



## SPECTRUM OF MALIGNANT LESIONS IN THE LYMPH NODE ON FNAC IN A TERTIARY CARE HOSPITAL IN HIMACHAL PRADESH.

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**ABSTRACT** **Background:** Lymphadenopathy, is any abnormal enlargement of the lymph node due to the infiltration by the inflammatory or the neoplastic cells. This is the most common and may be the only presentation of the patient attending the outpatient department (OPD). Fine needle aspiration cytology (FNAC) is a simple, reliable and first line OPD investigation in such cases. **Material And Methods:** It is a retrospective study carried out over a period of 18 months (1/1/2021) to 30/6/2022) in the Department of Pathology, Indira Gandhi Medical College (IGMC) Shimla, a tertiary care hospital of the state. All the cytology cases received in the department were included in the study. **Results:** Of the total 2870 cases, received in the department of Pathology, 880 (30.6%) cases were from the lymph node. Benign pathology was seen in 645 (73.3%) cases and 235 (26.7%) cases had a malignant lesion. Of these 235 malignant cases, 205 (87.5%) cases were positive for malignancy while 30 (12.8%) cases revealed a hematologic malignancy. Majority of the patients were above 40 years of age. Males contributed to 58.7% cases while 41.3% were females. Cervical lymph node was most common lymph node involved followed by supraclavicular lymph nodes. The squamous cell carcinoma (36.1%) was the most common metastatic lesion followed by adenocarcinoma (28.3%). NHL was more common among the lymphoproliferative disorders. **Conclusion:** FNAC is a rapid and a fairly reliable test for the diagnosis of metastatic lesion and at the same time giving the clue about the origin of the primary occult malignancy.

**KEYWORDS :** FNAC, lymphadenopathy, metastatic, lymphoproliferative disorders.

### INTRODUCTION

In the OPD, patients may present with the enlargement of the lymph node due to varying etiology. The etiological factor may range from infective to inflammatory to neoplastic causes.<sup>1</sup> Hence the cytological examination of the lymph node aspirate is very crucial for coming to the clinical diagnosis.<sup>2</sup> FNAC provides us a simple easy cheap method in doing so. It is often used as a first line investigation in the such cases.<sup>3</sup> It not only helps in the diagnosis of malignant lesion but also give us a lead towards the origin of the primary occult tumour.<sup>4,5,6</sup> Hence it has gained wide range of acceptability among the clinician, pediatrician and the pathologist alike<sup>1</sup>. In patients with small and deep seated lymph nodes, the help of USG and CT scan can be taken.<sup>1</sup>

### MATERIALS AND METHODS

This is a retrospective study done in the Department of Pathology, IGMC Shimla, on the FNACs of the lymph nodes received in the department over a period of 18 months from 1<sup>st</sup> January 2021 to 30<sup>th</sup> June 2022. FNAC was done only after noting the brief relevant history and obtaining a written consent from the patient (or attendant) on the prescribed performa. A 23 gauge /24 gauge needle and a 20 cc syringe attached to the frazen handle was used to perform the FNAC. At least two passes and minimum of four slides were made. Slides were routinely stained with Geimsa and PAP while ZN staining and other staining was done where ever required. Few cases received from the department of Surgery, ENT, Chest and T.B and Radiology (USG/CT guided) were also included in the study. The data thus collected was analyzed.

### RESULTS

A total of 2870 FNACs cases were received in the Department of Pathology of which, 880 (30.6%) cases were from the lymph nodes. Two hundred and thirty five cases (26.7%) revealed a neoplastic lesion of which 205 (87.2%) cases had metastatic deposits while 30 (12.8%) cases revealed a lymphoproliferative disorders.

#### Metastatic Lesions:

Of the total 205 cases, metastatic deposits were more common in males with 124 (60.5%) cases while 81 (39.5%) cases were females with male to female ratio of 1.5:1. (Table no.1). The age of the cases ranged from 12 years to 94 years. The most common lymph node involved was cervical lymph node in 113 (55.1%) cases followed by supraclavicular in 66 (32.2%) cases and axillary lymph node in 11 (5.4%) cases.(Table no 1)

**Table No: 1. Gender Wise And Regional Lymph Node Distribution Of Lesion.**

Region	Male	Female	Total (%)
Cervical	79	34	113(55.1%)
Supraclavicular	34	32	66(32.2%)
Axillary	4	7	11(5.4%)
Inguinal	4	6	10(4.9%)
Abdominal	3	2	5 (2.4%)
	124 (60.5%)	81 (39.5%)	205(100%)

