%
Hodgkin lymphoma (HL)	05	6.6%
Total	75	100%

FNAC diagnosis was found to be as follows: Among non-neoplastic lesions, reactive lymphadenitis 27 (36%), tubercular lymphadenitis 16 (21%), granulomatous lymphadenitis 9 (12%), suppurative lymphadenitis 4 (5.3%). Neoplastic lesions were diagnosed in 19 cases among which metastatic lesions 11 (14.6%), Non Hodgkin lymphoma 3 (4%), Hodgkin lymphoma 5 (6.6%) was diagnosed.

Reactive lymphadenitis was diagnosed on basis of high cellular density with mixed population of cells and presence of tingible body macrophages. Tubercular lymphadenitis was diagnosed on the basis of presence of epithelioid cell granuloma and caseous necrosis with or without langhan’s giant cells and ZiehlNeelsen staining positive. Granulomatous lymphadenitis was diagnosed on the presence of epithelioid cell granuloma with or without giant cells, absence of necrosis, ZiehlNeelsen staining negative. Suppurative lymphadenitis was diagnosed on the presence of polymorphonuclear leucocytes, lymphocytes and necrotic debris.

Out of 11 cases which turned out to be metastatic, 7 cases were of metastatic squamous cell carcinoma and 4 cases were of metastatic adenocarcinoma. Among 8 cases of lymphoma, non Hodgkin lymphoma was diagnosed in 3 cases with presence of monomorphic population of lymphoblasts. However, 5 cases of Hodgkin’s lymphoma showed mixed population of cells with characteristics Reed- Sternberg cells.

Table 2: Cyto-histo correlation of lymph node lesions (n=50)

Cytological diagnosis	No of cases	Histological diagnosis					
		Reactive lymphadenitis	Tubercular lymphadenitis	Granulomatous lymphadenitis	Metastatic carcinoma	Non Hodgkin Lymphoma	Hodgkin lymphoma
Reactive lymphadenitis	18	16				02	
Tubercular lymphadenitis	06		06				
Granulomatous lymphadenitis	07			06			01
Metastatic carcinoma	11				11		
Non Hodgkin Lymphoma	03	01				02	
Hodgkin lymphoma	05						05
Total	50	17	06	06	11	04	06

Table 3: Sensitivity and Specificity of FNAC

Name of disease	Sensitivity(%)	Specificity(%)
Reactive lymphadenitis	100%	94.11%
Tubercular lymphadenitis	100%	100%
Granulomatous lymphadenitis	100%	97.72%
Metastatic carcinoma	100%	100%
Non- Hodgkin lymphoma	50%	97.82%
Hodgkin lymphoma	83.33%	100%

A histopathological correlation was determined in 50 of 75 cases which were diagnosed both by FNAC and histopathology. Out of 50 cases, 18 were of reactive lymphadenitis, 16 of which were true positive and 2 were false positive which turned out to be non Hodgkin lymphoma on histopathology. The result showed 100% sensitivity and 94.11% specificity.

In 7 cases of granulomatous lymphadenitis, 6 showed histopathological corroboration. However, one case was found to be Hodgkin lymphoma on histopathology. Sensitivity was 100% whereas specificity was

97.72%. Out of 6 cases of tubercular lymphadenitis, cytohistological correlation was seen in all. Hence, sensitivity and specificity was 100% each.

Similarly, all metastatic carcinoma cases showed exact corroboration with histopathology. Thus, sensitivity and specificity was 100% in each cases. However, Hodgkin lymphoma sensitivity was 83.33% and specificity was 100% as one case of granulomatous lymphadenitis turned out to be Hodgkin lymphoma on biopsy.

In cases of NHL, out of 3 cases, one turned out to be reactive on histopathology examination and 2 were diagnosed as Non Hodgkin lymphoma on histopathology too. Thus sensitivity and specificity of FNAC in cases of NHL was 50% and 97.82% respectively.

IV. Discussion

Lymphadenopathy is a commonly encountered clinical condition which require accurate diagnosis so that proper treatment can be started as early as possible. FNAC is safe, rapid and inexpensive method for quick diagnosis.

In our study, maximum patients were in between age group 25-45 years which was similar to studies done by Pandit AA et al^{iv}, Nasar et al^v, whereas in study done by Gupta et al^{vi}, most of the patients were in age group of 0-20 years. Male to female ratio was 1:0.6, with male preponderance. Similar observation was seen in studies done by Hirachand et al^{vii}, Adhikari et al^{viii}. In the present study, most common site for lymph node lesions was cervical region which is comparable with Mohanty et al^{ix}, Pandit AA et al^{iv} and Amitet al^x.

In the present study, 36% cases were diagnosed to be reactive lymphadenitis which was similar to studies done by SumitGiri et al^{xi} (34.6%), Hirachand et al (41.5%)^{vii}. However, this number was lower than Nasar et al^v who reported 58.4% cases.

In the present study, metastatic lesions were found in 14.6% cases which was more than lymphoma cases 10.6%. Similarly, Adhikari et al^{viii}, Nasar^v et al reported 12.72% were and 14% respectively. This number was much lower than Sumyra et al^{xii}, who reported 38.2% cases. Most of the metastatic nodes sampled were SCC followed by adenocarcinoma which was similar to study done by Hajdu et al^{xiii}. Hodgkin lymphoma was diagnosed in 6.6% cases whereas Non Hodgkin lymphoma was diagnosed in 4% cases which were similar to other studies.^{xii,xiv}

In the present study, there were 18 cases of reactive lymphadenitis which underwent FNAC as well as biopsy. Out of 18 cases, 16 correlated well whereas 2 cases came out to be Non Hodgkin lymphoma on biopsy. This was similar to study done by Hirachand et al^{vii}. However, Adhikari et al^{viii} reported 100% correlation.

In the present study, 6 out of 7 cases of granulomatous lymphadenitis correlated well with both FNAC and HPE. This was similar to study done by SumitGiri^{xi} and Sumyra^{xii}. In the present study, out of 3 cases of NHL, 2 correlated well on HPE but one was diagnosed to be Reactive lymphadenitis. This results were similar to study done by SumitGiri et al^{xi}.

V. Conclusion

FNAC of lymph nodes is an important diagnostic tool for diagnosing both benign and malignant lesions. It can be recommended as initial diagnostic test and excision biopsy should be done whenever required.

Conflict of interest : None to declare

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