

## Diagnostic utility of fine needle aspiration cytology in interpretation of metastatic lymphadenopathy

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### Abstract

Malignancies can present with diversified symptoms and enlarged lymphnodes are one such. FNAC is a basic, dependable and economical diagnostic tool in the interpretation of metastatic lymphadenopathy.

**Materials and Method:** This is a 2 years retrospective study carried out in the department of pathology GMC Jammu from 1-1-2015 till 31-12-2016. It includes 71 cases of lymphadenopathy, diagnosed as positive for metastasis on FNAC.

**Result:** From a total of 71 cases positive for metastasis majority were of Squamous cell carcinoma 28(39.43%) followed by Poorly differentiated carcinoma 24(33.8%), Adenocarcinoma 14(19.71%), Malignant melanoma and anaplastic carcinoma / lymphoma, 2 cases each (2.81%) and 1 (1.4%) case of Small cell carcinoma. Cervical lymphnodes were the most frequently involved group. There were 42 males and 29 females with a male predominance (M:F = 1.4:1). Maximum cases were seen in the age group of 61 – 70 years (19). Cases with a known primary were 18 (25.35%) while rest 53 (74.64%) were without any known primary.

**Conclusion:** FNAC is a valuable diagnostic tool in metastatic lymphadenopathy without giving much trauma to the patients.

**Keywords:** Malignancy, Metastasis, Fine Needle Aspiration Cytology

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### Introduction

Malignancy is one of the principal causes of death both in developed and developing countries. It results by uncontrolled division of cells and the ability of these cells to metastasize. Most of the patients coming to cytology section of pathology department present with enlarged lymphnodes which often turn out to be metastatic in nature. Fine Needle Aspiration Cytology is a simple, straightforward and economical diagnostic tool in interpretation of such lesions. It gives an insight regarding the presence of tumor and many a times tells the origin of primary malignancy. Malignancy in lymphnodes in our country are predominantly metastatic in nature with an incidence varying from 65.7%<sup>(1)</sup> to 80.4%.<sup>(2)</sup> The aim of the present study was to assess the utility of FNAC as a diagnostic tool for patients presenting with or without the clinical suspicion of metastatic lymphadenopathy.

### Material and Method

This is a 2 year retrospective study carried out in the department of Pathology Govt. Medical College Jammu from 1-1-2015 till 31-12-2016. It includes 71 cases of lymphadenopathy, diagnosed as positive for metastasis on FNAC. FNAC was performed in all the cases taking all aseptic precautions using a 22-24 gauge disposable needle and 10ml syringe. Slides were stained with May Grunwald Giemsa (dry fixation) and Papanicolau stain (wet fixation) A relevant history, clinical examination and important investigations were documented along with focus on cytomorphological features like cellularity, predominant pattern and individual cell morphology.

### Result

The present study was retrospective in nature carried out in 71 cases positive for Metastatic Lymphnode. Out of 71 cases there were 42(59.15%)

males and 29(40.84%) females with a male predominance (M:F = 1.4:1). The age group varied from 28 to 91 years. The majority of the cases were in the age group of 61-70 years 19 cases followed by 51-60 years 15 cases (Table 1). On cytological evaluation Squamous cell carcinoma was the most common metastatic tumor 28(39.43%) followed by poorly differentiated carcinoma 24 (33.8%) and adenocarcinoma 14(19.71%). There were 2 cases (2.81%) each of malignant melanoma and anaplastic carcinoma / lymphoma and a single case of small cell carcinoma (1.4%) Table 2. Out of the various anatomical groups of lymphnodes cervical were the most frequently involved 34(47.8%) followed by supraclavicular 18(25.35%), inguinal 11(15.49%), axillary 6 (8.45%) and submandibular 2 (2.81%). Malignancy was clinically known (primary) in 18 cases (25.35%) and without any known primary in 53 cases (74.64%).

