



Study of Metastasis in Lymphnode by fine Needle Aspiration Cytology- our Institutional Experience.

KEYWORDS

FNAC , Lymph node , Metastasis

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ABSTRACT *Introduction* – Lymph nodes are common site of metastases for different cancers. Thus clinical recognition and urgent diagnosis of palpable lymphadenopathy is of paramount importance specially to differentiate between inflammatory lesions or metastatic or primary neoplastic tumor.

Aims – To find out the role of FNAC in diagnosis of metastatic lesions of lymphnode and as a diagnostic tool for typing of tumor.

Material & Method – Details of 750 patients with relevant history were taken in all lymphadenopathy cases. The study was carried out for 3 years at Municipal medical College, Ahmedabad Gujarat .FNAC was performed and stain with hematoxylin and eosin .

Result – FNAC was done in total 750 cases of lymphadenopathy. Out of which 627 were benign lesions, 110 were malignant lesions, while 13 cases were inconclusive. Among the malignant lesions 80 cases were of metastatic lesions. Maximum number of metastatic lesions were found in cervical lymphnodes and most common lesions were found metastatic squamous cell carcinoma followed by metastatic adenocarcinoma.

Conclusion- FNAC yielding a cellular material plays an important role in diagnosing metastatic lesions in the body.

INTRODUCTION

Now a days FNAC (Fine Needle Aspiration Cytology) is assuming increasing importance in practice of pathology and practiced today as an interpretative art with histopathology. FNAC has become routine procedure for any peripheral lymphadenopathy lesions in major academic institutes. It is an established technique for cytological diagnosis of benign as well as malignant or metastatic lesions. FNAC is a simple, rapid, non invasive and economical procedure.^{1, 2} FNAC is most popular diagnostic aid over the world for the patients presenting with lymphadenopathies with variable etiology such as bacterial, viral, fungal or protozoal infection as well as in diagnosis of primary lymphoid malignancies and secondary metastatic tumors.^{3, 4}

Metastatic cancer in lymph node is a far more common cause of enlarged peripheral lymph nodes than malignant lymphomas, especially patients older than 50 years and FNAC is a very reliable method of diagnosing metastatic cancer. This procedure may be combined with image guided modalities such as USG, CT or MRI for more precise and more accurate localization of deep seated metastatic lymph node lesions.² In the recent years, the application of cytology have further been expanded to obtain material for surface marker study, electron microscopy, flow cytometry and immunocytochemistry.^{1, 2, 5} FNAC serves not only to establish the diagnosis of a metastatic tumor, but also permits to define histological type and sometimes organ of origin.²

AIMS AND OBJECTIVE

- To find out role of FNAC in diagnosis of metastatic lesions of lymph node.
- As a diagnostic tool for typing of tumor and to guide the surgeon to find the primary lesion.
- To assist the surgeon or oncologists in selection of patient for surgery or palliative therapy.

IMAGES

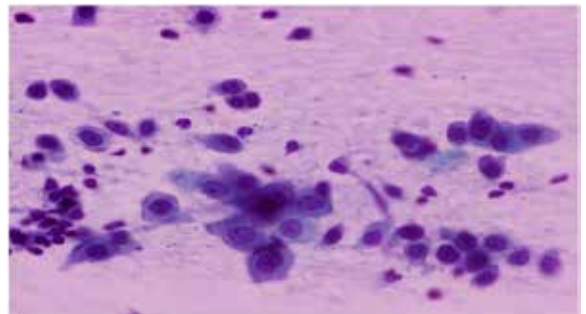


Figure 1: Metastatic squamous cell carcinoma in cervical lymph node (40x, H & E stain)

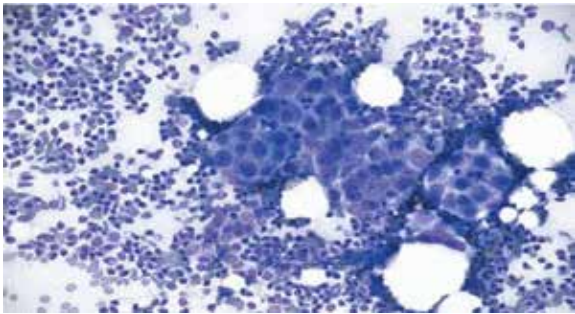


Figure 2: Metastatic breast carcinoma in axillary lymph node (40x, H & E stain)