Most of the patients were above the age of 40 years (180/205:88.0%) with majority of the patients being in the age group of 61-70 years with 56 (27.3%) cases followed by 52(25.3%) cases in the age group of 51-60 years. The majority of the males (33/124; 26.6%) presented with carcinomatous deposits in the 6<sup>th</sup> decade while more females were diagnosed in the age group of 61-70 years (26/81;32.0%),a decade later. (Table no 2)

**Table No 2: Age Wise, Gender Wise And Region Wise Distribution Of Lesion.**

Age group	Cervical		Supraclavicular		Axillary		Inguinal		Abdominal		Total (%)		Percent age
	M	F	M	F	M	F	M	F	M	F	M	F	
0-10	0	0	0	0	0	0	0	0	0	0	0	0	0
11-20	2	1	2	0	0	0	0	0	1	0	5	1	6
21-30	0	0	1	1	0	0	0	0	0	0	1	1	2
31-40	3	3	2	4	1	2	0	2	0	0	6	11	17
41-50	15	4	2	4	0	1	0	1	1	2	18	12	30
51-60	22	10	9	6	1	2	1	1	0	0	33	19	52
											(26.6%)	(23.5%)	(25.4%)

61-70	22	10	6	14	1	1	1	1	0	0	30 (24.2%)	26 (32.1%)	56 (27.31%)
71-80	13	5	11	3	1	0	0	0	0	0	25 (20.2%)	8 (9.9%)	33 (16.1%)
81-90	2	1	1	0	0	1	1	1	0	0	4 (3.2%)	3 (3.70%)	7 (3.5%)
>91	0	0	0	0	0	0	1	0	1	0	2 (1.6%)	0 (0%)	2 (0.97%)
Total	79	34	34	32	4	7	4	6	3	2	124 (100%)	81 (100%)	205 (100%)

Squamous cell carcinoma was the most common lesion seen in 74 (36.0%) cases with adenocarcinoma in 58 (28.2%) cases and poorly differentiated in 43 (21.0%) cases. It was observed that the most common metastatic deposits in males was of squamous cell carcinoma (50/124;40.3%) while in females both adenocarcinoma and squamous cell carcinoma were equally distributed in 24 (29.3%) cases.(Table no 3)

**Table No 3: Pattern In Cases Of Metastatic Deposits**

S.no	Metastatic lesion	Male	Female	Total	%
1	Squamous carcinoma	50	24	74	36.0
2	Adenocarcinoma	34	24	58	28.2

**Table No 4: Region And Type Of Metastatic Lesion**

SITE	SQ		AD		PD		SC		DC		PC		NSC		Total		total	%
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		
H&N	30	11	13	8	11	6	1	0	0	0	0	0	0	0	55	25	80	39.0
Lung	7	3	10	3	9	5	7	6	0	0	0	0	2	0	35	17	52	25.3
GIT	7	0	4	4	4	2	1	0	0	0	0	0	0	0	16	6	22	10.8
GT	0	3	0	1	0	4	0	1	0	0	0	0	0	0	0	9	9	4.4
Breast	0	0	0	0	0	0	0	0	2	5	0	0	0	0	2	5	7	3.5
Ass.Org	1	2	2	0	1	0	0	0	0	0	0	0	0	0	3	3	6	3.0
Thyroid	0	0	0	0	0	0	0	0	0	1	3	0	0	0	1	3	4	1.9
PUO	5	5	5	8	1	0	0	1	0	0	0	0	0	0	12	13	25	12.1
	50	24	34	24	26	17	9	8	2	5	1	3	2	0	124	81	205	100

Abbreviations ; H&N= head and neck, GIT=gastrointestinal tract, GT= genital tract, Ass.Org= accessory organ, PUO=Primary unknown origin

3	Carcinomatous/poorly differentiated	26	17	43	21.0
4	Small cell carcinoma	9	8	17	8.3
5	Ductal cell carcinoma	2	5	7	3.7
6	Papillary carcinoma	1	3	4	1.9
7	Non small cell carcinoma	2	0	2	0.9
		124(60.5%)	81(39.5%)	205	100

