



To Evaluate the Sensitivity and Specificity of The Fine Needle Aspiration Cytology (FNAC) in the Diagnosis of Cervical Lymphadenopathy Presenting at a Tertiary Health Care Centre.

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ABSTRACT

Aim : The aim of this study was to evaluate the reliability and diagnostic accuracy of fine needle aspiration cytology (FNAC) in the cases of cervical lymph nodes .

Patients and methods: It was a prospective study conducted on 102 selected patients with cervical lymphadenopathy that presented to the out patient clinic of the Department of the Pulmonary Medicine, Rohilkhand Medical College and Hospital, Bareilly. All the patients were subjected to FNAC after consent. All the discordant and the hypocellular slides were excluded from the study. The cytopathological diagnoses were compared with the histopathological results of the same excised nodes. Diagnostic sensitivity, specificity, positive predictive value, negative predictive value were calculated.

Results : A total of 102 patients were studied, out of which 88 patients had lymphadenopathies of infective origin while 14 patients had metastatic disease. There were 72 males and 30 females. Majority of patients were in age group 12 – 30 years followed by 31 – 50 years and >50 years. The sensitivity, specificity, false positive, false negative, positive predictive value and negative predictive value of FNAC of lymphadenopathies to diagnose tubercular lymphadenopathies were 80.0%, 100.0%, 0.0%, 20.0%, 100.0% and 82.14% respectively. Similarly, sensitivity, specificity of FNAC of lymphadenopathies to differentiate benign and malignant lesion were 100% each. False positive, false negative, positive predictive value and negative predictive value were 0.0%, 0.0%, 100.0% and 100.0% respectively.

Conclusion : FNAC is very useful in diagnosing tubercular lymphadenitis and differentiating it from reactive and other granulomatous lymphadenitis. It is very useful to distinguish between benign and malignant lymphadenopathies. In many setups without proper facilities antitubercular therapy is started to the patients without history and proper examination. FNAC being a simple procedure with almost negligible complications is henceforth very essential before starting the antitubercular therapy regimen to minimize the faulty treatment, drug resistance and misuse of the drugs.

KEYWORDS

Fine needle aspiration cytology; histopathology; cervical lymphadenopathies.

Introduction

Cervical Lymphadenopathy is a common clinical presentations amongst patients, attending the OPD clinics . Fine needle aspiration cytology (FNAC) of lymph node has become of hallmark importance in the modern era in initial diagnosis and management of patients with cervical lymphadenopathy due to rapid availability of results and less complications .FNAC has also been . It has an accurate diagnosis for reactive lymphoid hyperplasia, infectious disease, granulomatous lymphadenitis with or without caseation , and metastatic malignancy . How ever, in most of these cases, the primary tumor is clinically known and FNAC is used widely for the follow up of these patients. The role of FNAC for the initial diagnosis and sub classification of primary lymphoid malignancy is controversial . Enlarged palpable cervical lymph nodes are common and worrying presentation in adults as well as in children. Cervical lymph nodes are involved most often in all types of lymphadenopathy particularly reactive hyperplasia and Hodgkin lymphoma. The improved diagnostic ability of FNAC in the diagnosis of malignant lesions of the lymph nodes is probably due to a combination of factors such as the increased use of the technique, better and easier availability of reference material of similar studies, and increased experience of the trained observers over the years.³

Method

This is a prospective, comparative study done in the Department of Pulmonary Medicine, Rohilkhand Medical College and Hospital, Bareilly. Patients more or equal to 12 years of both genders were included. The procedure was done after the consent of the patient. 102 patients with cervical lymphadenopathies subjected to both fine needle aspiration cytology (FNAC) and histopathology (HPE). The sensitivity, specificity, false positive, false negative, positive predictive value and neg-

ative predictive value were calculated.

Consent was taken from all patients for the study and ethical approval was obtained from the Institution Ethical Committee Review Board.

Results

During a period of 12 months, there were 102 patients who underwent FNAC in our study. There were 72 males and 30 females. Majority of patients were in age group 12 – 30years followed by 31 – 50 years and >50 years. The sensitivity, specificity, false positive, false negative, positive predictive value and negative predictive value of FNAC of lymphadenopathies to diagnose tubercular lymphadenopathies were 80.0%, 100.0%, 0.0%, 20.0%, 100.0% and 82.14% respectively. Similarly, sensitivity, specificity of FNAC of lymphadenopathies to differentiate benign and malignant lesion were 100% each. False positive, false negative, positive predictive value and negative predictive value were 0.0%, 0.0%, 100.0% and 100.0% respectively. Most common correlation between FNAC and HPE were seen in reactive and granulomatous lymphadenopathies.

