



Original Research Article

A cytological study on metastatic lymphnode deposits in a tertiary care hospital

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ABSTRACT

Introduction: Metastatic malignancy is a more common etiology of peripheral lymphadenopathy, especially when it occurs after the age of 40 years. Lymph nodes enlarged by metastatic tumour deposits usually show diffuse involvement, therefore fine needle aspiration from an involved node will almost invariably result in diagnostic cells.

Aims and Objectives: 1. To study cytological spectrum of various metastatic deposits in lymph nodes. 2. To assess age, gender and site commonly involved in lymphnode metastatic deposits.

Materials and Methods: A cross-sectional descriptive study was conducted from January 2008 to May 2012. Fine needle aspiration cytology (FNAC) of lymph nodes with metastatic deposits performed in Pathology department, SDM College of Medical Sciences and Hospital, Dharwad were included in the study.

Results: Total of 148 cases were included in the study. The most common metastatic deposit was squamous cell carcinoma seen in 60.81% of cases, followed by adenocarcinoma deposits in 19.59% of cases. Commonly involved lymph node was cervical lymph node seen in 74.32% of cases. Age group of patients ranged from 22yrs - 86yrs with male:female ratio being 3.77:1.

Conclusion: FNAC is an effective diagnostic modality, useful in early diagnoses of metastatic lymphadenopathy. It is a simple OPD procedure useful in screening as well as follow-up of metastatic lymphnode enlargement.

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1. Introduction

Lymph node enlargement can be secondary to various diseases comprising of inflammatory, neoplastic and other causes. Fine needle aspiration cytology (FNAC) is efficient in diagnosing the etiology of enlarged lymph nodes in most of the circumstances.¹ Lymphnodes are the commonest site of involvement in various malignancies. FNAC is cost effective, easily performed and reliable diagnostic modality for all the palpable swellings including lymphnode enlargement.² In case if deeper lymphnodes are involved, FNAC can be performed efficiently under guidance, especially ultrasonography (USG) - guided.

In the USA, in 1921 Gulhrie described a method of using aspirated material to diagnose various disease causing cervical lymph node enlargement, which was reported to be the earliest use of FNA. FNAC has a significant role in neck lymph nodes, particularly those with metastasis.³ FNAC confirms the presence of metastatic disease and gives a clue regarding its nature and origin of primary malignancy. It is very useful in detecting recurrence and new metastases. Hence, it is an important and reliable tool in follow-up of malignant conditions. However, histopathological examination will always be considered as the gold standard in diagnosing varied lymphadenopathy etiologies, especially in lymphomas but in many metastatic malignancy FNAC may be the only tool for diagnosis and further management of the patients.⁴ Diagnostic

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dilemma is not uncommon, especially in cases where the metastatic lymphnodes have turned cystic, example metastatic squamous cell carcinoma or papillary thyroid carcinoma deposits. In such cases, FNA from multiple sites and meticulous examination of smears for detecting malignant features is essential.

The present study was undertaken to learn about the series of metastatic lymphnode deposits and evaluate common age group, gender and site involved.

2. Aims and Objectives

1. To study cytological spectrum of various metastatic deposits in lymph nodes.
2. To assess age, gender and site commonly involved in lymphnode metastatic deposits.

3. Materials and Methods

A cross-sectional descriptive study was conducted from January 2008 – May 2012. Fine needle aspiration cytology (FNAC) of lymph nodes with metastatic deposits performed in Pathology department, SDM College of Medical Sciences and Hospital, Dharwad were included in the study after seeking permission from the Departmental Head. For retrospective data; pertaining to age, gender, site and clinical history, all was obtained from FNAC request forms. For prospective data, thorough clinical history and examination was performed. After explaining the procedure to the patient, under aseptic precaution FNAC was performed using 22 – 23 G needle and 10ml disposable syringe. Aspirate was smeared on the slides and dried smear was stained with Leishman stain, whereas 95% alcohol fixed smears were stained with Papanicolaou stain and Hematoxylin & Eosin stain. Wherever indicated, on a dried smear Ziehl-Neelson stain for Acid Fast Bacilli was performed.

Slides were collected from departmental archives and reviewed. Clinical data was analysed and descriptive statistics was used in the study.

