



UTILITY OF FNAC IN EVALUATION OF METASTATIC LYMPHADENOPATHY: AN INSTITUTIONAL BASED CYTOMORPHOLOGICAL STUDY

Pathology

Poonam Sharma*	Lecturer, Department of Pathology, Government Medical College, Jammu *Corresponding Author
Rajat Gupta	Lecturer, Department of Pathology, Government Medical College, Jammu
Danish Ashraf	Post Graduate Student, Department of Pathology, Government Medical College, Jammu
Subhash Bharadwaj	Professor and Head, Department of Pathology, Government Medical College, Jammu

ABSTRACT

Background: Lymphadenopathy (LAP) remains one of the commonest clinical presentations in patients attending the OPD services of the hospital. Many Benign as well as Malignant Pathologies can present as lymphadenopathy in the body. Fine-needle aspiration cytology (FNAC) is an inexpensive and established method in the diagnoses of palpable lymph nodes.

Aim/Objectives: To evaluate the cytomorphological profile of metastatic lymph nodes and to study the site wise pattern of lymph node involvement.

Material and Methods: This retrospective study was carried out in the Department of Pathology, Government Medical College, Jammu for a period of one year. The FNAC slides were reviewed and cytomorphological features studied in detail.

Results: The age of patients ranged from 23 years to 88 years with male to female ratio of 2.25:1. Cervical lymph node (57/78; 73.1%) was the commonest involved group followed by supraclavicular group (12/78, 15.4%) group. Squamous cell carcinoma (44/78; 56.4%) was the commonest metastatic malignancy followed by poorly differentiated carcinoma (13/78, 16.7%) and adenocarcinoma (11/78, 14.1%). Primary site of malignancy was unknown in majority of cases (56/78, 71.8%).

Conclusions: FNAC is a rapid and cost-effective technique in the evaluation of peripheral LAP. It is a valuable diagnostic tool in assessment of metastatic LAP and gives early and accurate results with minimal invasion. It also reduces the need for invasive procedures like surgical biopsies and thereby reducing cost and time in making a final diagnosis.

KEYWORDS

Fine Needle Aspiration Cytology; Lymphadenopathy; Metastasis

INTRODUCTION:

Fine Needle Aspiration Cytology (FNAC) is safe, easy and minimally invasive technique and can be performed in office settings [1]. In an adult patient with malignancy, lymphadenopathy (LAP) may be the first presenting complaint. FNAC is cost effective procedure and is particularly especially useful in low-resource countries like India. FNAC plays an important role in confirming or excluding metastasis in a lymph node in a known case of malignancy and thus avoiding unwanted surgery [2]. FNAC may also be the first investigation to make a diagnosis of an occult malignancy [3].

FNAC has been used extensively in diagnosis of primary and secondary malignancies involving lymph nodes [4]. Besides confirming the presence of metastatic disease, FNAC may also provide an insight into the nature and origin of primary malignancy as well in the management of patient for staging purposes [5]. In developing countries, infective LAP is quite common especially tuberculosis, however a large percentage of cervical LAP in adults turn out to be malignant [6].

In India, lymph nodal malignancies are predominantly metastatic in nature with an incidence varying from 65.7% to 80.4% [7,8]. In contrary, Incidence of lymphomas range from 2% to 15.3% [3,9] among all lymph nodes Aspirates. However, limited literature is available signifying the role of FNAC in detecting malignancies in superficial lymph nodes in India, particularly in rural areas. So the aim of the study was to assess the utility of FNAC as a diagnostic tool in evaluation of superficial metastatic LAP.

MATERIAL AND METHODS:

This retrospective study was done on FNAC diagnosed metastatic lymph nodes diagnosed in the cytopathology section of Department of Pathology, GMC Jammu from January 2018 to December 2018. History and findings of clinical examination were recorded from the requisition forms of the patients. Informed consent was obtained and all sterile precautions were taken. FNAC was performed by using 10 cc disposable syringe and 22/24 G needle. For deep seated lesions, USG/CT guided FNAC was performed. Once needle had pierced the swelling, full suction was applied. The needle was moved in different directions till adequate material was visualized in the needle stem of the needle. Aspirated material was placed on the clean glass slides and

good quality smears prepared. The smears were stained with Giemsa and Papanicolaou stains. The smears were examined for adequacy and cytomorphological features like cell type, cellularity, arrangement and nuclear as well as cytoplasmic features were evaluated. Appropriate Statistical Analysis was performed.

