



Pattern of Various Lymph Node Lesions on Fine Needle Aspiration Cytology in Patients Presenting With Lymphadenopathies in A Rural Tertiary Care Hospital of Lower Assam, North-East India.

KEYWORDS

Fine needle aspiration cytology, lymphadenopathy, metastasis, granulomatous

*** Kaberee Bhuyan Medhi**

Associate Professor, Department of Pathology, FAAMCH, Barpeta, Assam, 781301
* corresponding author

Krishangee Bordoloi

Assistant Professor, Department of Pathology, FAAMCH, Barpeta, Assam, 781301

Ashok Jyoti Deka

Demonstrator, Department of Community Medicine, FAAMCH, Barpeta, Assam, 781301

ABSTRACT *AIM: To characterize various lymph node lesions on fine needle aspiration cytology along with their age and gender distribution in patients presenting with lymphadenopathies .*

METHOD-

Hospital based cross-sectional study conducted over a period of sixteen months. FNAC of 175 patients presenting with lymphadenopathy were performed .Smears prepared, stained and studied.

RESULTS-

Males commonly involved than females with M: F ratio of 1.46:1. Age of patients ranged from 6 months to 90 years. Cervical region (71.42%) was the most common site of lymphadenopathy. Tubercular lymphadenitis (30.81%) was overall the most common cause of lymphadenopathy. Benign lesions (77.32%) were more common than neoplastic (22.67%). Squamous cell carcinoma was the most common metastatic lesion.

CONCLUSION-

Role of FNAC in screening lymphoid pathology is invaluable as it is a simple procedure, cost effective with prompt diagnosis. It helps differentiating non-neoplastic processes from neoplastic diseases, and guides the physicians in planning of management.

INTRODUCTION-

Fine needle aspiration cytology, the process of studying cells and tissue fragments obtained by introducing a needle into an abnormal tissue, is one of the most important diagnostic technique in a background of a wide range of diseases starting from most innocuous to rapidly fatal. It is widely accepted, relatively simple, inexpensive method with a speedy result.

With a rise in cases of lymphadenopathies and owing to its relative easy accessibility, lymph nodes have become one of the most common organs for performing FNA studies. Peripheral lymphadenopathy which is most commonly caused as a result of a reaction to some symptomatic or asymptomatic inflammatory process, is usually watched for some time before decision of open biopsy is taken, unless clinical suspicion of malignancy is strong¹. Here lies the great importance of FNAC as an alternative method of quick, preliminary diagnosis which helps in differentiating the non-neoplastic processes involving the lymph nodes from the neoplastic diseases. It thus plays a tremendous role in allaying patient and guides the physicians in planning of management in earnest.

The aim of the present study is to characterize the pattern of various lymph node lesions on FNAC along with age and gender distribution in patients presenting with lymphadenopathies and to assert its utility in differentiating non-neoplastic from neoplastic lesions.

MATERIAL AND METHODS-

The present study is a hospital based cross-sectional study conducted over a period of sixteen (16) months from January 2015 to April 2016. FNAC of 175 cases of lymphadenopathies sent to Department of Pathology, Fakhruddin Ali Ahmed Medical College and Hospital, Barpeta from various clinical settings were performed after obtaining in-

formed consent. In all the cases a detailed clinical history and relevant investigations documented. FNAC were done by 22-24 gauge needles with an attached 10 to 20 ml syringe. Smears were both air dried and wet fixed. Air dried smears stained by May Grunwald Giemsa, Ziehl-Neelsen's stain wherever required. Wet fixed smears stained with Papanicolaou stain.

RESULTS-

Out of 175 cases, total number of 104(59.4 %) were males and total number of 71(40.6 %) were females. Male to female ratio is 1.46:1.

Age of patients ranged from 6 months to 90 years.

Commonest site of lymphadenopathy was cervical region (71.42%), followed by submandibular (9.71%) and then inguinal (6.85%). Multiple sites were involved in only 0.57%.

In the present study 3 cases (1.71%) could not be cytologically diagnosed due to inadequate smears (scanty aspirate material), while in 172 cases (98.2%) diagnosis was offered.