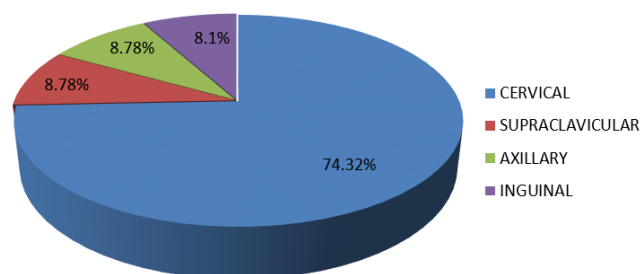
Institutional ethical clearance has been obtained.

4. Results

Total of 4095 FNAC was performed during the study period, with lymph node FNAC accounting for 828 cases. Metastatic lymphnode deposit FNAC included in the study were 148. Commonest metastatic deposit was Squamous cell carcinoma deposits (60.81%), followed by Adenocarcinoma deposit (19.59%). Other conditions – 6.75% Positive for malignancy without being further typed; 3.37% Malignant melanoma deposits (Figure 1); 2.70% Papillary carcinoma Thyroid deposits (Figure 4); 1.35% each of deposits from Large cell Neuroendocrine carcinoma (Figure 2), Small cell carcinoma, Nasopharyngeal carcinoma; 0.67% each of deposits from Non-

small cell carcinoma, Germ cell tumor, Carcinosarcoma or Sarcomatoid/ Spindle cell carcinoma (Figure 3) and Small round cell tumor (Table 1).

Range of age at presentation was 22 – 86yrs with commonest age group (Table 2) affected being 51 – 60 yrs (41.89%). Male: Female ratio was 3.77:1. Commonest site involved (Graph 1) was Cervical lymphnode (74.32%), followed by Supraclavicular lymphnode (8.78%), Axillary lymphnode (8.78%) and Inguinal lymphnode (8.10%).



Graph 1: Site of involvement in Lymphnode metastatic deposits

Primary site of malignancy was suspected in 31 cases: 9 in Upper Aerodigestive tract, 8 in Breast, 4 in Thyroid, 3 in Lung, 2 in Nasopharyngeal, 2 in Gastrointestinal tract, 1 in Bladder, 1 in Prostate and 1 in Pancreas. Follow-up was available in 17 cases and majority (12) were cytologically diagnosed as Metastatic Squamous cell carcinoma deposits and on histopathology all these cases showed Primary Squamous cell carcinoma in the following sites – supraglottic area, pyriform fossa, vallecula, tongue, tonsil, cervix and larynx. 01 case with axillary ductal carcinoma deposits showed Primary Invasive ductal carcinoma breast with axillary lymphnode metastasis on histopathology. 01 case on cytology was diagnosed as Metastatic adenocarcinoma deposits and on histopathology Primary was detected in Esophagus having Poorly Differentiated Squamous cell carcinoma. 02/03 cases of Positive for Malignancy on cytology were diagnosed as Primary Moderately differentiated Squamous cell carcinoma and 01 case was diagnosed as Primary Nasopharyngeal carcinoma on histopathology.

5. Discussion

Malignancies in lymph nodes mostly are metastatic in nature with an incidence ranging from 65.7% to 80.4% and for lymphomas the incidence ranges from 2% to 15.3%, among lymph nodes aspirated from all different sites.⁵⁻⁷ So, lymph node aspiration plays a key role in the diagnosis of malignant lymphadenopathies.

