



Pattern of Lymphadenopathy on Fine Needle Aspiration Cytology in Jammu

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Abstract

The present randomized study was undertaken to study cytological features of non-neoplastic and neoplastic lesions of enlarged lymph nodes by FNAC in 656 patients presenting with lymphadenopathy in the Postgraduate Department of Pathology of Government Medical College, Jammu over a period of three year. Tuberculous lymphadenitis, reactive hyperplasia, metastatic carcinoma, pyogenic lymphadenitis and lymphomas were seen in 52.3%, 37.2%, 3.8%, 1% and 2% respectively. However, a solitary case of Langerhans histiocytosis in a three year old child was reported over three years. Reactive hyperplasia was seen most often (74.5%) in first two decades of life, 58.9% tuberculous lymphadenitis in the second and third decades and 88% of metastatic carcinoma over 40 years of age. Cases of lymphoma were distributed in all age groups. Males showed preponderance of reactive hyperplasia, lymphoma and metastatic carcinoma, while tuberculous lymphadenitis showed a slight female preponderance. Cervical lymph nodes were involved most often in all types of lymphadenopathy.

Key Words

FNAC, Lymphadenopathy, Tuberculosis, Lymphoma

Introduction

Fine needle aspiration cytology (FNAC) is a simple, safe, reliable, rapid and inexpensive method of establishing the diagnosis of lesions and masses in various sites and organs (1). Lymph node aspiration is of great value for the diagnosis of lymphadenitis, lymphomas and metastatic carcinoma (2,3). The value of FNAC, besides making a diagnosis, also lies in early direction of appropriate investigations. Aspirates from lymph nodes are usually very cellular and their interpretation varies from clear diagnosis to a firm request for histopathology. However, limitations and pitfalls of the procedure should be recognized. 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 like India and should be considered in every case of granulomatous lymphadenopathy unless proved otherwise, whereas evaluation of granulomas is a complex problem in developed countries. The present randomized study was undertaken to study non-neoplastic and neoplastic lesions

of enlarged lymph nodes by FNAC in patients presenting with lymphadenopathy in the Postgraduate Department of Pathology of Government Medical College, Jammu over a period of three year to determine the pattern of disease affecting lymph nodes in this region.

Material and Methods

Six hundred and fifty six patients presenting with superficial palpable lymph nodes, who were referred to Cytology Section of Pathology Department from different associated hospitals of Govt. Medical College, Jammu over a period of 3 years were randomly selected. In each instance, a brief history and physical examination along with evaluation of relevant investigations, if available, was carried out. The FNAC procedure was performed by a cytopathologist, using a 24G needle attached to 20 ml syringe and Franzen handle. Multiple sites were aspirated. The aspirated material was smeared onto 4 slides in each case. Two slides were immediately immersed in 95% ethanol and remaining air dried. The air dried smears were

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routinely stained by May Grunwald Giemsa (MGG) stain and alcohol fixed smears stained by Papani Colaou (PAP) method. Special stains like Ziehl Neelson (ZN) stain for acid fast bacilli (AFB), Alcian blue-PAS for mucin were done whenever required. All the stained smears were evaluated by cytopathologists. Diagnosis was based on cytomorphological features and clinicocytological correlation. At the end of the study, data were analysed.

Results

Out of 656 patients with palpable lymphadenopathy in 10 (1.5%) cases, FNAC was inconclusive due to unsatisfactory smears. Tuberculous lymphadenitis and reactive hyperplasia were the most common lesions seen (52.3% and 37.2% respectively), followed by metastatic carcinoma in 3.8%, pyogenic lymphadenitis in 1% and lymphomas in 2% (Hodgkin's 0.8%, Non Hodgkin's 1.2%) of the cases (Table-1). However, a solitary case of Langerhans histiocytosis in a three year old child was reported. Reactive hyperplasia was seen most often (74.5%) in first two decades of life, 58.9% tuberculous lymphadenitis in the second and third decades and 88% of metastatic carcinoma over 40 years of age (Table 2). Cases of lymphoma were distributed in all age groups. Males showed preponderance of reactive hyperplasia, lymphoma and metastatic carcinoma, while tuberculous lymphadenitis showed a slight female preponderance (Table2).