**Table 1: Distribution of patients according to age**

Age (years)	No of patients
0-10	0
11-20	0
21-30	1
31-40	5
41-50	14
51-60	15
61-70	19
71-80	12
81-90	3
91-100	2
Total	71

**Table 2: Distribution of metastatic tumors on FNAC**

Type of Malignancy	Cases	%
Squamous cell Carcinoma	28	39.43%
Poorly differentiated Carcinoma	24	33.8%
Adenocarcinoma	14	19.71%
Malignant Melanoma	2	2.81%
Anaplastic Carcinoma/lymphoma	2	2.81%
Small Cell Carcinoma	1	1.4%
Total	71	100%

**Table 3: Metastatic sites showing the origin of primary lesion**

Sites	No. of Cases	Percentage (%)	Primary Sites Identified	Primary Sites
Cervical	34	47.88%	8	Buccal Mucosa, Tongue, Larynx, Epiglottis / Lung
Supra-Clavicular	18	25.35%	3	Stomach, Liver, Gall Bladder, Salivary Gland, Lung
Axillary	6	8.45%	2	Breast
Inguinal	11	15.49%	5	Malignant Melanoma, Carcinoma Penis, Anal Canal, Cervix
Sub-Mandibular	2	2.81%	0	Head & Neck
Total	71	100%	18	

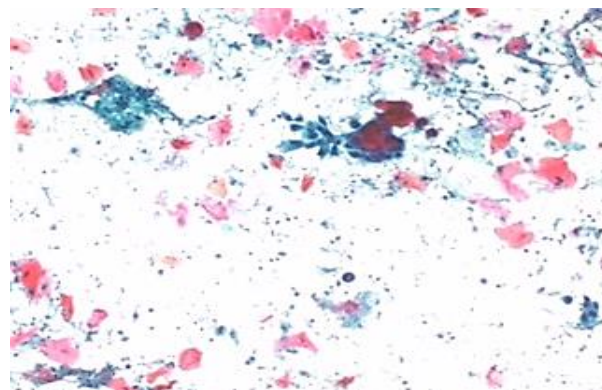
## Discussion

FNAC is the simple, basic and reliable diagnostic tool for suspected and unsuspected lymphadenopathies especially in a developing country like ours. The diagnosis given by an expert and skilful pathologist avoids the necessity of excision biopsy. In the present study, male predominance was noted (M:F= 1.4) which correlates with other studies of Khajuria et al.<sup>(3)</sup> A.K. Kochar et al.<sup>(4)</sup> and A.B Pandav et al.<sup>(5)</sup> Reason for this is likely to be over use of tobacco, pan masala by the male population of our country despite knowing the fact that all of them can cause cancer. The largest number of patients 34 cases (47.88%) belong to fifth to seventh decade, very similar to the findings of Aggarwal et al.<sup>(6)</sup>

The most common lymphnode group to be aspirated was Cervical 34(47.88%), as they are easily accessible for examination and also have a large drainage from head and neck area(common primary sites found in our study). These observations were similar to those of Alam K et al.<sup>(2)</sup>

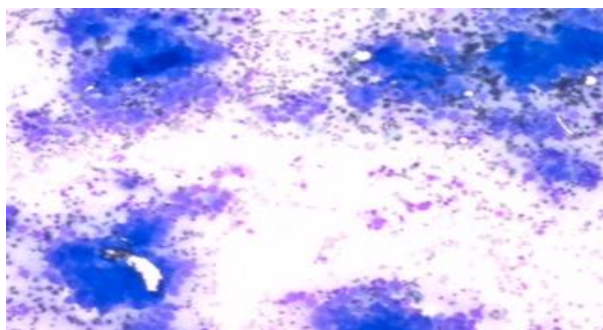
In the present study Metastatic deposits of Squamous cell carcinoma(SCC) most common cytological finding. This is in accordance with other studies by Chhotray GP et al,<sup>(7)</sup> Wilkinson et al<sup>(8)</sup> and Khajuria et al.<sup>(3)</sup> Metastatic squamous cell carcinoma most often shows necrosis, cystic degeneration and keratinisation, which is better seen in papanicolaou stain. Cytologically SCC can show varying degree of differentiation. Fig. 1 Keratinizing tumors show keratinized malignant cells with refractile and orangiophillic cytoplasm, bizarre cell shapes, spindle and caudate cells. Non keratinizing SCC are recognized

by solid cohesive multilayered fragments with well defined cell borders and dense cytoplasm.



