

A Study of Fine Needle Aspiration Cytology -Histopathological Correlation of Lymph Nodes

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Abstract: FNAC is a simple and rapid diagnostic technique because of early availability of results, simplicity of the procedure, minimal trauma and complications. The aspiration cytology is now considered a valuable diagnostic aid and is part and parcel of a pathologist repertoire.

The aim of the study is to evaluate the results of FNAC of lymph nodes in comparison to the results of histopathology. FNAC is useful and reliable in diagnosing neoplastic and non-neoplastic lesions of lymph nodes. It helps in planning treatment, where definitive operative intervention can be performed in the single session.

Keywords: FNAC, lymphadenopathy.

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I Introduction

Lymph-nodes, the most widely distributed and easily accessible lymphoid tissue, are frequently examined for diagnostic purpose. Lymphadenopathy is one of the commonest and worrisome clinical presentation in patients attending the outpatient department in most of the hospitals. The etiology varies from an inflammatory process to a malignant condition¹.

Evaluation of FNAC in comparison to histopathology of lymph nodes in a prospective cohort of patients with lymphadenopathy produces a powerful tool and results in the distinctly improved diagnostic accuracy of lesions of lymph nodes². FNAC has also been advocated as a useful method in comparison to more expensive surgical excision biopsies in developing countries with limited financial and health care resources³.

In India and some other developing countries, tuberculosis (TB) is the first differential diagnosis for a patient who presents with chronic lymph node enlargement⁴.

It is difficult to differentiate TB and lymphoma on the clinical ground only, especially when fine needle aspiration cytology (FNAC) is totally inconclusive. On the other hand, granulomas may be found in both TB and lymphoma, especially in cases of Hodgkin disease^{5,6}. Whereas the evaluation of granulomas is a complex problem in developed countries⁷.

II Methods

The present prospective study has been done in the Department of Pathology, Sri Venkateswara Medical College, Tirupati for 2 years duration the period from June 2010 to June 2012 on a sample of 354 patients with superficial palpable lymphadenopathy from various sites referred from outpatient and inpatient departments of Sri Venkateswara Ram Narayan Ruia Govt General Hospital, Tirupati.

III Materials:

1. Swabs with spirit
 2. Needles- standard disposable 22-25 G, 30-35G long needles for most superficial lesions. Finest 25 G needles for children.
 3. Syringes- Disposable plastic 10 ml syringes.
 4. Slides- Plain micro slides 75X25X1.35mm.
 5. Small transparent box for slide preparation
 6. Fixatives - for routine fixation of smears, Isopropyl alcohol, conveniently in Coplin jar, preferable to spray fixatives.
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IV Results And Observations

During the study period, a total of 354 cases of lymph nodal swellings are analysed by FNAC and 86 cases diagnosed are subjected to histopathology. The distribution among benign and malignant are 291 (82.2%) and 63(17.2%)

Out of 354 cases, 203(57%) cases were diagnosed as granulomatous lymphadenitis and 60(16.9%) as reactive/non-specific lymphadenitis. These were the most common lesions seen, followed by metastatic deposits in 59(16.6%) cases and suppurative lymphadenitis in 28(7.9%) cases.

Lymphadenopathy with both cytological and histopathological diagnosis

Cytological Diagnosis	No. of cases diagnosed by cytology	No. of cases diagnosed by Histopathology	Percentage of patients subjected to histopathology
Granulomatous lymphadenitis	203	56	27.6%
Reactive/Non-specific Lymphadenitis	60	10	16.7%
Metastatic deposit	59	16	27.1%
Suppurative lymphadenitis	28	0	0
Hodgkins lymphoma	2	2	100%
Non-Hodgkins lymphoma	2	2	100%
Total	354	86	24.3%

In cases subjected to histopathology 56(27.6%) cases of granulomatous lymphadenitis, 10(16.7%) cases of metastatic deposits and 4 cases of lymphomas are identified. This low acceptance of 24.3% shows the convenience of FNAC over biopsy to the patient.

Age wise distribution of patients with lymphadenopathy

Lesion	No. cases	1-10	11-20	21-30	31-40	41-50	51-60	>60
Granulomatous lymphadenitis	203	15	34	56	43	21	22	12
Reactive/Non-specific Lymphadenitis	60	7	22	12	5	7	7	0
Metastatic deposit	59	0	0	1	6	6	9	37
Suppurative lymphadenitis	28	2	3	6	8	3	2	4
Hodgkin's lymphoma	2	0	0	1	1	0	0	0
Non-Hodgkin's lymphoma	2	0	0	0	0	0	1	1
Total	354	24	59	76	63	37	41	54

In the present study, the youngest patient is 3 years old and oldest is 85 years of age. Among the total number of 354 cases, the highest incidence is noticed in 3rd decade. Tuberculosis is seen predominantly during 3rd and 4th decades whereas metastatic deposits are noticed in 6th and 7th decade.

Most of the cases showed good correlation between cytology and histopathology except one case of granulomatous lymphadenitis diagnosed by FNAC turned out to be Non-Hodgkin's lymphoma in histopathology and one case of reactive lymphadenitis diagnosed by FNAC showed granulomatous lymphadenitis in histopathology.

V Statistical Analysis

Parameters	Granulomatous lymphadenitis	Reactive lymphadenitis	Metastatic deposits	HL	NHL	Total
Total cases	56	10	16	2	2	86
True positive	55	9	16	2	2	20
False positive	1	1	0	0	0	0
False negative	1	0	0	0	0	1
True negative	29	76	70	84	84	65
Sensitivity%	98.2	100	100	100	100	95.2
Specificity%	96.6	98.7	100	100	100	100
Positive predictive value %	98.2	90	100	100	100	100
Negative predictive value	96.6	100	100	100	100	98.4

%						
Diagnostic accuracy%	97.6	98.8	100	100	100	98.8
Discordance rate%	2.3	1.1	0	0	0	1.1

A correlation has been done in 86 cases which are diagnosed both by FNAC and histopathology, in which 65 are non-neoplastic and 21 are malignant. In the non-neoplastic lesions, 56 are granulomatous lymphadenitis, in which one single case turned out to be non-Hodgkin's lymphoma on histopathological examination. The results show 98.2% sensitivity, whereas specificity is 96.6%, positive predictive value is 98.2% and negative predictive value is 96.6% with diagnostic accuracy of 97.6% and discordance rate of 2.3%.

In 10 cases of Reactive lymphadenitis, histological correlation is seen in 9 cases. A single case has been diagnosed as Granulomatous lymphadenitis on histopathological examination. Sensitivity, Specificity and diagnostic accuracy is found to be 100%, 98.7% and 90% respectively. The positive and negative predictive value are 100% and 98.8% respectively with the discordance rate of 1.1%.

In Malignant lesions all the 20 cases showed good correlation between FNAC and Histopathology.

Therefore, the overall sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of FNAC procedure is found to be 95.2%, 100%, 100%, 98.4% respectively with 1.1% discordance rate.

VI Conclusion

The Clinician's interest lies in definite early and accurate diagnosis without much inconvenience to the patient so that early treatment is started, which goes a long way in the final outcome especially in the neoplastic conditions. Dependence on the clinical evidence alone would lead to erroneous diagnosis in considerable number of lymphadenitis cases. Hence an impetus is generated to confirm the diagnosis by simple technique like FNAC or cytopathology or histopathology, along with ancillary investigations.

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