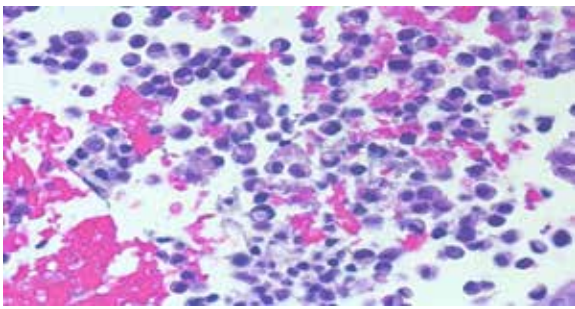


Figure 3: Metastatic adenocarcinoma of stomach showing signet ring like cells and cells with intracytoplasmic vacuolation (40x, H & E stain)

MATERIAL AND METHOD.

Details of total 80 patients with relevant history were taken in each metastatic lesions of lymph node. The study was carried out from 2012 to 2014 and the cases were taken from. Municipal Medical College, Ahmedabad, Gujarat. Pathologist, surgeon and radiologist play a crucial role in FNAC procedure. Aspiration was done with 20to22 gauges simple or lumbar puncture needle. 10ml syringe was attached and aspiration was carried out. Material was spread with the help of another slide. In cystic lesion aspirate was collected in test tube and centrifuge preparations were made. The smears were fixed in 95% ethyl alcohol and stain with H&E (Hematoxylin and eosin).

RESULTS AND OBSERVATIONS

Total 750 aspirations were done from patients with lymphadenopathy in our institution.

Among these 627 (83.6%) were benign lesions and 110 (14.7%) were malignant lesions, while in 13 (1.7%) cases FNAC was inconclusive. Among benign lesions tuberculosis was found in 352 (46.9 %) cases followed by reactive/nonspecific lymphadenitis in 275 (36.7 %) cases. Out of 110 malignant lesions metastatic lesions were found in 80 (10.7 %) cases and lymphoma in 30 cases.

TABLE 1: DISTRIBUTION OF METASTATIC LESIONS AT VARIOUS SITES

Site	No. of cases	Percentage (%)
Cervical	38	47.5
Supraclavicular	22	27.5
Axillary	10	12.5
Intra-abdominal (Retroperitoneal & Paracolic)	3	3.7
Inguinal	7	8.8
Total	80	100

From the above table it is observed that majority of metastatic lesions were found in cervical group of lymph node which were 38 (47.5 %), followed by supraclavicular 22

(27.5 %) and axillary 10 (12.5%) lymph nodes. Among 3 cases of intra-abdominal lymph nodes 2 were retroperitoneal nodes and 1 was mesenteric lymph node.

TABLE 2: DISTRIBUTION OF LESIONS BY AGE AND SEX

Age Groups (In Years)	Sex				Total	
	Male		Female		No.	%
	No.	%	No.	%		
<30	3	6.2	1	3.1	4	5
31-40	4	8.3	2	6.3	6	7.5
41-50	7	14.6	13	40.6	20	25
51-60	9	18.8	5	15.6	14	17.5
>60	25	52.1	11	34.4	36	45
Total	48	100	32	100	80	100

Out of 80 patients 48 (60%) were males and 32 (40%) were females. Male to female ratio was 1.5:1. Among males maximum numbers of patients were above 60 years accounting for 25 (52.1) followed by 9 (18.8%) patients in the age group of 51-60 years. Among females maximum numbers of patients were in the age group of 41-50 years accounting for 13 (40.6%) followed by 11 (34.4%) patients in the age group of more than 60 years.

TABLE 3: DISTRIBUTION OF VARIOUS TYPES OF METASTATIC LESIONS

Metastatic lesion	No. of cases	Percentage (%)
Squamous cell carcinoma	47	58.8
Adenocarcinoma	24	30
Small cell carcinoma	2	2.5
Round cell tumor	1	1.2
Sarcoma	1	1.2
Malignant melanoma	2	2.5
Undifferentiated	3	3.8
Total	80	100

From the above table it is observed that metastatic squamous cell carcinoma (SCC) was found to be most common lesion accounting for 47 (58.8%) cases followed by metastatic adenocarcinoma in 24 (30%) cases.

TABLE 4: DISTRIBUTION OF VARIOUS TYPES OF METASTATIC SQUAMOUS CELL CARCINOMA

Metastatic lesion	No. of cases	Percentage (%)
Keratinizing	31	66
Non-keratinizing	11	23.4
Necrotizing	5	10.6
Total	47	100

Out of 47 cases of metastatic squamous cell carcinoma most of the cases were keratinizing squamous cell carcinoma followed by non-keratinizing and necrotizing squamous cell carcinoma.