[Table-1] shows cytological diagnosis of various non-neoplastic and neoplastic lesions of lymph nodes. Tubercular lymphadenitis (n=53, 30.81%) was over all the most common cause of lymphadenopathy. A female preponderance has been observed in our study. Most of the cases occurred between 20-29 years, followed by 10-19 years. [Table2] shows the age and sex distribution of patients with lymph node pathology. Cervical lymph nodes were more commonly involved in tuberculosis followed by axillary nodes.[Table3] shows site of lymph nodes involved in various lymph node lesions. Reactive lymphoid hyperplasia was the second most common lesion seen (n=42, 24.41%) followed by metastatic lesions (n=34, 19.76%) , acute suppurative lesions (n=25, 14.53%), granulomatous

lymphadenitis (n=13, 7.55%), Non-Hodgkin's lymphoma (N=5, 2.90%). A cytological diagnosis of granulomatous lesion was offered in all those cases where smears showed granulomas with a negative Z-N staining and there was no other supportive evidence of a tubercular pathology. Among these cases one case was histologically diagnosed as cysticercosis of supraclavicular lymph node.

Benign lesions (n=133, 77.32%) which includes tubercular lymphadenitis, reactive lymphoid hyperplasia, acute suppurative lymphadenitis, granulomatous lymphadenitis, constituted 77.32%, while neoplastic lesions (NHL and metastatic) constituted 22.67% (n=39).

Amongst the neoplastic lesions (n=39, 22.67%), metastatic lymphadenopathy (n=34, 87.17%) was the most common, and predominant cause of lymph node involvement in patients ranging from 40 years and above. Although rare below 35 years age, a single case of inguinal metastatic adenocarcinoma in a 19 year female was seen.

Rest of the neoplastic cases were that of Non-Hodgkin's Lymphoma (n=5, 12.82%, primary lymphoid malignancy).

Among the metastatic lesions (n=34), squamous cell carcinoma (n=31, 91.17%) was the most common. Metastatic SCC was found to be more common in males (83.87%) and most of the cases occurred between 60-69 years age. Cervical nodes (n=25, 80.64%) were most commonly involved in these lesions. Metastatic adenocarcinoma constituted rest 8.82% (n=3) of metastatic lesions. Out of the three cases of metastatic adenocarcinoma, slight preponderance was seen in females with two cases, out of which one was a metastatic infiltrating duct carcinoma to the axillary node, other being metastatic adenocarcinoma to inguinal node with unknown primary. There was a single case of metastatic adenocarcinoma to supraclavicular node in a male patient.

All the five cases of primary lymphoma was Non-Hodgkin's Lymphoma. Females (n=3, 60%) showed slight preponderance over males (n=2, 40%). Out of five cases, two cases were found between 10-19 years, three cases were found between 50-69 years.

DISCUSSION-

In the present study males (n=104) were more commonly involved than females (n=71) with M:F ratio of 1.46:1. This finding is in conformity with studies done by Patra AK and co-workers², Seikh MM and co-workers³.

Age of patients showed a wide range starting from as early as 6 months (0.5 years) to 90 years old. Most of the cases of lymphadenopathies occurred between 20-29 years age group. Similar findings were observed by Pandav AB and co-workers⁴, Pavithra et al⁵.

Most common site of lymphadenopathy in our study was cervical region (71.42%). Similar finding was seen in study by Pandit AA and co-workers⁶, Malukani K et al⁷, Mohanty R et al⁸. This was followed by submandibular region (9.71%), inguinal region (6.85%). Multiple site was involved in only 0.57% case (n=1).

Tubercular lymphadenitis (n=53, 30.81%) was overall the most common cause of lymphadenopathy. This finding is in conformity with study conducted by Biswas G et al⁹, Sharma P et al¹⁰, Malukani K et al⁷. Most of the cases occurred between 20-29 year, followed by 10-19 years. A

declining trend in cases was observed after 30 years of age, which is in conformity with study by Ahmed SS et al¹¹, Sharma P et al¹⁰. A female preponderance has been observed in our study as has also been seen in studies by Pavithra P et al⁵, Fatima et al¹², Sharma P et al¹⁰. Cervical lymph node were more commonly involved in tubercular lymphadenitis followed by axillary node, a finding similar to study done by Pavithra P et al⁵, Sharma P et al¹⁰. Reactive lymphoid hyperplasia (n=42, 24.41%) was the second most common lesion seen. Although this lesion is said to occur commonly in younger age group, in our study it had a wide age distribution (6-60 years). Males were affected more than females. Cervical lymph nodes were commonly involved. Reactive hyperplasia was followed by metastatic lesions (n=34, 19.76%), acute suppurative lesions (n=25, 14.53%), granulomatous lymphadenitis (n=13, 7.55%), Non-Hodgkin's lymphoma (N=5, 2.90%). A cytological diagnosis of granulomatous lesion was offered in all those cases where smears showed granulomas with a negative Z-N staining and there was no other supportive evidence of a tubercular pathology. Among these cases one case was histologically diagnosed as cysticercosis of supraclavicular lymph node.