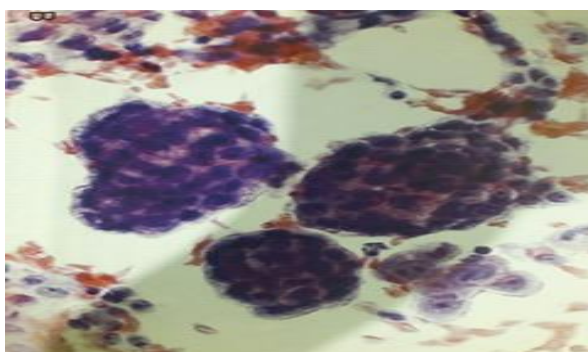
**Fig. 1: Metastatic deposits of well differentiated squamous cell carcinoma**

The second largest number of cases in present study were of poorly differentiated carcinoma. They present as large multilayered fragments, no differentiation corresponding to the solid growth of carcinomas. (Fig. 2) Even an experienced cytopathologist finds it difficult to categorize such cases without the help of immunocytochemistry.



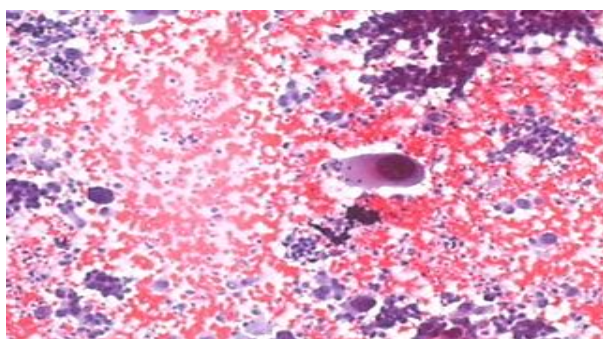
**Fig. 2: Metastatic deposits of poorly differentiated carcinoma**

Adenocarcinoma was the third commonest metastatic malignancy found in our study. Pilloti et al<sup>(10)</sup> also found it to be very common finding. Cytologic features like rosetts, acini, cell clusters, medium to large sized cells with abundant delicate sometimes vacuolated cytoplasm, signet cells with mucin are an important indicators to the diagnosis.(Fig. 3)



**Fig. 3: Metastatic deposits of adenocarcinoma**

In the present study, there were 2 cases of metastatic malignant melanoma diagnosed on FNAC. Both were deposits in inguinal lymph nodes identified by the presence of melanin pigment, scattered as well as clusters of cells with hyperchromatic nuclei, large prominent nucleoli. Many binucleated forms also seen in the smears studied. Pilloti et al<sup>(10)</sup> detected 16 cases of metastatic melanoma. (Fig. 4)



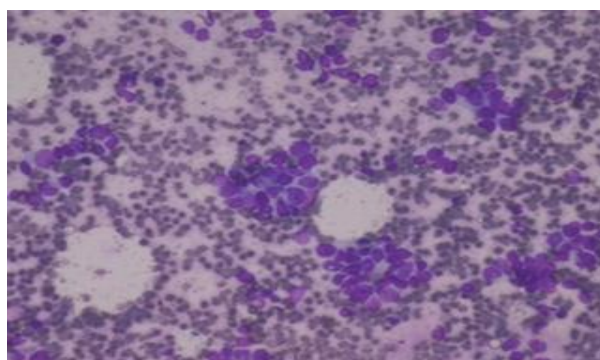
**Fig. 4: Metastatic deposits of malignant melanoma**

Two cases were reported as Anaplastic carcinoma /lymphoma showing numerous large pleomorphic cells having high N:C ratio, hyperchromatic irregular convoluted nuclei with bluish cytoplasm. Many of the cells show prominent nucleoli. Background shows lymphocytes and cystic macrophages. Immunocytochemistry was advised in such cases to arrive at a correct diagnosis. (Fig. 5)



**Fig. 5: Metastatic deposits of anaplastic carcinoma, lymphoma**

A single case of small cell carcinoma was reported in this study showing dispersed cells with some clustering of small cells with little or no cytoplasm, granular nuclear chromatin, nuclear moulding, smeared cells and streaks of nuclear material. (Fig. 6)



**Fig. 6: Metastatic deposits of small cell carcinoma**

In our study 18 cases were with a known primary. Primary sites identified were mostly buccal mucosa, tongue, larynx followed by those in lung and breast. Facundo et al<sup>(11)</sup> however found primary in 59% cases.

In the present study, there was no case of sarcoma metastasizing to lymph nodes. Most sarcomas tend not to metastasize to lymph nodes. Less than 3% of patients with sarcoma develop lymph node metastasis Fong Y et al.<sup>(12)</sup>

### Conclusion

FNAC used as a diagnostic tool in early workup of cases of metastatic lymphadenopathy can prevent

associated mortality and morbidity and surely help in better patient care.

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