

A STUDY OF FNA FINDINGS OF MALIGNANCY IN LYMPH NODES WITH SPECIAL EMPHASIS ON METASTATIC MALIGNANCY

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Aims: This study was undertaken to describe the common metastases to different groups of lymph nodes and to underline the importance of FNA as a diagnostic tool in malignant disease of lymph nodes

Settings and Design: The study was conducted in the department of pathology, Assam Medical College over a period of one year. **Study design :** Cross sectional study

Methods and Material: A one year retrospective study was carried out on all malignant lymph node aspirates. Inadequate smears were excluded from the study.

Statistical analysis used: Rates and proportions using percentage

Results: A total of 151 cases showed evidence of malignant disease with a male female ratio of 2.6:1 and age range of 15 yrs to 85 yrs. 10.6% of the cases were lymphomas and 89.4% were metastatic malignancy. Cervical group (102 cases) was most commonly involved followed by supraclavicular nodes (21 cases). Axillary nodes (10 cases), submandibular (9 cases), inguinal (4 cases), pre auricular (2 cases), abdominal nodes (2 cases) and pre tracheal (1 case) constituted the rest. The most common type of lymphoma was non Hodgkin's lymphoma whereas the most common type of metastasis was squamous cell carcinoma (80 cases) followed by adenocarcinoma (21 cases).

Conclusions: Of malignant diseases of lymph node, metastatic malignancy was commonest. The cervical group was the most frequent site of lymph node metastasis with squamous cell carcinoma being the most common type. Non Hodgkins lymphoma was found to be commoner than Hodgkins lymphoma.

Key-words: : Fine needle aspiration, lymphadenopathy, metastasis

INTRODUCTION

Lymph nodes were the first organs to be sampled by fine needle aspiration cytology. FNAC is a primary method of diagnosis in reactive, infective and metastatic lymphadenopathy. FNA was introduced in most medical centres with a view to reducing the number of excisional biopsies of lymph nodes.¹ Besides confirming the presence of metastatic disease, FNAC gives clues regarding the nature and origin of the primary tumour. The aim of this study was to describe the common metastases to different groups of lymph nodes and to underline

the importance of FNA as a diagnostic tool in malignant disease of lymph nodes.

Subjects and Methods: A one year retrospective study was carried out on all malignant lymph node aspirates that came to our department for FNAC. FNA samples were taken using 23 gauge needles under all aseptic precautions and smears were stained with MGG. A detailed history and clinical examination were performed. All lymph node aspirates were evaluated and those showing malignant disease were included in our study. Inadequate smears were excluded from the study.

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Clinicoradiological and histopathology correlation were done wherever possible. A total of 151 cases were studied which included both lymphoma and metastatic disease. Based on cytomorphology, along with clinicoradiologic findings, metastatic tumors were further classified into squamous cell carcinomas, adenocarcinomas and other distinctive tumor types. Those cases which showed features of metastasis but could not be placed into any definite group were reported as metastatic deposit only.

Results: During the period of study, a total of 151 cases showed evidence of malignant disease on FNA. The ratio of males to females was 2.6:1. The age of the patients ranged from 15 yrs to 85 yrs. Of these, 10.6%(16 cases) were lymphomas and 89.4%(135 cases) were metastatic malignancy to the nodes. The most commonly involved nodes were the cervical group (102 cases) followed by supraclavicular nodes (21 cases). Axillary nodes(10 cases), submandibular (9 cases), inguinal (4 cases), pre auricular(2 cases) , abdominal nodes (2 cases) and pre tracheal (1 case) constituted the rest. The most common type of lymphoma was non Hodgkin's lymphoma whereas the most common type of metastasis was squamous cell carcinoma(80 cases) followed by adenocarcinoma (21 cases). The different types of malignant disease seen in our study are detailed in the following table:

Table 1: Types of malignancy and their frequency

The most common type of metastasis in cervical group was squamous cell carcinoma whereas in the supraclavicular node, adenocarcinoma was the most common type. In the axillary nodes, carcinoma breast was the most common. In submandibular nodes, squamous cell carcinoma was most common followed by Non Hodgkin's lymphoma. The youngest patient was 15 years old and had Non Hodgkin's lymphoma while the oldest patient (85 yrs) had poorly differentiated carcinoma.