TABLE 5: INCIDENCE OF VARIOUS TYPES OF METASTATIC LESIONS ACCORDING TO AGE

Metastatic lesion	Age Group					Total
	<30	31-40	41-50	51-60	>60	
Squamous cell carcinoma	2	4	10	6	25	47
Adenocarcinoma	0	2	9	5	8	24
Round cell tumor	1	0	0	0	0	1
Small cell carcinoma	0	0	0	1	1	2
Sarcoma	0	0	0	1	0	1
Malignant Melanoma	1	0	0	0	1	2
Undifferentiated	0	0	1	1	1	3
Total	4	6	20	14	36	80

Metastatic squamous cell carcinoma was found most frequently in the age group of more than 60 years while metastatic adenocarcinoma was observed most frequently in the age group of 41-50 years.

TABLE 6: DISTRIBUTION OF VARIOUS TYPES OF METASTATIC LESIONS AT DIFFERENT SITES

Metastatic lesion	Sites of metastasis					Total
	Cervical	Supraclavicular	Axillary	Intra-abdominal	Inguinal	
Squamous cell carcinoma	34	7	0	0	6	47
Adenocarcinoma	2	10	9	3	0	24
Small cell carcinoma	0	1	1	0	0	2
Round cell tumor	0	1	0	0	0	1
Sarcoma	0	1	0	0	0	1
Malignant Melanoma	1	0	0	0	1	2
Undifferentiated	1	2	0	0	0	3
Total	38	22	10	3	7	80

From the above table it is observed that in cervical and Inguinal lymph nodes metastatic lesion most commonly found was squamous cell carcinoma. Adenocarcinoma was found to be most common metastatic lesion in supraclavicular, axillary and intra-abdominal lymph nodes

TABLE 7: CASES IN WHICH FNAC AND HPE DIAGNOSIS DIFFER

Sr.No.	FNAC Report	No. of cases	HPE Diagnosis
1	Inconclusive report – Only Necrotic and hemorrhagic material	2	Metastatic necrotizing squamous cell carcinoma with cystic change
2	Reactive lymphadenitis	1	Metastasis of invasive ductal carcinoma of breast – Only capsular invasion
3	Non-Hodgkin's Lymphoma	1	Metastasis of Poorly differentiated carcinoma of lung

Thus above table shows that apart from 80 metastatic cases which were diagnosed by FNAC, there were another 4 cases in which FNAC fail to establish the diagnosis of metastatic carcinoma and the diagnosis was made after HPE report. So there were actually 84 cases of metastatic lymphadenopathy but we were able to find it in 80 cases. In 4 cases we missed the diagnosis. Thus diagnostic accuracy of our study was found to be 95.2%.

DISCUSSION

Lymph nodes are common site of metastases for different cancers. Thus clinical

Recognition and urgent diagnosis of palpable lymphadenopathy is of paramount importance specially to dif-

ferentiate between inflammatory lesions, metastatic or primary neoplastic tumor. Although open biopsy with histological examination of excised tissue still remains the golden standard for diagnosis of lymph node tumors yet FNAC (Fine needle aspiration cytology) has now become an integral part of the initial diagnosis and management of patients presenting with lymphadenopathy. The main purpose of this study is to find out the role of FNAC in metastatic lesions of lymph node. In the present study 80 cases of metastatic lesions were found. Out of which 38 (47.5%) cases were from cervical group of lymph nodes followed by 22 (27.5%) cases were from supraclavicular lymph nodes. In our study most of the patients were in the age group of more than 60 years accounting for 36 (45%) cases with M:F ratio was found to be 1.5:1.

TABLE 8: COMPARISON OF LYMPH NODE LESION WITH OTHER STUDIES

Lesion	Study			
	Present study	Hirchand S et al ⁶	Chawla N et al ³	Ruchi K et al ⁷
	No. of cases (%)	No. of cases (%)	No. of cases (%)	No. of cases (%)
Tuberculosis	352 (46.9%)	48 (37.2%)	114 (38%)	343 (53.3%)
Reactive/Non specific Lymphadenitis	275 (36.7%)	54 (41.5%)	125 (41.7%)	252 (39.2%)
Lymphoma	30 (4%)	8 (6%)	19 (6.3%)	13 (2%)
Metastatic lesion	80 (10.7%)	16 (12.3)	32 (10.7%)	25 (3.9%)
Inconclusive	13 (1.7%)	4 (3%)	10 (3.3%)	10 (1.6%)
Total	750 (100%)	130 (100%)	300 (100%)	643 (100%)

In the present study metastatic lesion was found to be in 80 (10.7%) cases. Our findings correlate with the study conducted by Hirchand S et al, Chawla N et al and Ruchi K et al.

