

CYTOPATHOLOGICAL EVALUATION OF METASTATIC LYMPHADENOPATHIES- A RETROSPECTIVE AND PROSPECTIVE STUDY

Pathology

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ABSTRACT

Background: The diagnosis of lesions and masses at diverse sites and organs can be made with help of fine needle aspiration cytology, which is safe, easy to use, affordable, well-tolerated, and widely accepted. FNAC is a valuable outpatient treatment that is relatively painless, convenient for patients and doctors alike, avoids physical and psychological damage that might occasionally follow an open surgical biopsy, and offers strong correlation between cytology and histopathology. The major goal of this study is to provide the most comprehensive picture of the present situation of lymph node metastatic lesions and to provide information on early detection, treatment, and prognosis. **Method:** All metastatic lymph node lesions were reported to Govt. Medical College Surat, Department of Pathology between June 2018 and June 2020 was subject of this retrospective and prospective study. **Results:** A total of 3091 cases of fine needle aspiration cytology were performed, 1514 cases involved superficial lymph node FNACs, out of which 200 cases had metastatic lymph node lesions. Squamous cell carcinoma from cervical lymph nodes was most prevalent metastatic lesion. Males made up the majority of cases of metastatic tumors, which occurred most frequently in patients aged 51 to 60 years. Histopathological confirmation was performed in 71 out of 200 cases, and FNAC's diagnostic efficacy was 100%. **Conclusion:** Cytological evaluation along with proper clinic-radiological correlation is quite useful in diagnosing metastasis with good degree of certainty.

KEYWORDS

Fine needle aspiration cytology, Lymphadenopathy, Metastasis

INTRODUCTION

Easy accessibility & frequent involvement make a morphological study of lymph nodes a permanent activity for the pathologist. Superficial lymphadenopathy is a common clinical finding; it may be a sign of inflammation or malignancy, whether primary or metastatic.^{[1][2]}

It is a well-known procedure to utilize FNAC for the diagnosis of metastatic cancers in the lymph node.^[3] FNAC can avert unnecessary surgery to confirm metastases in individuals with enlarged lymph nodes and a history of confirmed malignancy. Even when a patient has a documented history of a primary neoplasm, the possibility of a metastasis from a new primary tumor should be considered.^{[4][5]} It is significant in developing nations like India since it is a low-cost, simple procedure with nearly minimal consequences.^{[6][7]}

With the use of strict morphological criteria in conjugation with certain ancillary techniques such as special stains, immunocytochemistry, flow cytometry, electron microscopy and gene rearrangement studies, diagnostic accuracy of FNAC can be improved.^{[8][9]}

Fine needle aspiration cytology is gaining wide acceptance as a routine preoperative investigation in major academic institutions worldwide. The present study also tried to evaluate the FNAC as a diagnostic tool in our clinical setup. The main purpose of this study is that to gives the most comprehensive picture of current state of metastatic lesions of lymph nodes including prevalence of metastatic malignancy in lymph node and its correlation with different parameters and give us a clue for early diagnosis, management, and prognosis.

MATERIAL & METHODS:

The retrospective and prospective study of Fine needle aspiration cytology in Lymphadenopathies was conducted between June 2018 to June 2020 at Department of Pathology, Government Medical College and New Civil Hospital, Surat.

All patients, Indoor and outdoor from all age group with superficial and easily accessible lesions referred for FNAC of lymph nodes were included in the present study. The present study comprises a total of 200 patients. Deep seated lesions and USG guided FNAC, ulcerated open lesions, haematolymphoid lesions were excluded from study.

Aspiration was done by using 22-24 gauge disposable needle and 10

ml syringe, and prepared slides were stained with May Grunwald Giemsa, Papanicolaou and Haematoxylin and Eosin. Cytomorphological features were assessed by examination under low power and high power. Wherever necessary special stains like diastase resistant Periodic acid Schiff (PAS), cell block preparation and Immunocytochemistry was done. Final smear was reported after correlating the clinical data and other investigations.