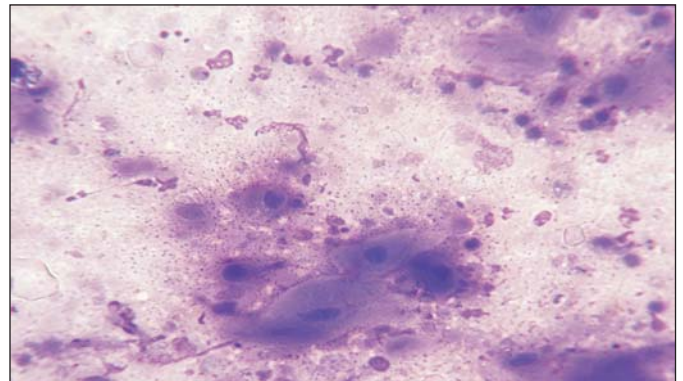


Fig.1 showing lymph node metastasis of keratinising squamous cell carcinoma(100X)

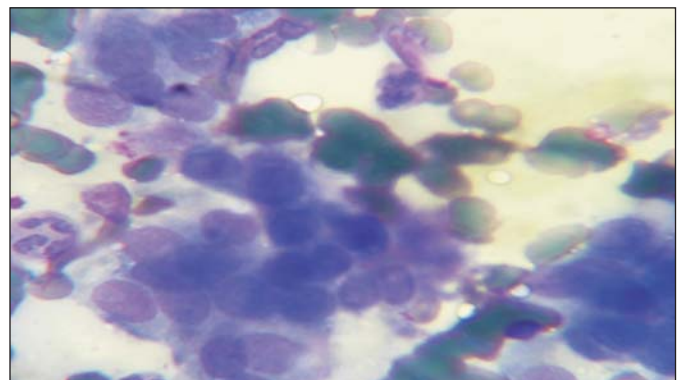


Fig.2 showing metastatic adenocarcinoma with cells forming acini at places (100X)

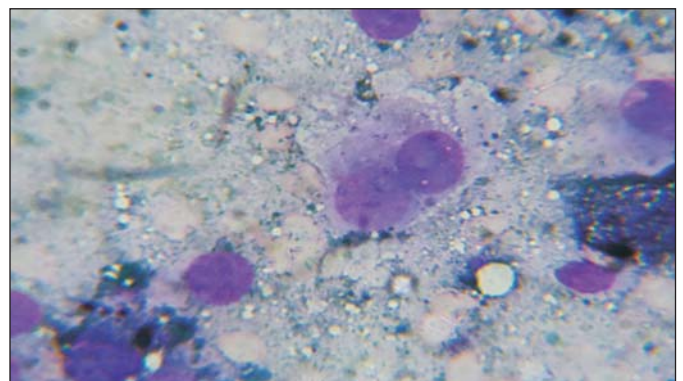


Fig.3 showing malignant melanoma cells from an inguinal node (100X)

Serial no.	Type of malignancy	Total number of cases	Percentage (%)
1	Non Hodgkin's lymphoma	13	8.6
2	Hodgkin's lymphoma	3	2
3	Squamous cell carcinoma	80	53
4	Adenocarcinoma	21	14
5	Poorly differentiated carcinoma	6	4
6	Carcinoma breast	6	4
7	Malignant melanoma	1	0.7
8	Synovial sarcoma	1	0.7
9	Nasopharyngeal carcinoma	1	0.7
10	Testicular tumour	1	0.7
11	Ovarian tumour	1	0.7
12	Metastatic deposit	16	10.6

Table 1: Types of malignancy and their frequency

DISCUSSION

Lymph node FNA is a cost-effective, valuable tool for the primary diagnosis of lymph nodes containing metastatic or hematologic malignancy, and for staging or monitoring of relapse in patients with known malignancy.² It plays a significant role in developing countries like India, as it is a cheap procedure, simple to perform and has almost no complications.³⁻⁵

In our study, the ratio of male to female patients was 2.6:1. The percentage of metastasis (89.4%) was much higher than that of lymphomas (10.6%). In a study by Wilkinson et al.⁶ the percentage of metastatic disease was 90% and lymphomas comprised 5%, which was similar to our study. Other Indian studies^{4,5} also showed similar results although there are variations in the percentage involved depending on the number of cases studied. The diagnostic accuracy of FNAC in metastatic disease varies from 87% to 97.9%^{4,5} and for lymphomas is 82%.⁴ The sensitivity of FNAC for metastatic lesions to lymph nodes has varied from 97.9% to 100%, whereas the specificity has been found to be 100%.^{4,7}

The cervical group is the most common group of

lymph nodes to be involved and the primary is most often from the oral cavity^{7,8} with squamous cell carcinoma being the most common histological type. In our study also, cervical group was the most commonly involved group followed by the submandibular group. Squamous cell carcinoma was the most common malignancy in these groups. This correlates with the high rates of cancers of upper aerodigestive tract in India, possibly due to the habit of tobacco chewing in the Indian population.