Benign lesions (n=133) seen in our study, which includes tubercular lymphadenitis, reactive lymphoid hyperplasia, acute suppurative lymphadenitis, granulomatous lymphadenitis, constituted 77.32%, while neoplastic lesions (NHL and metastatic) constituted 22.67% (n=39). Ahmed SS et al¹¹, Gupta R et al¹³, in their studies have also found benign lesions more commonly than neoplastic lesions.

Amongst the neoplastic lesions (n=39, 22.67%), metastatic lymphadenopathy (n=34, 87.17%) was the most common, and predominant cause of lymph node involvement in patients ranging from 40 years and above. Although rare below 35 years age, a single case of inguinal metastatic adenocarcinoma in a 19 year female was seen. Rest of the neoplastic cases were that of Non-Hodgkin's Lymphoma (n=5, 12.82%, primary lymphoid malignancy).

Among the metastatic lesions (n=34), squamous cell carcinoma (n=31, 91.17%) was the most common. This finding is in concordance with study by Wilkinson AR and co-workers¹⁴, Hirachand S et al¹⁵, Mohanty R et al⁸. Metastatic SCC was found to be more common in males (83.87%) and most of the cases occurred between 60-69 years age. Cervical nodes (n=25, 80.64%) were most commonly involved in these lesions. Metastatic adenocarcinoma constituted rest 8.82% (n=3) of the metastatic lesions. Out of the three cases of metastatic adenocarcinoma, slight preponderance was seen in females with two cases, out of which one was a metastatic infiltrating duct carcinoma to the axillary node, other being metastatic adenocarcinoma to inguinal node with unknown primary. There was a single case of metastatic adenocarcinoma to supraclavicular node in a male patient.

In our present study all the five cases of primary lymphoid neoplasm were Non Hodgkin's Lymphoma. Females (n=3, 60%) showed slight preponderance over males (n=2, 40%). Out of five cases, two cases were found between 10-19 years, three cases were found between 50-69 years.

CONCLUSION-

Role of FNAC in screening lymphoid pathology is invaluable as it is a simple procedure, rapid and cost effective. The most important aspect lies in the fact that it helps in differentiating non-neoplastic processes from neoplastic

diseases on the basis of which physicians plan the management.

In the present study we conclude that a diverse group of diseases affect the lymph nodes ranging from inflammatory to neoplastic diseases with their characteristic age and sex pattern. FNAC aided by a careful clinical history and supporting investigations offer optimum results and helps avoiding unwanted surgical procedure.

Tables

Cytological diagnosis of various Non-neoplastic and Neoplastic lesions:

Diseases	Total number of cases	Percentage
Tubercular lymphadenitis	53	30.3

Reactive lymphoid hyperplasia	42	24
Metastasis	34	19.4
Acute suppurative lesion	25	14.3
Granulomatous lymphadenitis	13	7.4
Non-Hodgkin's lymphoma	5	2.9
Inadequate	3	1.7
Total	175	100

Site of lymph node involved in various lymph node lesions:

Sites	TB	RLH	META-STASIS	ACUTE SUPPURATIVE	GRANULOMATOUS	NHL	INADEQUATE	TOTAL
Cervical	47 (37.6)	33 (26.4)	25 (20)	16 (12.8)	1 (0.8)	2 (1.6)	1 (0.8)	125 (100)
Submandibular	1 (5.9)	6 (35.5)	3 (17.6)	2 (11.8)	3 (17.6)	0 (0.0)	2 (11.8)	17 (100)
Inguinal	0 (0.0)	2 (16.7)	1 (8.3)	4 (33.3)	3 (25)	2 (16.7)	0 (0.0)	12 (100)
Supraclavicular	1 (11.1)	0 (0.0)	4 (44.4)	1 (11.1)	3 (33.3)	0 (0.0)	0 (0.0)	9 (100)
Axillary	4 (50)	0 (0.0)	1 (12.5)	2 (25)	1 (12.5)	0 (0.0)	0 (0.0)	8 (100)
Submental	0 (0.0)	1 (33.3)	0 (0.0)	0 (0.0)	2 (66.7)	0 (0.0)	0 (0.0)	3 (100)
Multiple	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100)	0 (0.0)	1 (100)
Total	53	42	34	25	13	5	3	175

*Figure in parenthesis indicates percentage.