RESULTS:

In the study, metastatic lymph nodes were evaluated in 78 patients during the period of study. Majority of patients were males with M:F ratio of 2.25:1. Age range of the patients in our study was 23 to 88 years. Majority of patients were seen in the age group of 51-60 years followed by 41-50 years (Table 1). Only 3 cases were seen in 21-30 years age group.

Among anatomical sites involved, cervical lymph nodal group was the commonest site (73.1%) followed by supraclavicular region (15.4%) and axillary region (5.1%). Inguinal and Suprasternal regions were involved in 3.8% and 2.6% cases respectively. In majority of the patients (56/78, 71.8%), primary site was unknown while primary site of malignancy was known in 28.2% (22/78) cases. On Cytomorphological examination, Squamous cell carcinoma was the most common metastatic lesion (44/78, 56.4%) followed by poorly differentiated carcinoma (13/78, 16.7%) and adenocarcinoma (11/78, 14.1%) (Table 2). Four cases of metastatic breast carcinoma and two cases each of malignant melanoma and leukaemia metastasis were also seen. Single case each of small cell carcinoma and papillary carcinoma of thyroid were also seen

DISCUSSION:

FNAC is an easy, reliable and cost effective diagnostic tool in evaluation of LAP especially in a limited resource country like ours. The diagnosis provided on aspirated material by a skilled pathologist is often the final accepted diagnosis and many times no biopsy correlation or further evaluation is required.

Majority of cases in our study were seen in 51-60 years age group with age range of 23-88 years. Meena P et al [5] in their study observed maximum cases in 51-60 years age group with age range of 22 to 83 years. Khajuria R et al [9] and Pandav AB et al [10] also observed maximum cases in 51-60 years age group in their studies. Majority of patients in our study were males with a M:F ratio of 2.25:1. The results

were similar to previously published studies [9,10]. This may be attributed to use of excessive usage of tobacco containing products (known carcinogenic substance) by males in our country, especially among low socio-economic strata.

In this study, maximum cases were observed in cervical region followed by supraclavicular and axillary region. Wilkinson AR et al [3], Meena P et al [5], Ruchi R et al [9] and Alam K et al [8] in their studies observed cervical region as the most commonly involved region. Lymph nodes in the cervical region can be easily accessed on examination and drain head and neck region which is a fairly large region in the body. On cytology, Metastatic deposits of squamous cell carcinoma were the commonest finding. The results were similar to studies by Wilkinson AR et al [3], Meena P et al [5] and Khajuria R et al [9]. On cytology, Metastatic squamous cell carcinoma shows evidence of necrosis, cystic degeneration and keratinisation (better appreciated on papanicolaou stain) (Figure 1A). In Keratinizing tumors, keratinized malignant cells with refractile and orangiophilic cytoplasm, bizarre cell shapes, spindle and caudate cells and pyknotic nuclei are seen while non keratinizing types are recognized by solid cohesive multilayered fragments, well defined cell borders and dense cytoplasm [11]. Second Commonest metastatic deposits in our study were poorly differentiated carcinoma, similar to previous study by Gupta A et al [11]. Adenocarcinoma (Figure 1B) followed by metastatic breast carcinoma were the other common metastatic lesions in our study. Two cases each of malignant melanoma and leukaemia metastasis and single case each of small cell carcinoma and papillary carcinoma of thyroid were also seen in our study. Among all the lesions, primary site of malignancy was identified in 22 cases with help of FNAC and clinical data while majority of cases had unknown primary.

CONCLUSIONS:

FNAC of lymph nodes is a rapid, effective and simple tool in the diagnosis of lymph node malignancies. It gives early and accurate results with minimal invasion by reducing the requirement of surgical biopsies. It can also help in detecting occult primary malignancies in the body. Thus a cytopathologist plays a pivotal role in the diagnosis of lymph node malignancies.

