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CYTOLOGICAL EVALUATION OF ENLARGED LYMPHNODES IN METASTATIC DISEASE

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ABSTRACT

Introduction: Lymphnodes 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 from neoplastic lesions. Fine needle aspiration cytology (FNAC) of the lymph node is a simple diagnostic tool to diagnose suspected and unsuspected lymph node malignancy.
Aims–To find out the role of FNAC in the diagnosis of metastatic lesions of lymphnode and whenever possible, for typing of tumor.
Material &Method– A total 900 patients, who presented with lymphadenopathy were studied at AMC MET medical College and L.G hospital, Ahmedabad, Gujarat for a period of 2 years. FNAC of enlarged lymphnode was performed and stain with hematoxylin and eosin.
Results- Out of total 900 cases studied, 785 were benign and 95 were malignant lesions. Twenty cases were inconclusive. Among the malignant lesions, 80 cases were found to be metastatic lesions. Maximum numbers of metastatic lesions were found in cervical lymphnodes and metastatic squamous cell carcinoma was the most common lesion followed by metastatic adenocarcinoma.
Conclusion- FNAC is a simple, rapid, accurate and non-expensive diagnostic technique which can be used for the initial diagnosis of metastatic lymphadenopathy. It can give significant clue to detect the primary site of the tumor in cases with hidden malignancy, who are presented with metastatic lymphadenopathy as an initial sign. Therefore, FNAC is a useful tool in diagnosing metastatic lesion of lymphnodes.

Key words: FNAC, Lymphnodes, Metastasis

INTRODUCTION

Fine needle aspiration cytology (FNAC) is assuming increasing importance in practice of pathology and practiced today as interpretative art with histopathology. FNAC has now become an integral part of initial diagnosis and management of patient's presenting with lymphadenopathy. Enlarged lymphnodes are easily accessible for fine needle aspiration. 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 and protozoal infections as well as in diagnosis of primary lymphoid malignancies and secondary metastatic tumors[3, 4].

Metastatic cancer in lymphnode is a far more common cause of enlarged peripheral lymphnodes than malignant lymphomas, especially in patients above 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 lymphnode lesion. In recent years, the application of cytology has further been expanded to obtain material for the surface marker study, electron microscopy, flow cytometry and immunohistochemistry[1,2,5.] FNAC serves to establish the diagnosis of a metastatic tumor and permits to define histological type and organ of origin[2.]

AIMS AND OBJECTIVES

The study was undertaken with followings aims and objectives:

- To find out the role of FNAC of lymphnodes in the diagnosis of lymphnode metastasis.

- For typing of metastatic tumor and to guide the surgeon to find out the primary lesion.

MATERIALS AND METHODS

The study was carried out at Pathology Department, AMC MET medical college and Sheth L.G hospital, Ahmedabad, Gujarat from July 2017 To June 2019; for a period of two years. The study was conducted on 900 patients presented with enlarged lymphnodes. A detailed history, clinical examination and relevant investigations were documented. FNAC was done by standard technique using 22 to 25 gauges simple or 25 gauges lumbar puncture needle and 10 ml syringe. Aspiration was carried out and aspirated material was blown out on clean glass slide. In cystic lesion aspirate was collected in test tube and centrifuge preparation was made. The smears were fixed with 95% ethyl alcohol and stained with hematoxylin and eosin. Some special stains were also used wherever indicated. Most patients had three aspirations to assure sufficient material for cytodiagnostic evaluation. Microscopic examination was done and diagnoses were rendered. Data of metastatic lesions were statistically analysed.

RESULTS AND OBSERVATION

Out of total 900 patients, who underwent lymphnode FNAC, 785 (87.2%) cases were found to be benign and 95 (10.5%) were found to be malignant lesions. In 20 (2.2%) patients, FNAC was reported as inconclusive because of inadequate material aspirated, which is due to deep seated lymphnode, non-palpable lymphnodes, very small size of lymphnode and uncooperative patients. Out of 900 lymphadenopathy cases, metastatic lesions were found in 80 (8.90%) cases.