Age distribution of cervical lymphadenopathies

Age group(years)	Gender		Total patients	Percentage (%)
	Male	female		
12-30	45	15	60	59
31-50	20	12	32	31
>50	6	4	10	10
Total patients	72	30	102	100

Lymphadenopathy correlation

Histological diagnosis	Total number of patients	FNAC correlating with HPE	FNAC not correlating with HPE (%)
Tuberculous Lymphadenopathies	50	40	10 (10%)
Granulomatous Lymphadenopathies	32	32	0
Reactive Lymphadenopathies	14	14	0
Metastatic Lymphadenopathies	06	06	0
total	102	92	10(10%)

Sensitivity and specificity of FNAC diagnosis

	Tuberculosis	Reactive cells	Secondaries	Lymphoma
Sensitivity (%)	80	77	95	100
Specificity (%)	95	98	100	100

Cytomorphologic features of aspirates correlated with presence of AFB in tubercular lymphadenopathy

Cytomorphologic feature	No. of cases	AFB present in
Epithelioid cells and caseation necrosis	22	13
Epithelioid and giant cells with caseation necrosis	20	14
Necrosis with polymorphs	4	
Epithelioid cells only	4	
Total	50	

Discussion

Lymphadenopathy is a very common symptom that patients present with in primary care settings. The observation of enlarged lymph node particularly more than 5 mm raises fears about serious illness, usually from benign infectious causes. Cervical lymph nodes are the most frequently enlarged and biopsied of all peripheral lymph nodes. The knowledge of the pattern of lymphadenopathy in a given geographical region is essential for making a confident diagnosis or suspecting a disease. Tuberculosis is the commonest cause of lymphadenopathy in developing countries especially like India¹⁻² and should be considered in every case of granulomatous lymphadenopathy unless proven otherwise. FNAC as a first line screening method has been recommended in suspected malignancy.⁴

Majority of patients in this study of different origin were in age group 12 –30 years followed by 31 – 50 years and > 50 years. The finding obtained correlated with studies done by Pandit et al who also reported majority of cases belonged to age group 21 –40 years. Malignant metastases to cervical lymph node also were seen mostly in older age group. Khieri and Ahmed study revealed that majority of lymph nodes were benign in origin and most common is tuberculous lymphadenitis followed by reactive lymphadenitis and granulomatous lymphadenitis which is similar to our study. The calculated sensitivity rate in different studies is from 81% to 92%. Specificity varies from 86% to 98.9%. The calculated accuracy is from 84% to 94.3%. In our study, the sensitivity and specificity of FNAC of lymphadenopathy to diagnose tubercular lymphadenopathy were 80.0% and 95.0%. Similarly, the sensitivity, specificity, false positive, false negative, positive predictive value and negative predictive value of FNAC of lymphadenopathies to diagnose tubercular lymphadenopathies

were 80.0%, 100.0%, 0.0%, 20.0%, 100.0% and 82.14% respectively. According to Haque et al study, FNAC diagnosis was found to be as follows: granulomatous inflammation 46 (40.35%), reactive hyperplasia 31 (27.19%), metastatic carcinoma 20 (17.54%), Non-Hodgkin’s lymphoma 6 (5.26%), tubercular lymphadenitis 4 (3.51%), acute non-specific lymphadenitis 3 (2.63%), Hodgkin’s lymphoma 3 (2.63%) and chronic nonspecific lymphadenitis 1 (0.88%) FNAC has been highly accurate in the diagnosis of metastatic carcinoma of the lymph node. In our study, there were only six cases of metastatic lymph nodes which were diagnosed as metastatic carcinoma, both in fine needle aspiration cytology and histopathology, which correlated with Pandit et al study. There were no cases of primary malignancies in our study. We also found FNAC as a satisfactory tool in the diagnosis of tubercular and malignant lymphadenopathy. However the gold standard procedure for the diagnosis of a neck mass is open biopsy of the mass with histological examination of the excised tissue. But the simplicity, low complications profile and cost-effectiveness of the procedure make FNAC most suitable for use on outpatient basis.

Conclusion

Fine needle aspiration cytology (FNAC) is very useful because of excellent patient compliance, due to the minimally invasive nature of the technique and the important aspect of avoidance of surgery in situations like non neoplastic or inflammatory conditions and metastatic tumours. Routine use of FNAC can help us to diagnose the types of lymphadenopathies pre-operatively and the patient can be further managed on the correct line of treatment. It also helps to differentiate tubercular lymphadenitis from reactive and granulomatous⁵, it can also distinguish well between benign and malignant lymphadenopathies. It can be used as an initial investigation for routine screening of cervical lymphadenopathies where facilities of histopathology are not available. In many setups without proper facilities antitubercular therapy is started to the patients without history and proper examination. FNAC being a simple procedure with almost negligible complications is henceforth very essential before starting the antitubercular therapy regimen to minimize the faulty treatment, drug resistance and misuse of the drugs.

References

1. Bagwan IN, Kane SV, Chinoy RF. Cytologic evaluation of the enlarged neck node: FNAC utility in metastatic neck disease. *Int J Pathol.* 2007;6:2.
2. Alam K, Khan A, Siddiqui F, Jain A, Haider N, Maheshwari V. Fine needle aspiration cytology (FNAC): A handy tool for metastatic lymphadenopathy. *Int J Pathol.* 2010;10:2.
3. Anne R. Wilkinson, Sadhana D. Mahore, and Sabiha A. Maimoon. FNAC in the diagnosis of lymph node malignancies: A simple and sensitive tool. *Indian J Med Paediatr Oncol.* 2012 Jan-Mar; 33(1): 21–24. doi: 10.4103/0971-5851.96964.
4. Lioe TF, Elliott H, Allen DC, Spence RA. The role of fine needle aspiration cytology (FNAC) in the investigation of superficial lymphadenopathy; uses and limitations of the technique. *Cytopathol.* 1998;10(5):291–7.
5. Ellison E, Lapuerta P, Martin SE. Fine needle aspiration diagnosis of mycobacterial lymphadenitis. Sensitivity and predictive value in the United States. *Acta Cytol.* 1999 Mar-Apr;43(2):153-7.