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## Original Research Article

## Role of FNAC in the diagnosis of lymph node malignancies - An institutional experience

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## ABSTRACT

**Background:** Lymphadenopathy is a sign of underlying infection, primary or metastatic malignancy. Fine-needle aspiration is a simple and reliable tool for its initial investigation.**Aims and Objectives:** To analyse the cytomorphological features of malignant lymph node lesions and to determine the frequency of different lymph node malignancies.**Materials and Methods:** It was an observational, retrospective study conducted in the cytology section of Department of Pathology, Govt. Medical College, Jammu. It included lymph node aspirates that were reported as malignant. May-Grunwald-Giemsa (MGG) and Papanicolaou (PAP) stained smears were examined under light microscope and the cytological features were studied.**Results:** A total of 97 malignant lymph node aspirates were included in this study. Metastatic malignancy accounted for maximum number of cases (78, 80.4%) followed by lymphoma (19, 19.6%). Squamous cell carcinoma was the most common metastatic malignancy and also the most frequently diagnosed malignant lesion in our study (42, 43.3%). Cervical lymph nodes were the most commonly aspirated lymph nodes.**Conclusion:** FNAC of lymph nodes is a simple and valuable tool in the diagnosis of lymph node malignancies.This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.For reprints contact: [reprint@ipinnovative.com](mailto:reprint@ipinnovative.com)

## 1. Introduction

Lymphadenopathy is a commonly encountered clinical sign of underlying inflammation, infection or neoplastic process.<sup>1-3</sup> Fine Needle Aspiration Cytology (FNAC) of lymph nodes is a simple, rapid and cost effective procedure.<sup>4-6</sup> Cytological examination helps to determine whether lymphadenopathy is due to reactive hyperplasia, infection, metastatic malignancy or malignant lymphoma.<sup>4,7</sup> In patients with known malignancy, subsequently presenting with lymphadenopathy, FNAC helps to confirm metastasis. In patients without a previous malignant diagnosis, apart from confirming metastatic malignancy, it can also give clue to the nature and site of

the primary.<sup>7</sup>

This study was undertaken with the aim to analyse the cytomorphological features of malignant lymph node lesions and to determine the frequency of different lymph node malignancies.

## 2. Materials and Methods

It was an observational, retrospective study conducted in the cytology section of Department of Pathology, Govt. Medical College, Jammu w.e.f. 1<sup>st</sup> July 2021 to 30<sup>th</sup> June 2022. It included lymph node aspirates that were reported as malignant. Inadequate aspirates were excluded from the study. Detailed history, clinical examination and relevant investigations of all patients were recorded. FNAC was performed on palpable lymph nodes using 22 G needle

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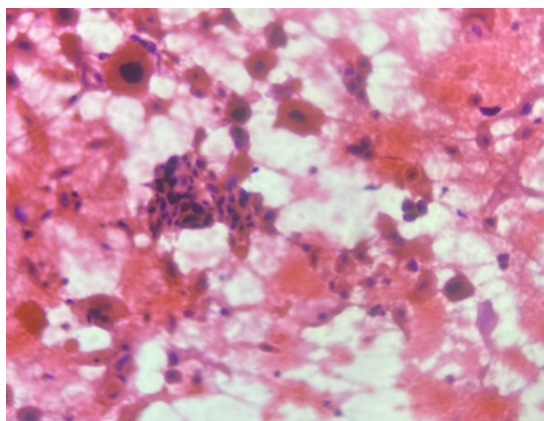
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and 20cc syringe after obtaining written informed consent. Smears were prepared; air dried smears were stained with May-Grunwald-Giemsa (MGG) stain and alcohol fixed smears were stained with Papanicolaou (PAP) stain. Stained smears were examined under light microscope. The cytological features were studied and diagnosis was made. Data obtained was tabulated and expressed as percentages and proportions.

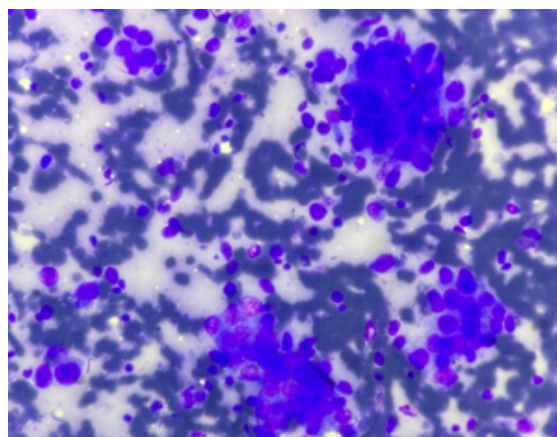
### 3. Results

A total of 97 malignant lymph node aspirates were included in this study. Out of these, 64 (66%) were males and 33 (34%) were females with male to female ratio of 1.94:1. The mean age of patients was 53.7 years with age range from 6 years to 95 years. Maximum cases were in the age group of 41-60 years followed by 61-80 years as shown in Table 1. Out of 41 cases in 41-60 years age group, 27 cases were in 51-60 years age group.