Conflicts of Interest: Nil

Source of Funding: Nil

Acknowledgements: Nil

Tables:

Table 1: Age and Sex Distribution (N=78)

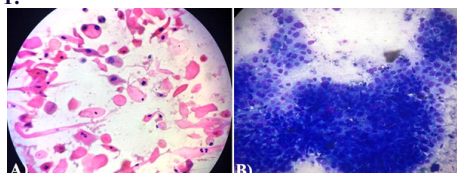
Age Group in years	Number of Patients	Number of Males	Number of Females
21-30	3	3	0
31-40	7	5	2
41-50	22	15	7
51-60	33	22	11
61-70	8	5	3
>70	5	4	1
Total	78	54	24

Table 2: Cytomorphological Diagnosis on FNAC (n=78)

Cytomorphological Diagnosis	Number of Cases	Percentage
Squamous Cell Carcinoma	44	56.4
Poorly Differentiated Carcinoma	13	16.7
Metastatic Adenocarcinoma	11	14.1
Metastatic Breast Carcinoma	4	5.1
Malignant Melanoma	2	2.6
Leukaemia Deposits	2	2.6
Small Cell Carcinoma	1	1.3
Papillary carcinoma Thyroid Metastasis	1	1.3
Total	78	100

Figures:

Figure 1:



A) High Power view (papanicolaou stain) of Metastatic Squamous Cell Carcinoma showing keratinized cells with pyknotic nuclei and moderate pleomorphism. B) Low Power view (Giemsa Stain) of Metastatic Adenocarcinoma showing papillary configuration with individual cells having high N:C ratio, prominent nucleoli and cytoplasmic vacuolations at places.

REFERENCES:

1. Hafez NH, Tahoun NS. Reliability of fine needle aspiration cytology (FNAC) as a diagnostic tool in cases of cervical lymphadenopathy. *J Egypt Natl Canc Inst.* 2011;23(3):105-114
2. Manupriya S, Aruna G, Kaul R. Utility of FNAC in Diagnosis of Lymph Node Malignancies: An Audit from a Rural Medical College. *Int J Cancer Cell Biol Res.* 2017; 2(2):34-8.
3. Wilkinson AR, Mahore SD, Maimoon SA. FNAC in the diagnosis of lymph node malignancies: A simple and sensitive tool. *Indian J Med Paediatr Oncol.* 2012;33(1):21-4.
4. Malakar D, Jajoo IL, Swarup K, Gupta OP, Jain AP, Poflee VW. A clinical evaluation of fine needle aspiration cytology in the diagnosis of lymphadenopathy. *Ind J Tub.* 1991;38:17-9.
5. Meena P, Mishra RT. A study of metastatic lesions of lymph nodes by fine needle aspiration cytology. *Int J Res Med Sci* 2017; 5(10):4523-6.
6. Ghartimagar D, Ghosh A, Ranabhat S, Shrestha MK, Narasimhan R, Talwar OP. Utility of fine needle aspiration cytology in metastatic lymph nodes. *J Pathol Nepal.* 2011; 1(2):92-5.
7. Bhagwan IN, Kane SV, Chinoy RF. Cytologic evaluation of the enlarged neck node: FNAC utility in metastatic neck disease. *Internet J Pathol* 2007;6:(2).
8. 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.
9. Khajuria R, Goswami KC, Singh K, Dubey VK. Pattern of lymphadenopathy on fine needle aspiration cytology in Jammu. *JK Sci.* 2006 Jul-Sep; 8(3):157-9.
10. Pandav AB, Patil PP, Lanjewar DN. Cervical lymphadenopathy- diagnosis by F.N.A.C., a study of 219 cases. *Asian J Med Res.* 2012 Jul-Sep;1(3):79-83.
11. Gupta A, Gupta D, Suri J, Kaul KK. Diagnostic utility of fine needle aspiration cytology in interpretation of metastatic lymphadenopathy. *Ind J Pathol Oncol.* 2017 Jul-Sep; 4(3):426-9.