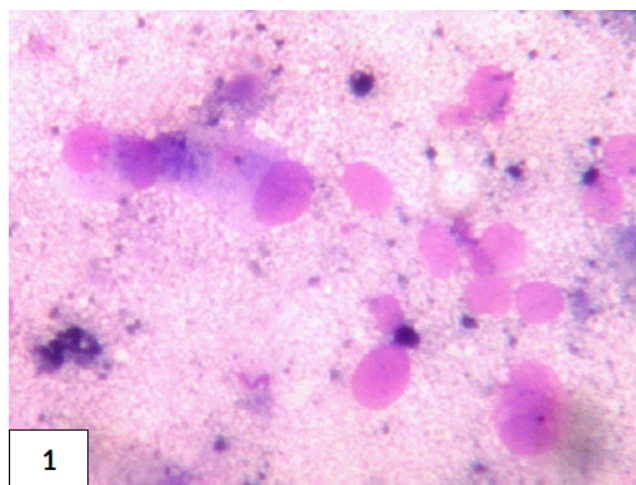
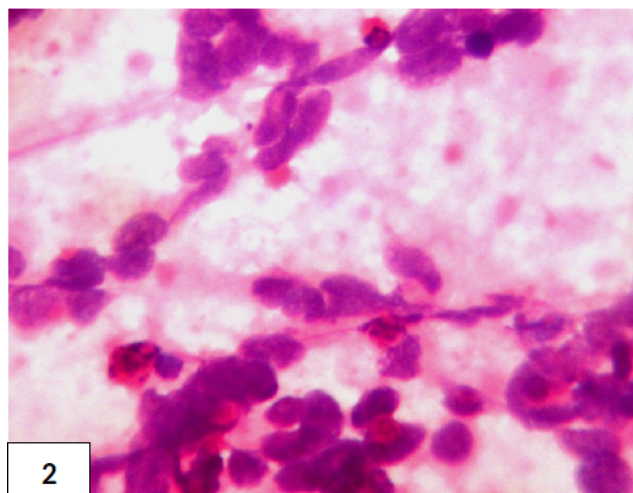
In present study, common age group involved was 51 – 60yrs with 41.89% of cases. Similar, finding was observed in studies done by Rai N N et al,² Prasad S et al³ and

Table 1: Distribution pattern of various Lymphnode metastatic deposits

Cytological Diagnosis (Metastatic deposits from)	Number of cases/ Gender		% of cases
1. Squamous cell carcinoma	90	10 Female 80 Male	60.81
2. Adenocarcinoma	29	14 Female 15 Male	19.59
3. Positive for Malignancy	10	03 Female 07 Male	6.75
4. Malignant melanoma	05	02 Female 03 Male	3.37
5. Papillary carcinoma thyroid	04	01 Female 03 Male	2.70
6. Large cell Neuroendocrine carcinoma	02	02 Male	1.35
7. Small cell carcinoma	02	02 Male	1.35
8. Nasopharyngeal carcinoma	02	02 Male	1.35
9. Non-small cell carcinoma	01	01 Male	0.67
10. Germ cell tumor	01	01 Male	0.67
11. Carcinosarcoma or Sarcomatoid/Spindle cell carcinoma	01	01 Female	0.67
12. Small round cell tumor	01	01 Male	0.67
Total No. of cases	148		

Table 2: Age group involved in Lymphnode metastatic deposits

Age group	No. of cases	% of cases
21 – 30yrs	06	4.05
31 – 40yrs	12	8.10
41 – 50yrs	35	23.64
51 – 60yrs	62	41.89
61 – 70yrs	18	12.16
71 – 80yrs	13	8.78
81 – 90yrs	02	1.35
Total No. of cases	148	

**Fig. 1:** Malignant melanoma deposits. Leishmann stain (10 X) – discohesive pleomorphic plasmacytoid cells, binucleate cells, intracellular and extracellular melanin pigment.**Fig. 2:** Large cell neuroendocrine carcinoma deposits. H & E stain (10X) – large pleomorphic cells with stippled nuclear chromatin and inconspicuous nucleoli

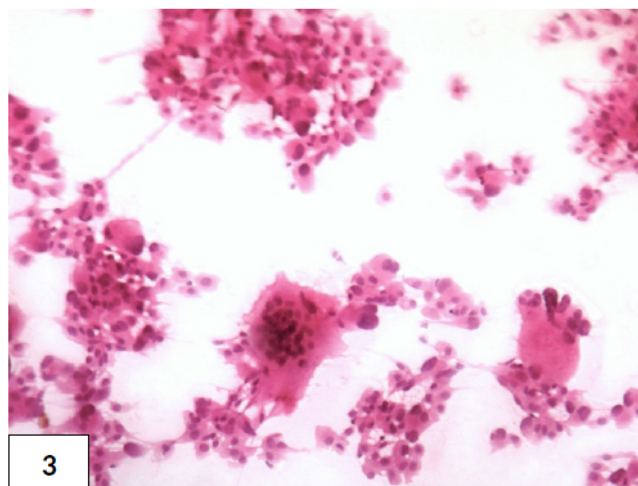


Fig. 3: Carcinosarcoma or sarcomatoid/spindle cell carcinoma deposits. H & E stain (4X) – discohesive clusters of moderately pleomorphic cells, plasmacytoid cells, multinucleated giant cells.