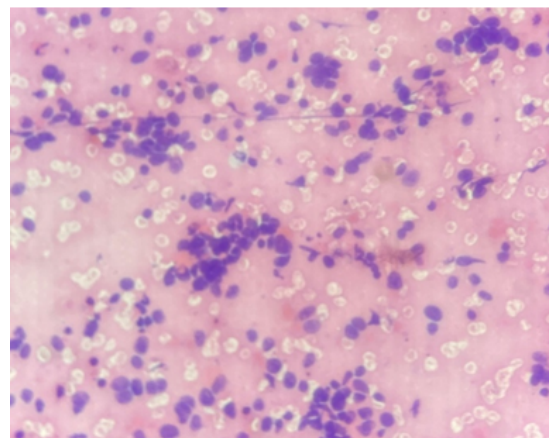
On microscopic examination of aspiration smears, metastatic malignancy accounted for maximum number of malignant lesions (78, 80.4%). This was followed by primary lymphoma (19, 19.6%). Among the metastatic malignancies, squamous cell carcinoma cases (42, 43.3%) (Figure 1) were the highest followed by adenocarcinoma (14, 14.4%) (Figure 2) (\$). Squamous cell carcinoma was also overall the most frequently diagnosed malignant lesion in our study. Other metastatic lesions were poorly differentiated carcinoma, deposits of ductal carcinoma breast, nasopharyngeal carcinoma (poorly differentiated), small cell carcinoma (Figure 3), papillary thyroid carcinoma, mucoepidermoid carcinoma and malignant melanoma (Figure 4) (Table 2). Among lymphomas, maximum cases were of Non- Hodgkin lymphoma (Figure 5) along with one case of Hodgkin lymphoma.



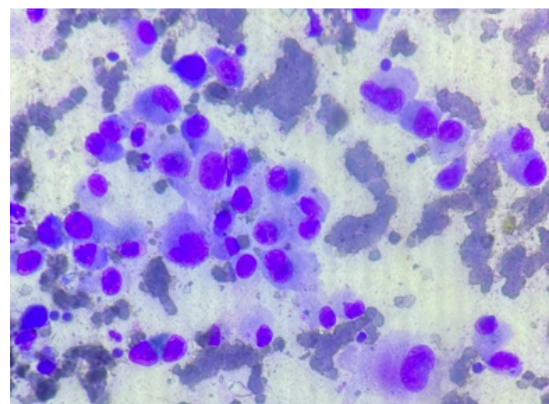
**Fig. 1:** Photomicrograph from a case of metastatic squamous cell carcinoma showing cluster and singly scattered malignant orangeophilic keratinized squamous cells (PAP 400X)



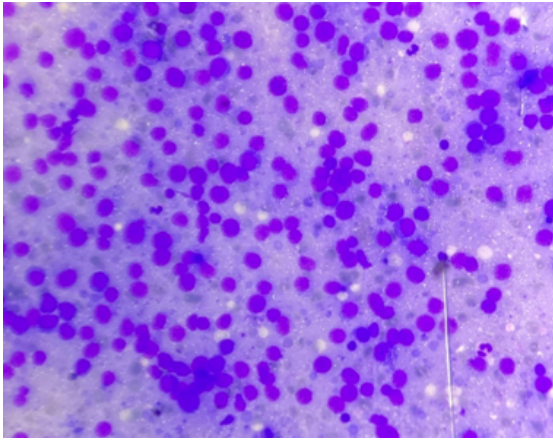
**Fig. 2:** Photomicrograph from a case of metastatic adenocarcinoma showing tumors cells arranged in clusters and acini (MGG 400X)



**Fig. 3:** Photomicrograph from a case of metastatic small cell carcinoma showing clusters and dispersed small to medium sized cells with nuclear molding and streaking (PAP 400X)