Age and sex distribution of patients with lymph node pathology:

Age Group (Yrs)	TB		RLH		Met		Ac. supp		GR		NHL		INAD		Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
0-9	2	1	8	3	0	0	7	0	1	1	0	0	1	0	24
10-19	4	6	6	3	0	1	2	1	3	1	0	2	0	1	30
20-29	9	12	3	3	0	0	2	2	1	0	0	0	0	0	32
30-39	4	7	3	2	2	1	0	2	1	3	0	0	0	0	25
40-49	2	3	2	2	5	2	1	3	1	1	0	0	1	0	23
50-59	0	0	1	4	8	1	1	0	0	0	1	1	0	0	17
60-69	0	1	2	0	9	2	1	0	0	0	1	0	0	0	16
≥70	2	0	0	0	3	0	3	0	0	0	0	0	0	0	8
Total	53		42		34		25		13		5		3		175

N.B: TB=Tubercular lymphadenitis; RLH=Reactive Lymphoid Hyperplasia; Met= Metastatic Lesion; Ac. Supp= Acute Suppurative Lesion; GR=Granulomatous Lesion; NHL= Non-Hodgkin's Lymphoma; INAD= inadequate.

REFERENCES

1. Orell SR, Sterrett GF, Whitaker D. *Fine Needle Aspiration Cytology*. 4th ed. India: Elsevier Limited; 2008.
2. Patra AK, Nanda BK, Mohapatra BK, Panda AK. Diagnosis of lymphadenopathy by fine needle aspiration cytology. *Indian J Pathol Microbiol* 1983;26:273-8.
3. Sheikh MM, Ansari Z, Ahmad P, Tyagi SP. Tuberculous lymphadenopathy in children. *Indian Pediatr* 1981; 18: 293-6.
4. Pandav AB, Patil PP, Lanjewar DN. Cervical lymphadenopathy diagnosis by FNAC: a study of 219 cases. *Asian J Med Res*. 2012;1(3):79-83.
5. Pavithra P, Geetha JP. Role of fine needle aspiration cytology in the evaluation of the spectrum of lymph node lesions. *Int J Pharm Bio Sci* 2014;5(4):377-84.
6. Pandit AA, Candes FP, Khubchandini SR. Fine needle cytology of lymph nodes. *J Postgrad Med*. 1987;33:134-6.
7. Malukani K, Saxena A, Yeshwante PS, Varma AV, Nandedkar SS, Matreja SS. Cytologic evaluation of lymphadenopathy in a tertiary care hospital of central India. *Indian J Basic and Apl Med Res* 2015;5(1):671-81.
8. Mohanti R, Wilkinson A. Utility of fine needle aspiration cytology of lymph nodes. *J Dent Med Sci* 2013;8:13-18.
9. Biswas G, Das A, Haldar D, Mukherjee A, Dutta S, Sinha R. Clinico-pathological correlates of cervical lymphadenopathy: a hospital based study. *Indian J Otolaryngol Head Neck Surg* 2013;65:42-7.
10. Sharma P, Rana S, Gill MK, Singh P, Satarkar RN, Kalhan S. *Int J Res Med Sci*. 2015 May;3(5):1125-30.
11. Ahmed SS, Akhtar S, Akhtar K, Naseem S, Mansoor T. Study of FNAC in lymphadenopathy with special reference to acid-fast staining in cases of tuberculosis. *JK Sci* 2005;7:1-4.
12. Fatima S, Arshad S, Ahmed Z, Hasan SH. Spectrum of cytological findings in patients with Neck lymphadenopathy - experience in a tertiary hospital in Pakistan. *Asian Pac J Cancer Prev*. 2011;12:1873-5.
13. Gupta R, Dewan D. Etiological pattern of lymphadenopathies and role of fine needle aspiration cytology (FNAC) in its diagnosis. *Int Multispcl J Health* 2015;1:12-9.
14. Wilkinson AR, Mahore SD, Maimoon SA. FNAC in the diagnosis of lymph node malignancies: A simple and sensitive tool. *Indian J Med Paediatr Oncol* 2012;33:21-4.
15. Hirachand S, Lakhey M, Akhter J, Thapa B. Evaluation of fine needle aspiration cytology of lymph nodes in Kathmandu Medical College, Teaching Hospital. *Kathmandu University Medical Journal* 2009;7:139-42.