Head and neck region was involved in 80 (39%) cases, with majority of the cases being squamous cell carcinoma (41 cases, 51.3%) followed by 22 ( 27.5%) cases of adenocarcinoma and 17 (21.3%) cases of poorly differentiated carcinoma. Malignant deposits from the lung were seen in 52 (25.3%) cases (35 males and 17 females) with 14 ( 28%) cases of poorly differentiated carcinoma and 13 cases each of adenocarcinoma and of small cell carcinoma. Squamous cell carcinoma and non small cell carcinoma were seen in 10 cases and 2 cases respectively. Twenty two (10.8%) cases revealed metastatic deposits from the gastrointestinal tract with adenocarcinoma and poorly differentiated in 8 cases and 7 cases of squamous cell carcinoma. Metastatic ductal cell carcinomatous deposits were seen in 7 (3.5%) cases which include 2 males and 5 females. Deposits from the malignancies of the female genital tract was also seen in 9 (4.4%) cases. Metastatic deposits from the papillary thyroid carcinoma was seen cervical lymph nodes in 4 cases. (1male and 3 females). In 25 (12.1%) cases metastatic deposits were seen but the primary origin of the tumor could not be ascertained. This included 13 (52%) cases of adenocarcinoma, 10 (40%) cases of squamous cell carcinoma and 1 case of poorly differentiated carcinoma.(table no: 4)

	7	11	1	0	2	2	1	1	3	2
Total	18		1		4		2		5	

**Lymphoproliferative Disorder:**

Of the total 880 cases, lymphoproliferative disorders were observed in 30 (3.4%) cases. Of these 30 cases, 27 cases were diagnosed as non hodgkin lymphoma (NHL) of whom 15 were females and 12 were males. Three cases of HL were reported of whom 2 were females and 1 was male. The most common lymph node involved was cervical lymph node seen in 18 (60%) cases followed by abdominal lymph node 5 (18%) cases and axillary lymph node in 4 (15%) cases. Most of the patients were below the age of 30 years (12 cases, 40%). Of the 27 cases of NHL 15 (55.5%) cases, cervical lymph node was involved and in 5(18.5%) cases abdominal lymph node were involved. In all the patients of Hodgkin's diseases, cervical lymph node was involved. (table no 5). Patients were advised to have excision biopsy for the histopathological examination and immunohistochemistry for exact characterization of the lymphoma.

**Table No 5: Age, Gender Wise And Regional Lymph Node Distribution Of Lymphoproliferative Disorders.**

Age group	Cervical		Supraclavicular		Axillary		Inguinal		Abdominal	
	M	F	M	F	M	F	M	F	M	F
1-10	2	2	0	0	0	0	0	0	0	0
11-20	2	2	0	0	0	0	0	1	0	0
21-30	2	2	0	0	0	0	0	0	0	0
31-40	0	2	0	0	0	1	0	0	0	1
41-50	0	0	0	0	0	0	0	0	2	0
51-60	0	1	1	0	1	0	0	0	0	0
61-70	0	2	0	0	1	1	0	0	1	0
71-80	1	0	0	0	0	0	1	0	0	0
81-90	0	0	0	0	0	0	0	0	0	1
>91	0	0	0	0	0	0	0	0	0	0

**DISCUSSION:**

Lymphadenopathy may be the first clinical sign of the underlying undiagnosed malignancy.<sup>7</sup> In the developing country like India, FNAC plays an important role in making the diagnosis of malignancy.<sup>8</sup> FNAC is a simple, easy, reliable and a rapid test that can be done as an OPD procedure.<sup>9</sup> It does not involve the anesthetics and other OT staff as required in the excision biopsy.<sup>6</sup> Hence it is cost effective to the patient and the nation as well.<sup>8</sup> Since it is repeatable, quite reliable and does not require much advanced, expensive or a sophisticated set up, it has gained much popularity among the pathologist and clinicians as well in the last few years.<sup>3</sup> In the study of ours, we collected the data from the department of pathology from October 2020 to December 2021 (over 15 months).