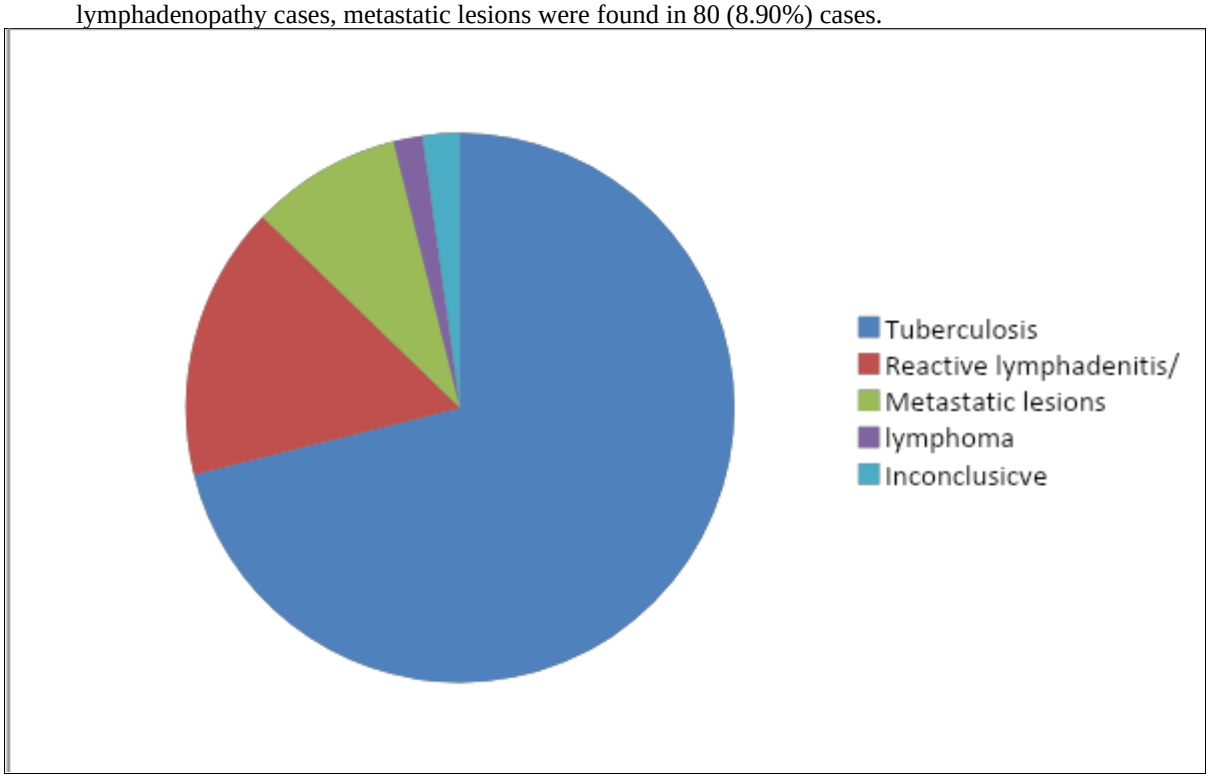

Table 1- Distribution of metastatic lesions according to location

Site	No. of Cases	Percentage (%)
Cervical	40	50.00
Supraclavicular	21	26.25
Axillary	12	15.00
Intraabdominal (Retroperitoneal & Paracolic)	01	1.25
Inguinal	06	7.50
Total	**80**	**100**

Majority of metastatic lesions {40(50.00 %)} were observed in cervical group of lymph nodes; which were followed by supraclavicular {21(26.25%)} and axillary lymph nodes {12 (15.00%)} in descending order of frequency. (Table-1).

Age groups (in years)	Sex					
	Male		Female		Total	
	No.	%	No.	%	No.	%
<30	03	6.25	01	3.12	04	05
31-40	04	8.33	02	6.25	06	7.5
41-50	07	14.58	13	40.62	20	25
51-60	09	18.75	05	15.62	14	17.5
>60	25	52.08	11	34.37	36	45
Total	**48**	**100**	**32**	**100**	**80**	**100**

Table 2- Distribution of metastatic lesions by age and sex

Out of 80 patients with lymphnode metastasis, 48 (60%) were males and 32 (40%) were females with male to female ratio being1.5:1. Maximum numbers of male patients were found beyond 7th decade of age group while predominant female patients were noted in 5th decade.

Table 3- Histopathological types of metastatic lesions

Metastatic lesion	No. of cases	Percentage (%)
Squamous cell carcinoma	47	58.75
Adenocarcinoma	23	28.75
Small cell carcinoma	01	1.25
Ductal carcinoma, breast	03	3.75
Papillary carcinoma of thyroid	01	1.25
Undifferentiated/ poorly differentiated carcinoma	05	6.25
Total	**80**	**100**

From the above table it is observed that metastatic squamous cell carcinoma (SCC) was found to be the most common lesion accounting for 47 (58.75%) cases.