It has been seen that the cervical lymph nodes were involved most often in all types of lymphadenopathy, particularly Hodgkin's disease, which showed 100 % involvement of cervical group of lymph nodes (Table 3). In Non-Hodgkin's lymphoma cervical group of lymph nodes were involved in 25% of cases. The inguinal lymph nodes were least involved in all types of lymphadenopathy.

Table 1

Cytologic Diagnosis of 656 cases of Lymphadenopathy.

Cytologic Diagnosis	No. of Cases	%age
Reactive hyperplasia	244	37.2
Tuberculous lymphadenitis	343	52.3
Lymphoma	13	2.0
Hodgkin's	5	0.8
Non - Hodgkin's	8	1.2
Metastatic carcinoma	25	3.8
Pyogenic lymphadenitis	7	1.0
Langerhans cell histiocytosis	1	0.15
Unsatisfactory	10	1.5

Table 2 : Age and Sex distribution of patients of Lymphadenopathy (excluding those with unsatisfactory smears)

Age group (years)	Reactive hyperplasia		Tuberculous Lymphadenitis		Lymphoma				Metastatic Carcinoma	
	M	F	M	F	M	F	M	F	M	F
0 - 10	100	30	24	18	2	0	0	0	1	0
11 - 20	32	20	37	49	0	0	0	0	0	0
21 - 30	17	12	51	65	0	0	1	0	1	0
31 - 40	8	6	16	27	2	1	1	0	0	1
41 - 50	4	3	7	21	0	0	1	0	3	4
51 - 60	1	3	4	13	0	0	1	1	8	2
> 60	5	3	7	4	0	0	2	1	5	0
Male:female ratio	(2.1)		(0.7)		(4.0)		(3.0)		(2.5)	

M = Male, F = Female, H= Hodgkin's, NH= -Non-Hodgkin's

Table 3 : Lymph node group involved in various types of Lymphopathy

Site	Reactive hyperplasia	Tuberculous Lymphadenitis	Metastatic Carcinoma	Lymphoma	
				H	NH
Cervical group	205 (84.0%)	286 (83.4%)	21 (84%)	5 (100%)	2 (25%)
Axillary group	16 (6.5%)	33 (9.6%)	1 (4%)	0	0
Inguinal group	10 (4%)	4 (1.7%)	3 (12%)	0 (25%)	0
Generalized*	13 (5.3%)	20 (5.8%)	0	0	4 (50%)

* Involvement of two or more groups of lymph nodes was considered to be generalized. H= Hodgkin's, NH= Non-Hodgkin's

Discussion

In developing countries where facilities for biopsy are not readily available, FNAC is completely safe, quick and inexpensive method for quick diagnosis of lymphadenopathy reduce need of surgical biopsy . We have presented our experience with 656 cases of lymphadenopathy over a period of three years. The pattern of lesions (non-neoplastic lesions consisted of tuberculosis, reactive hyperplasia, and pyogenic lymphadenitis and neoplastic lesions included metastatic carcinoma and malignant lymphoma) seen in our study more or less is same as reported in other studies from India and other developing countries (4-8). Tuberculous lymphadenitis proved to be the most common diagnosis in our study (52.3%). In India, tuberculous lymphadenitis is one of the most common type of lymphadenopathy



encountered in clinical practice in India (3,4,7,8) ; whereas it is in sharp contrast to very low frequency of 1.6% in western studies (9). In our study it was seen most frequently in second and third decade of life (58.9%) with female preponderance and decreasing incidence with age. Lymph nodes of the neck (83.4%) followed by axilla (9.6%) are the most common sites involved. Similar observations have been made in other studies (2,4,5,10,11). Reactive hyperplasia constituted the second largest group in the present study of 37.2%. The highest incidence of reactive hyperplasia was seen in first two decades of life (74.5%) with a male preponderance. These findings are in agreement with experience of Gupta *et al* (2) and Lochan *et al* (12). In the diagnosis of metastatic malignancy, the lymph node puncture is as rewarding as the surgical biopsy. Metastatic malignancy was diagnosed in 25 patients and the most common tumors in order included squamous cell carcinoma, adenocarcinoma and undifferentiated carcinoma. Engzell *et al* found similar pattern among 962 patients with cervical lymph node metastasis and histopathologically verified tumors (13).