Of the total, 2870 FNACs done in the department of Pathology,880 cases were from the lymph node. Benign lesion were observed in 645(73.2%) cases which is very much similar to the studies done by Sharma M et al (82%)<sup>10</sup>, Ghartimagar D et al (62.0%)<sup>11</sup> and Meena P et al (73.0%)<sup>3</sup> while malignant lesions were seen in 235 (23.8%) very much similar to the findings other studies where the incidence of malignancy in the lymph node was reported in range from 5.8% to 25.0%.<sup>12,13,14</sup>

**Metastatic Lesions:**

In our study, we had observed metastatic deposits in 205 cases, with the age of the patients ranging from 12 years to 93 years. About eighty eight percent of the total 205 patients who had malignant lesion were above the age of 40 years. This is very much very much similar to the finding of Meena P et al (74.2%)<sup>3</sup>, Rathod et al (82.5%)<sup>15</sup> & Ghatimagar et al (94%)<sup>11</sup>. Maximum number of patients (56 of 205, 27.3%) were in the age group of 61-70 years followed by 52 (25.3%) patients in the age group of 51-60 years. However Mallap L et al<sup>10</sup> and Ahamd et al<sup>7</sup> had reported maximum number of cases in the sixth decade, a decade earlier than our study. We had found that there was a male



preponderance with the ratio of 1.5:1 (124 males and 84 females) very similar to the observation of Qadri et al (1.3:1)<sup>18</sup>, Wilkinson et al (1.5:1)<sup>13</sup> & Mallap Let al (2:1)<sup>16</sup> while Meena et al (2.5:1)<sup>3</sup> and Mehdi et al (3.2:1)<sup>1</sup> had observed a higher degree of male preponderance. This could be attributed to the high risk behavior such intake of tobacco in different form (smoking bidi and cigarette, beetal nut, pan eating) and drinking alcohol been more common among the males.

Cervical lymph node was the most common lymph node involved in the our study accounting to 55.1% (113) cases followed by supraclavicular lymph node in 66 (32.2%) cases and axillary node in 11(5.4%) cases. This is in concurrence to the findings of Ghartimagar et al<sup>11</sup> and Wilkinison et al<sup>13</sup> who had also reported, cervical lymph node to be the most commonly involved in 48% and 62% cases respectively. A few studies had observed the involvement of cervical lymph node to be much higher as seen by Sharma M et al (74%)<sup>10</sup>, Mehdi et al (85%)<sup>1</sup> and Mallap et al (81%)<sup>16</sup>. Qadri et al<sup>18</sup>, however in the study had observed the involvement of the supraclavicular lymph node to be the most common node (55.7%).

Squamous cell carcinoma metastasis was the most common lesion in our study seen in 74 (36%) cases very much similar to the findings of Wilkinison et al (46%)<sup>13</sup>, Mehdi et al (53.4%)<sup>1</sup>, Mallap L et al (58.0%)<sup>16</sup>, Sharma M et al (60.4%)<sup>10</sup>, Meena Pet al (76.2%)<sup>3</sup> and Rathod et al (80%)<sup>15</sup>. Adenocarcinoma was the next common malignancy observed in 58 (28.2%) cases followed by poorly differentiated carcinoma in 43 (21.0%) cases.

In our study, the common site for the primary tumour, was from the head and neck region making 39% (80 of 205 cases) followed by lung contributing to 25.3% (52 of 205 cases) cases. These observations are very similar to the observations found in other studies from India (Bagwan et al, Alam et al and Wilkinison et al)<sup>6,7&13</sup>.

We were not able to determine the origin of the primary tumour in 25 (12.1%) cases. These findings are very much in concurrence to the findings of various studies (Qadri et al 19.1%,<sup>18</sup> Alam et al 10.0%)<sup>7</sup>. However in few studies, occult malignancy was observed only in few cases. The high number of cases with primary of unknown origin could be attributed to the patient been referred to the higher institution, death of the patient, unable to find the primary even after thorough investigation and refusal of the patients to undertake other expensive investigation such as MRI, CT and PET scan.