TABLE 9: COMPARISON OF METASTATIC LESIONS AT VARIOUS SITES WITH OTHER STUDIES

Site	Study			
	Present study	Kirti M et al ⁸	Ghartimagar D et al ⁹	Alam K et al ¹⁰
	No. of cases (%)	No. of cases (%)	No. of cases (%)	No. of cases (%)
Cervical	38 (47.5%)	99 (70.7%)	45 (48.3%)	164 (74.2%)
Supraclavicular	22 (27.5%)	16 (11.4%)	30 (32.3%)	21 (9.5%)
Axillary	10 (12.5%)	17 (18.3%)	11 (11.8%)	21 (9.5%)
Intra-abdominal	3 (3.7%)	0 (0%)	1 (1.1%)	4 (1.8%)
Inguinal	7 (8.8%)	8 (8.6%)	6 (6.5%)	11 (5%)
Total	80 (100%)	140 (100%)	93 (100%)	221 (100%)

From the above table it is observed that in our study most of the metastatic lesions were found in cervical group of lymph nodes accounting for 38 (47.5%) of cases. Similar results were also found in Kirti M et al, Ghartimagar D et al and Alam K et al studies.

TABLE 10: COMPARISON OF AGE GROUPS IN METASTATIC LESION WITH OTHER STUDIES

Age Group (In Years)	Study		
	Present Study	Kirti M et al ⁸	Ghartimagar D et al ⁹
	No. of cases (%)	No. of cases (%)	No. of cases (%)
<30	4 (5%)	8 (5.7%)	2 (2.1%)
31-40	6 (7.5%)	16 (11.4%)	3 (3.2%)
41-50	20 (25%)	32 (22.9%)	18 (19.4%)
51-60	14 (17.5%)	42 (30%)	13 (14%)
>60	36 (45%)	42 (30%)	57 (61.3%)
Total	80 (100%)	140 (100%)	93 (100%)

Our study was comparable with Kirti M et al and Ghartimagar D et al

TABLE 11: COMPARISON OF DISTRIBUTION OF VARIOUS TYPES OF METASTATIC LESIONS WITH OTHER STUDIES

Metastatic lesion	Study			
	Present Study	Kirti M et al ⁸	Ghartimagar D et al ⁹	Alam K et al ¹⁰
	No. of cases (%)	No. of cases (%)	No. of cases (%)	No. of cases (%)
SCC	47 (58.8%)	112 (80%)	14 (15%)	150 (67.9%)
Adenocarcinoma	24 (30%)	21 (15%)	75 (79%)	49 (22.2%)
Small cell carcinoma	2 (2.5%)	-	2 (2%)	4 (1.8%)
Round cell tumor	1 (1.2%)	-	-	3 (1.4%)
Sarcoma	1 (1.2%)	-	-	3 (1.4%)
Malignant melanoma	2 (2.5%)	-	2 (2%)	2 (0.9%)
Germ cell tumor	-	2 (1.4%)	-	-
Undifferentiated	3 (3.8%)	5 (3.6%)	-	9 (4.1%)
Total	80 (100%)	140 (100%)	93 (100%)	221 (100%)

Our study was correlate well with study of Kirti M et al and Alam K et al

The most common metastatic was found squamous cell carcinoma in cervical and inguinal lymph nodes. This finding is also correlate well with study of Swagata Dowerah ¹⁰

TABLE 12: COMPARISON OF DIAGNOSTIC ACCURACY WITH OTHER STUDIES

Diagnostic accuracy	Study		
	Present study	Alam K et al ¹⁰	Ruchi K et al ⁷
	95.2 %	97.9%	87 %

Diagnostic accuracy in our study was found to be 95.2%. Alam k et al found 97.9% of diagnostic accuracy in their study while it was 87% in the study conducted by Ruchi K et al.

SUMMARY & CONCLUSION

Thus, it is concluded that Fine Needle Aspiration Cytology yielding a cellular material plays an important role in diagnosing metastatic lesions in the body. Cytology of lymphadenopathy is a rapid, cheap, safe, highly accurate and cost effective method with minimal discomfort to the patient. FNAC helps in defining the tumor type while clinical history and investigations help in identifying the tumor site.

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