Table-4 Distribution of cases according to the different sites

Metastatic lesion	Site of metastasis					
	Cervical	Supraclavicular	Axillary	Intra-abdominal	Inguinal	Total
Squamous cell carcinoma	34	07	00	00	06	47
Adenocarcinoma	03	10	09	01	00	23
Small cell carcinoma	00	01	00	00	00	01
Ductal carcinoma, breast	00	00	03	00	00	03
Papillary carcinoma of thyroid	01	00	00	00	00	01
Undifferentiated/poorly differentiated carcinoma	02	03	00	00	00	05
Total	**40**	**21**	**12**	**01**	**06**	**80**

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

Table 5- Frequency 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	02	04	10	06	25	47
Adenocarcinoma	00	01	09	05	08	23
Small cell carcinoma	00	00	00	01	00	01
Ductal carcinoma, breast	00	00	01	02	00	03
Papillary carcinoma of thyroid	00	00	00	01	00	01
Undifferentiated/poorly differentiated carcinoma	00	00	01	02	02	05
Total	**02**	**05**	**21**	**17**	**35**	**80**

Metastatic squamous cell carcinoma was found most frequently in beyond 7th decade of age group while metastatic adenocarcinoma was observed most frequently in 5th decade of age group.

DISCUSSION

Lymphnodes are common sites of metastasis for different malignancies. Lymphadenopathy with clinical suspicion of metastasis is one of the common indications for FNAC. Secondly, the procedure helps in identifying an occult malignancy which was not clinically suspected. Although, open biopsy with histological examination of excised tissues still remains the gold standard for diagnosis of lymph node pathology, FNAC has now become an integral part of the initial diagnosis and management. It plays a significant role in developing countries like India, as it is a cheap and simple procedure and devoid of any serious complications.

In the present study, 900 lymphnodes were aspirated during 2 years period. Out of 900 cases, metastatic lesions were found in 80 (8.90%) cases. Our findings correlate with study conducted by Hirchand S et al[6], Chawla N et al[3] and Ruchi K et al[7]who also found metastatic lesion in 16 (12.3%), 32 (10.7%) and 25 (3.9%) cases, respectively.

Table 6- Comparison of metastatic lesion of lymphnode with other studies

	Study			
Lesion	**Present study No. of cases (%)**	**Hirchand S et al[6] No. of cases (%)**	**Chawla et al[3] No. of cases (%)**	**Ruchi et al[7] No. of cases (%)**
Metastatic lesion	80 (8.9%)	16 (12.3%)	32 (10.7%)	25 (3.9%)

Majority of the patients belonged to the >40 years of age group in our study. This is similar to the findings of Kirti M et al[8] and Ghartimagar D et al[9] studies where majority of patients belonged to this age group.

In our study out of 80 cases, 48 (60%) were male and 32 (40%) were female with M: F (male: female) ratio being 1.5:1. The similar male preponderance was observed in studies of Kirti M et al[8] and Ghartimagar D et al[9].

Table 7- Comparison of age groups in metastatic lesion with other studies

Age group (in year)	**Study**		
	Present study No. of cases (%)	**Kirti Met al[8] No. of cases (%)**	**Ghartimagar D et al[9] No. of cases (%)**
<30	02 (2.5%)	08 (5.7%)	02 (2.1%)
31-40	05 (6.25%)	16 (11.4%)	03 (3.2%)
41-50	21 (26.25%)	32 (22.9%)	18 (19.4%)
51-60	17 (21.25%)	42 (30%)	13 (14%)
>60	35 (43.75%)	42 (30%)	57 (61.3%)
Total	**80 (100%)**	**140 (100%)**	**93 (100%)**

In our study, most of the metastatic lesions were found in cervical groups of lymph nodes accounting for 40 (50.00%) cases. Similar results were also found in Kirti M et al[8], Ghartimagar D et al[9] and alam K et al[10] studies.

Table 8- Comparison of metastatic lesions at various sites with other studies

Site	**Study**			
	Present study No. of cases (%)	**Kirti M et al[8] No. of cases (%)**	**Ghartimagar D et al[9] No. of cases (%)**	**Alam et al[10] No. of cases (%)**
Cervical	40 (50.00%)	99 (70.7%)	45 (48.3%)	164 (74.2%)

In the present study, metastatic lesion was found to be in 80 (8.90%) cases. Among the metastatic tumors, Squamous cell carcinoma was the most common tumor followed by adenocarcinoma. Our findings are similar to studies conducted by Kirti M et al[8], Ghartimagar D et al[9] and alam K et al[10] where Squamous cell carcinoma predominated over adenocarcinoma. In metastatic squamous cell carcinoma, head and neck was the most common site of primary. Oral cancers account for a large number of malignancies and they often present as cervical lymphadenopathy. An important clue to the diagnosis of metastatic squamous cell carcinoma is the presence of necrosis and keratinization, which is better appreciated on pap stain than on H&E stain. The

cytological appearance of squamous cell carcinoma depends upon the degree of differentiation by the tumor. FNAC play a very important role in early diagnosis and timely intervention in metastatic cancers.

CONCLUSION

It is concluded that FNAC yielding a cellular material plays an important role in diagnostic 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. Hence, the cytopathologist plays a vital role in diagnosis of lymphnode malignancies.

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