**Fig. 4:** Photomicrograph from a case of malignant melanoma showing dispersed tumor cells having pleomorphic nuclei, prominent nucleoli and intracytoplasmic pigment (MGG 400X)



**Fig. 5:** Photomicrograph from a case of Non-Hodgkin lymphoma showing monomorphic population of lymphoid cells along with lymphoglandular bodies in the background (MGG 400 X)

**Table 1:** Age wise distribution of cases

Age (years)	Number of cases	Percentage (%)
0-20	6	6.2
21-40	13	13.4
41-60	41	42.3
61-80	34	35.0
81-100	3	3.1
Total	97	100.0

**Table 2:** Various malignant lymph node lesions diagnosed by FNAC

Cytological diagnosis	Number of cases	Percentage (%)
<b>Metastatic malignancy</b>		
Squamous cell carcinoma	42	43.3
Adenocarcinoma	14	14.4
Poorly differentiated carcinoma	11	11.3
Ductal carcinoma breast	3	3.1
Poorly differentiated carcinoma - Nasopharynx	2	2.1
Small cell carcinoma	3	3.1
Papillary thyroid carcinoma	1	1.0
Mucoepidermoid carcinoma	1	1.0
Malignant Melanoma	1	1.0
<b>Primary</b>		
Hodgkin lymphoma	1	1.0
Non-Hodgkin lymphoma	18	18.6
<b>Total</b>	<b>97</b>	<b>100.0</b>

**Table 3:** Site wise distribution of lymph nodes

Site of lymph node	Number of cases	Percentage (%)
Cervical	61	62.8
Submental	2	2.1
Submandibular	7	7.2
Post auricular	1	1.0
Supraclavicular	13	13.4
Axillary	12	12.4
Inguinal	1	1.0
Total	97	100.0

Cervical lymph nodes were the most frequently aspirated lymph nodes (61, 62.8%) followed by supraclavicular (13, 13.4%) and axillary lymph nodes (12, 12.4%) (Table 3). All the cases of metastatic ductal carcinoma breast involved axillary lymph nodes. Primary site of origin of malignancy was known in 21 cases at the time of FNAC. Among these, head and neck region was the most common site followed by breast. In cases of metastatic squamous cell carcinoma, known primary sites were tongue, buccal mucosa, oropharynx, hypopharynx, pyriform sinus and supraglottic region.

#### 4. Discussion

Malignancies in lymph nodes in our country are predominantly metastatic in nature with an incidence varying from 65.7% to 80.4% and lymphomas range from 2% to 15.3% among lymph nodes aspirated from all sites.<sup>8</sup> FNAC has become a well-established method for the diagnosis of metastatic malignancies in the lymph node.<sup>9,10</sup> The present study included 97 malignant lymph node aspirates. There was male predominance (64, 66%) in our study with male to female ratio of 1.94:1. This is comparable to many studies.<sup>1,4,8</sup> The most common age group involved in our study was 40-60 years followed by 60-80 years. This similar to study by Yadav et al.<sup>3</sup>

Metastatic malignancies were more common malignant lymph node lesions than lymphoma. This is similar to other studies.<sup>6-8,11</sup> Squamous cell carcinoma was the most common metastatic lesion and was overall the most frequent lymph node malignancy diagnosed in our study. This is consistent with many studies.<sup>12-15</sup> Adenocarcinoma was the next common metastatic malignancy in our study. This was also observed in other studies.<sup>7,14</sup> Non-Hodgkin lymphoma cases were more than Hodgkin lymphoma. This is similar to other studies.<sup>7,8</sup> Cervical lymph nodes were the most frequently aspirated lymph nodes in our study. This is comparable to other studies.<sup>3,4,8</sup>

In the present study, both metastatic and primary lymph node malignancies have been diagnosed by cytological examination. In cases with known primary, cytological examination confirms presence of metastasis thereby reducing the need of biopsy. In cases with

unknown primary, it can confirm the presence of metastatic disease. Correlation of FNAC findings with clinical and radiological details in these cases can help to detect the site of primary. FNAC along with ancillary techniques like immunocytochemistry and cell block preparations can help in identifying the primary. In the diagnosis of lymphoma, cytological examination suggests a preliminary diagnosis that can be followed by histopathology and immunophenotyping for confirmation and further subtyping.

## 5. Conclusion

FNAC of lymph nodes is a simple and valuable tool in the diagnosis of lymph node malignancies.

## 6. Conflict of Interest

None.


## 7. Source of Funding

None.

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