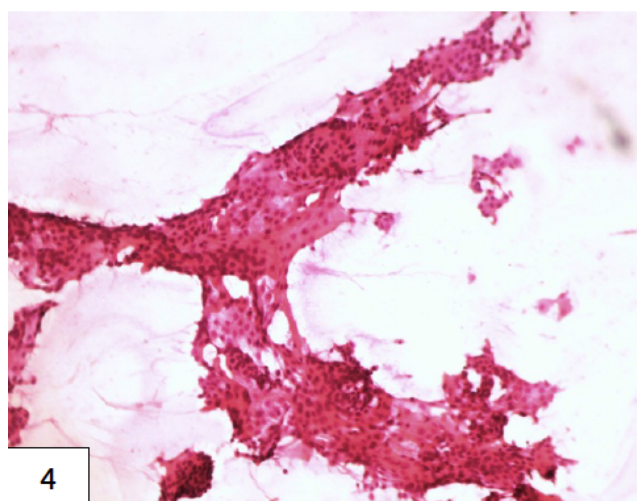


Fig. 4: Papillary carcinoma thyroid deposits. H & E stain (4X) – papillary fragments with anatomical border, mildly pleomorphic cells showing nuclear groove.

Nama S et al⁴ showing 41-60yrs, 5th – 6th decade and 51 – 60yrs age group being commonly involved with 54.2%, 58%, 47.93% of cases respectively. They also showed male predominance with Male:Female ratio of 3.75:1, 3:1 and 2.78:1 in their respective studies. Male:Female ratio in the present study was 3.77:1. In the present study, cervical lymphnode was commonly involved followed by supraclavicular lymphnode and axillary lymphnode with 74.32%, 8.78% and 8.78% of cases respectively. Rai N N et al² and Nama S et al⁴ also observed cervical lymphnode to be commonly involved with 57% and 80.99% of cases respectively.

In the present study, 60.81% of cases accounted for Metastatic Squamous cell carcinoma deposits, followed by Metastatic Adenocarcinoma deposits in 19.59% of cases and in suspected cases of primary - Upper Aerodigestive tract was the commonest site. Study done by Goel N M et al¹ and Nikethan B B⁸ et al also showed Metastatic Squamous cell carcinoma deposits, followed by Metastatic Adenocarcinoma deposits which was observed in 75%, 23% and 65%, 14% of cases respectively. Prasad S et al³ in their study found suspected primary site to be Upper Aerodigestive tract in 84.03% of cases. On the contrary to our observations, in some of the other studies metastatic adenocarcinoma was the most common subtype than squamous cell carcinoma.^{9,10}

Distinction between Metastatic adenocarcinoma deposits and Poorly differentiated squamous cell carcinoma can be difficult, especially when atypical cell clusters show thick nuclear membrane and prominent nucleoli. In our study also, there was a case of Metastatic adenocarcinoma deposits, but the primary tumor on histopathology was found to be Poorly differentiated Squamous cell carcinoma in esophagus. Diagnostic dilemma also occurs in cystic change/ necrotic lymphnode, thus one should always keep Metastatic Squamous cell carcinoma deposits and Metastatic Papillary thyroid carcinoma deposits as the differential diagnosis in their mind. Hence; along with microscopic examination of smears, clinical and radiological findings should be used in conjunction with FNAC.

Meticulous screening of smears as well correlation with clinical and radiological parameters is of utmost importance in Fine needle aspiration cytological diagnosis of metastatic lymphadenopathy.

6. Conclusion

In the present study, metastatic squamous cell carcinoma deposits were common. Cervical lymphnode was the commonest lymphnode involved; followed by supraclavicular, axillary and inguinal lymphnode. FNAC is an easy, rapid, relatively safe and non-expensive diagnostic modality. It is useful for the early diagnosis of metastatic lymphadenopathy in a developing country with resource challenged environment. It is not only useful in detecting secondaries where primary tumour is evident or is of unknown origin, but also helps in monitoring response to therapy.

7. Funding

No funding sources.

8. Conflict of interest

None declared.

9. Ethical approval

Institutional ethical clearance has been obtained.

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