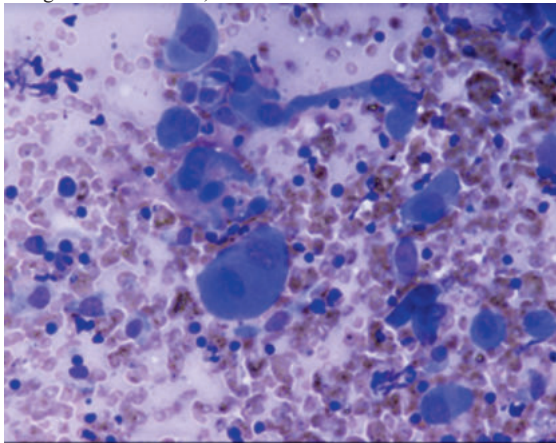


Figure No:1. Squamous cell carcinoma

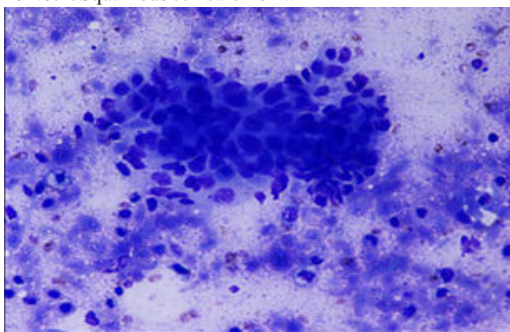


Figure No:2. Squamous cell carcinoma

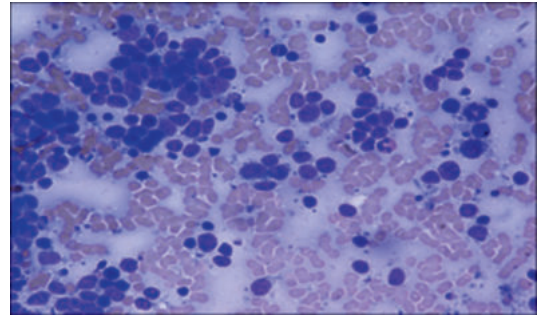


Figure no: 3. Poorly Dedifferentiated Neuroendocrine

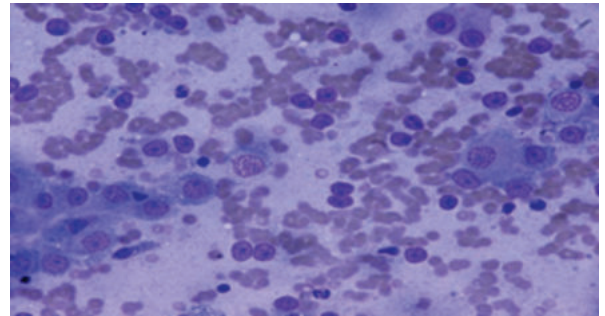


Figure No 4: Adenocarcinoma

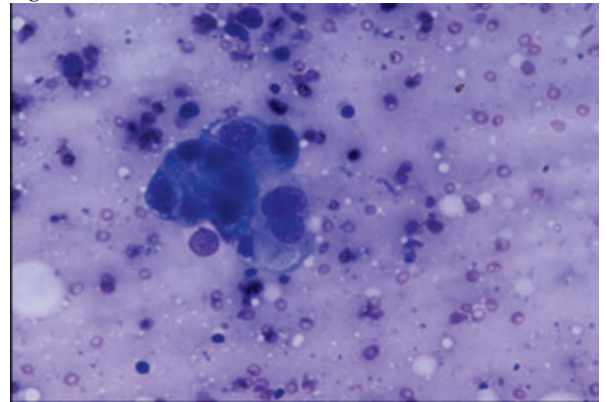


Figure No: 5 Adeno pap[illary Carcinoma

Figure No: 6 Keratinizing Squamous Cell Carcinoma.

**Lymphoproliferative Disorder:**

The incidence of lymphoproliferative disorders contributed to 3.4% (n=30) of the total cases, which is very similar to the observation of Ruchi et al (2.0%)<sup>19</sup>, Vimal S et al (2.6%)<sup>20</sup> while Sharma M et al and Mallap L et al had reported the incidence to be 10% and 13.1% respectively. This was very high in comparison to our observations. The role of FNAC in cases of lymphoma is very limited since the exact characterization and WHO classification, which forms the basis of the treatment in these cases can only be done with excision biopsy and IHC studies. Hence, FNAC helps in the triage of these cases for further workup.

**CONCLUSION**

FNAC being simple, easy, cheap and reliable procedure that can be done on the OPD basis, should be considered as a first line investigation in all cases of lymphadenopathy. FNAC can help in the diagnosis of the metastatic deposits in the lymph node that can be valuable in determining the treatment protocol and management schedule of the patient, follow up of the patients and also to determine the effect of treatment in the patient. FNAC done by an experienced cytopathologist can provide the clinician with high degree of accuracy, the diagnosis and the status of the lymph node and thus avoid the excision of the lymph node. In certain cases it also helps us to determine the primary site of occult malignancy.

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