RESULTS:

We had received a total of 3091 cases of FNAC during Jun 2018 to Jun 2020 in cytopathology section, out of which 1514 cases (48.9%) were superficial lymph node FNACs and out of that, 200 (13.21%) cases were of metastatic lymph node lesions. Certain cases given as descriptive diagnosis and non-conclusive ones, are excluded from our study. Total 200 cases were studied in all age group and 71 cases were correlated with histopathological examination.

Out of 200 cases of metastatic lymph node lesions, 164 cases showed metastasis from squamous cell carcinoma which was the most common metastatic lesion of the lymph node and comprises about 82%. (Table. 1)

Metastatic lesions of lymph node were more common after age of 40 years. We found that maximum no. of cases was in the age group of 51-60 years (32.5%), 153 (76.5%) male and 47 (23.5%) female patients were reported with metastatic lesion. The male to female ratio was 3.25:1. (Table. 2)

The maximum number of cases (136 cases) of metastatic lesions were reported in cervical lymph nodes (68%) followed by submandibular lymph nodes (28%) and others. (Table.3)

Metastatic tumors	No. of cases(%)
Squamous cell carcinoma	164(82%)
Adenocarcinoma (Adeno)	13(6.5%)
Thyroid carcinoma	03(1.5%)
Poorly differentiated carcinoma (Poorly diff.)	12(06%)
Mammary carcinoma	05(2.5%)
Malignant melanoma	02(01%)
Small cell tumors	01(0.5%)

Table 2: Age wise distribution

Age Group	Male	Female	Total No. of cases (%)
11-20	00	01	01(0.5%)
21-30	00	00	00(00%)
31-40	18	09	27(13.5%)
41-50	33	10	43(21.5%)
51-60	45	20	65(32.5%)
61-70	44	06	50(25%)
>70	13	01	14(07%)

In present study, majority of lymph node swelling fell between 1 to 5 cm in size. Most of swellings were <2 cm (52%) in size. Few lesions were >5 cm (1.5%) in size, which were diagnosed as metastatic SCC. (Table.4)

Table 4. Size wise distribution

Size	No. of cases (%)
<2 cm	105(52.5%)
3-5 cm	92(46%)
>5 cm	03(1.5%)

Histopathological correlation from the lymph node or along with their primary tumour tissues were available in 71 cases and all these cases correlated with histopathological diagnosis. (Table.5)

In our study, maximum number of lymphadenopathies were unilateral and single lymph node involvement (89.5%). 19 cases (9%) of metastatic lymph node were bilateral lymphadenopathy which were mostly metastatic SCC, and 2 cases (1%) were of multiple nodes involvement which were metastatic adenocarcinoma.

Table 3. Distribution of different sub types of metastatic tumors according to site of FNAC of lymph node

Site	Metastatic tumors					
	SCC	Adeno Ca	Thyr oid ca	Poorly diff.	Mamma ry Ca	Ma. Mela.
Cervical	117	06	02	10	00	00
Supraclavi cular	04	03	00	01	01	00
Submandi bular	35	00	01	00	00	00
Submental	02	00	00	00	00	00
Axillary	03	01	00	01	04	01
Inguinal	03	02	00	00	00	01
Other	00	01	00	00	00	00
Total	164	13	03	12	05	02

Table 5. Metastatic lymph node showing the tumor origin as confirmed by histopathology

Lymph node metastatic site	No. of cases (%)	No. of Cases- Primary tumour origin
Cervical	66(33%)	15-Oral Cavity
		11-tongue
		18-larynx
		19-Nasopharynx
		02-Thyroid
		01-Skin of face
Supraclavicular	01(0.5%)	01-Breast
Axillary	04(02%)	04-Breast

DISCUSSION:

The age range most frequently afflicted by metastatic tumours in the current study was 51–60 years old, which is consistent with other studies by Ruchi et al.^[10], S. Yadav et al.^[11], and others. However, S. Khurajam et al.^[12] observed the age range with the largest number of cases to be 61–70 years old, but they also discovered the age range with the second highest number of cases to be 51–60 years old, which was a number less case from primary age group affected in their study. So, they had somewhat similar results in both age groups. In our study, there were significantly more men than women, which is consistent with prior research by S. Yadav et al.^[11] and Ruchi et al.^[10]. This is because of smoking and tobacco consumptions are much more common in male population.