The technique of FNAC has been used extensively for diagnosis of Non-Hodgkin's lymphoma and Hodgkin's disease. There were 13 cases of malignant lymphoma, 8 Non- Hodgkin's lymphoma and 5 Hodgkin's disease. FNAC is useful in staging, in defining the limits of unusual radiation fields and in recognizing residual disease or recurrences. The cases were distributed in all age groups; however, the number was too small to draw any comparison with other studies.

For determination of the diagnostic accuracy of FNAC it is usual practice to correlate cytodiagnosis with subsequent histological reports of excised biopsy specimens. In the present study, diagnosis was based on definite cytomorphological findings with clinicocytological correlation. Our primary aim was to help the clinician in arriving at an early diagnosis in cases presenting with lymphadenopathy. In a previous study from our department of FNAC of 2275 cases over three years, 75 cases of lymph node aspiration were reported and results correlated with subsequent histopathological examination (14). The diagnostic accuracy was reported as 92% for all lesions, 88% for reactive hyperplasia, 100% for tuberculosis, 82% for lymphomas and 87% for metastatic deposits. In the present study FNAC was inconclusive in 10 cases (1.8%) due to unsatisfactory smears. These included cases in which the aspirated

material was either inadequate or unsatisfactory due to poor preparation and/or staining. However, it must be realized that FNA not only offers tissue diagnosis but serves as a preliminary screening procedure for a number of clinical considerations e.g. lymphoma, leukaemia, metastases, tuberculosis and lymphadenopathy not otherwise specified. Following the cytodiagnosis, decision regarding biopsy from appropriate sites, if necessary, and other relevant investigations can be done.

References

1. Melcher D, Linehan J, Smith R. Fine needle aspiration cytology. Recent advances in histopathology No.11, Churchill Livingstone, 1981, pp 263-80
2. Gupta AK, Nayar M, Chandra M. Reliability and limitations of fine needle aspiration cytology of lymphadenopathies. *Acta Cytol* 1991 ; 35 : 777-82.
3. Prasad RR, Narasimhan R, Sankran V, Veliath AJ. Fine needle aspiration cytology in the diagnosis of superficial lymphadenopathy: an analysis of 2418 cases. *Diagn Cytol* 1993 ; 15 : 382-86.
4. Paul PC, Goswami BK, Chakrabarty S, Giri A, Pramanik R. Fine needle aspiration cytology of lymph nodes-An institutional study of 1448 cases over a five year period. *J Cytology* 2004 ; 21 : 187-90.
5. Patra SP, Bhattacharya N, Mangal S. FNAC, Imprint Cytology and Histopathology for diagnosing diseases of lymph node. *J Cytology* 2003 ; 20 : 124-28.
6. Eroz C, Polat A, Serin MS, Soylu L, Demircan O. Fine needle aspiration cytology in tuberculous lymphadenitis. *Cytopathol* 1998 ; 9 : 201-07.
7. Gupta AK, Nayar M, Chandra M. Critical appraisal of fine needle aspiration cytology in tuberculosis. *Acta Cytol* 1992 ; 36 : 391-94.
8. Bhaskran CS, Kumar GH, Sreenivas M, Rajni K, Rao G, Aruna CA. Fine needle aspiration cytology review of 1731 cases. *Ind J Pathol Microbiol* 1990 ; 33 : 387-97.
9. Kline TS, Khannan V, Line IK. Lymphadenopathy and aspiration biopsy cytology review of 376 superficial lymph nodes. *Cancer* 1984 ; 54 : 1076-81.
10. Das DK. Tuberculous lymphadenitis: correlation of cellular components and necrosis in lymph node aspirates with AFB positivity and bacillary count. *Ind J Pathol Microbiol* 1990 ; 33 : 1-10.
11. Rajwanshi A, Bhambani S, Dilip DK. Fine needle aspiration cytology diagnosis of tuberculosis. *Diagn Cytol* 1987 ; 3 : 13-16.
12. Lochan KK, Goyal S, Garg R. Lymphadenopathy in children-role of FNAC. *J Cytology* 2002 ; 19 : 183-86.
13. Engzell U, Jacobsson PA, Singurdson A, Zajicek J. Aspiration biopsy of metastatic carcinoma in lymph nodes of neck. A review of 1101 consecutive cases. *Acta Otolaryngol* 1971 ; 72 : 138-47.
14. Singh K, Dubey VK, Khajuria R. Diagnostic accuracy of fine needle aspiration cytology when compared with histopathology. *J Cytol* 2003 ; 20 : 22-27.