Metastatic sarcomas are uncommon findings in lymph nodes. Sarcomas other than Kaposi's which have a tendency to involve regional nodes are rhabdomyosarcoma, epithelioid sarcoma, clear cell sarcoma, angiosarcoma and synovial sarcoma. In our study, there was a single case of synovial sarcoma.

Melanomas arising in the eyeball, scalp or head and neck region may metastasize to neck nodes, but occasionally it presents as a metastasis from an occult primary. Cytologically these aspirates are highly cellular with loosely scattered pleomorphic cells and binucleate and multinucleate forms. The cells have eccentrically placed nuclei, irregular nuclear outlines, intranuclear vacuoles and large prominent nucleoli. Melanin pigment is seen only in 25% of all aspirates^{9,10}. Prominent melanin pigment was seen in the metastatic melanoma in our study.

Non Hodgkins lymphoma was the most commonly occurring lymphoid malignancy in our study. In 16 cases, malignant cells were seen which could not be put definitely under any category.

The utility of FNAC as a diagnostic tool in malignant disease of lymph node is influenced by a variety of factors which include proper technique, adequacy of smears and the experience of the trained observer developed over the years. In many cases, ancillary studies are necessary to arrive at a correct diagnosis. The tendency of certain malignancies to metastasize to certain groups of nodes can give an idea of the possible sites of the primary tumor. In cases of lymphoid malignancy, FNA offers a preliminary diagnosis which is later confirmed on histopathological examination with immunohistochemistry correlation.

CONCLUSION

FNA is a very useful tool in the diagnosis of lymph node malignancy. Of malignant diseases of lymph node, metastatic malignancy was found to be most common. The cervical group was the most frequent site of lymph node metastasis with squamous cell carcinoma being the most common type. Among lymphoid malignancies, Non Hodgkins lymphoma was found to be much commoner than Hodgkins lymphoma.

REFERENCES

1. Skoog L, Tani E. Lymph nodes. Diagnostic Cytopathology 3rd edition. 2010;13:409.
2. Buley ID. Fine needle aspiration of lymph nodes. *J Clin Pathol*. 1998;51:881–5.
3. Bagwan IN, Kane SV, Chinoy RF. Cytologic evaluation of the enlarged neck node: FNAC utility in metastatic neck disease. *Int J Pathol*. 2007;6:2.
4. Alam K, Khan A, Siddiqui F, Jain A, Haider N, Maheshwari V. Fine needle aspiration cytology (FNAC): A handy tool for metastatic lymphadenopathy. *Int J Pathol*. 2010;10:2.
5. Khajuria R, Goswami KC, Singh K, Dubey VK. Pattern of lymphadenopathy on fine needle aspiration cytology in Jammu. *JK Sci*. 2006;8:157–9.
6. Anne R. Wilkinson, Sadhana D. Mahore, Sabiha A. Maimoon. FNAC in the diagnosis of lymph node malignancies: A simple and sensitive tool. *Indian J Med Paediatr Oncol*. 2012 Jan-Mar; 33(1): 21–24.
7. Hirachand S, Lakhey M, Akhter P, Thapa B. Evaluation of fine needle aspiration cytology of lymph nodes in Kathmandu Medical College, Teaching hospital. *Kathmandu Univ Med J*. 2009;7:139–42.
8. Hoft S, Muhle C, Brenner W, Sprenger E, Maune S. Fine-needle aspiration cytology of the sentinel lymph node in head and neck cancer. *J Nucl Med*. 2002;43:1585–90. [[PubMed](#)]
9. Schwarz R, Chan NH, MacFarlane JK: Fine needle aspiration cytology in the evaluation of head and neck masses. *Am J Surg* 1990; 159: 482-485.
10. Fulciniti F, Califano L, Zupi A, Vetrani A: Accuracy of Fine needle aspiration biopsy in head and neck tumours. *J Oral Maxillofac Surg* 1997;55: 1094-097