Squamous cell carcinoma was the most common type of metastatic malignancy among 200 patients (82%). Similar results were found by

S. Yadav et al.^[11], Kirti M et al.^[13], and A.K. Kochhar et al.^[14], who reported 80.3%, 80%, and 83.7% instances, respectively.

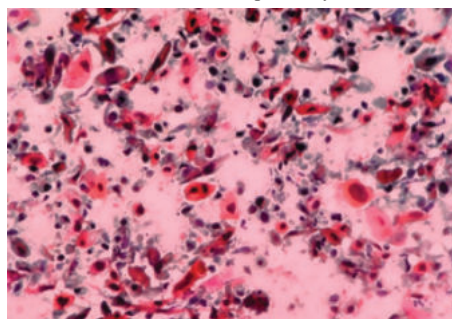


Fig.1-Metastatic squamous cell carcinoma (PAP, 40X)

In the present study, cervical lymph node was most common site for metastatic lesion. We reported 68% cases of cervical lymph nodes followed by submandibular, submental, axillary, supraclavicular and inguinal lymph node metastasis. These findings were concurrent with studies of S. Khurajam et al.^[12], A. Wilkinson et al.^[15] and S. Yadav et al.^[16].

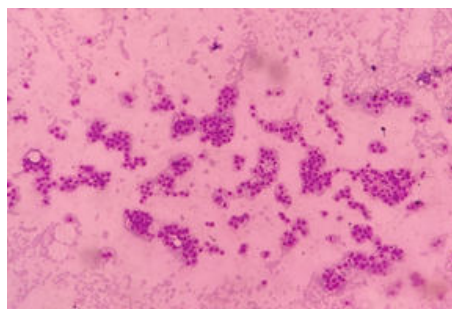


Fig.2- Metastatic mammary carcinoma (MGG, 10X)

In the present study we observed that single lymph node involvement by metastasis in 89.5% cases and multiple in 11.5% cases. These findings are concurrent with study of S. Khurajam et al.^[12] who reported 94.7 % cases of single lymph node involvement and Snow GB et al.^[17] who reported 61.3% cases of single lymph node involvement.

The FNAC method has a low cost, excellent diagnostic accuracy for disease staging, and it can detect metastases from a known primary. Due to its low risk of adverse effects, lack of morbidity, and ease of use to patients of all ages, it possesses great patient acceptance. There is no need for anaesthesia and it can be done as an OPD procedure. The necessity to perform excision biopsy is reduced in many cases.^{[18][19]}

Nowadays, number of cases of metastatic lesion have increased in our country which correlates well with changing lifestyle and habits i.e., smoking, tobacco, and alcohol etc., It can be modified by improved life goals, improved health, nutritional status, socio-economic standards, literacy and ultimately quality of life.^[20]

A few pitfalls in the technique of FNAC have been observed like inadequate material, non-compliance of patients, technical error, blood obscured samples or sampling from a non-representative area. These can be overcome by proper training and repeat aspirations. Necrosis and fibrosis in swelling may occur in malignant cases, such aspirates may yield scant sample or only necrotic material which may be a major hindrance in diagnosis. These can be overcome by repeat aspiration or aspiration under ultrasound guidance. Few cases may fall in grey zone wherein confirmatory diagnosis cannot be offered. Ancillary techniques can be used to offer an optimum diagnosis which helps the clinician to follow an appropriate clinical management.

CONCLUSION:

It can be concluded that fine needle aspiration cytology is safe, accurate, inexpensive, and convenient method for diagnosis of metastatic lesions of lymph node. It might be the only method for identifying metastatic lesions in lymph nodes with known underlying cancers. It is valuable to the treating surgeon and quite helpful in defining the course of treatment. Although FNAC is not a replacement for traditional histopathology, it should be considered a crucial aspect

of the preoperative diagnosis. Cytological evaluation along with proper clinic-radiological correlation is quite useful in diagnosing metastasis with good degree of certainty.

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