

## Original Research Article

# Fine needle aspiration cytology as a first line investigation in cervical swellings of 470 cases

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### ABSTRACT

**Background:** Fine needle aspiration cytology (FNAC) is a first line investigation in cervical swellings. The etiology varies from an inflammatory process to a malignant condition.

**Methods:** The study was carried out in department of Pathology, Government Medical College, affiliated with government hospital in Gujarat. There were 470 patients with cervical swelling in a period from January 2017 to December 2017. Patients with thyroid swelling (swelling moves with deglutition) were excluded from the study. FNAC procedure was performed, smears prepared, stained with haematoxylin and eosin (H and E), May Grunwald Giemsa (MGG) and Pap stain. Zeihl Neelsen stain was carried out when required. Patient history, local examination findings and microscopic findings were recorded.

**Results:** Total 470 patients, age ranged from 2 months to 90 years were studied. There were 286 males and 184 females. There were 449 cases in which conclusive opinion given. 111 cases were neoplastic and 338 cases were non-neoplastic. Various cytological diagnosis were; 207 cases of granulomatous lymphadenitis (tuberculosis), 1 case of filarial lymphadenitis, 72 cases of chronic reactive hyperplasia, 25 cases of acute suppurative inflammation, 1 case of sialadenitis, 10 cases of keratinous cyst, 6 cases of benign cystic lesion, 12 cases of lipoma, 4 cases of lymphoproliferative lesion, 1 cases of benign appendage tumor, 2 cases of mucoepidermoid carcinoma, 103 cases of metastasis and 5 cases of non Hodgkin lymphoma.

**Conclusions:** FNAC is a simple, quick, inexpensive and minimally invasive technique to diagnose cervical swellings. It can differentiate the infective process from neoplastic one and avoids unnecessary surgeries.

**Keywords:** Cervical swelling, FNAC, Lymphoma, Metastasis, TB

### INTRODUCTION

FNAC is a simple, inexpensive and rapid investigative procedure for sampling superficial masses found in head and neck with minimal trauma and low complication rate.<sup>1,2</sup> The etiology varies from an inflammatory process to a malignant condition.<sup>3</sup> FNAC procedure can be both diagnostic and therapeutic in cystic swellings.<sup>4</sup> It offers an accurate diagnosis for reactive lymphoid hyperplasia, infectious disease, granulomatous lymphadenitis and metastatic malignancy. Thus, it can avoid the need for

excisional biopsy in most cases and allow rapid onset of therapy.<sup>5</sup> In developing and under developed countries tuberculosis continues to be the most common cause of cervical lymphadenopathy caused by mycobacterium tuberculosis. The diagnosis of metastatic tumor to the lymph node on cytological smear is crucial. This would be the sole indication for searching the primary tumor, especially in cases of occult carcinoma.<sup>6</sup> Malignancies in lymph nodes are predominantly metastatic in India with an incidence varies from 65.7% to 80.4% and lymphoma range from 2% to 15.3% among lymph nodes aspirated

from all sites. Although histopathological examination is gold standard in diagnosis of lymphoma, FNAC is the only tool for diagnosis of metastatic malignancy.<sup>7,8</sup> This technique is an outpatient department (OPD) procedure and is particularly useful if a neck lump is thought to be malignant. There is no evidence that the tumor spreads through the skin track created by the fine hypodermic needle used in this technique.<sup>9</sup>

**METHODS**

The present study was carried out in Department of Pathology, Government Medical College, affiliated with government Hospital in Gujarat. The study was carried out in 470 patients with cervical swelling in a period from January 2017 to December 2017. Patients with thyroid swelling (swelling moves with deglutition) were excluded from the study. Patients were explained about the FNAC procedure and its indication. Maximum efforts have been made to re-assure the patient as to the safety, simplicity of the procedure and minimal discomfort. The area to be aspirated was cleaned with spirit and a 22 or 23-gauge needle with 10ml syringe and multiple hits were made within the lesion, with sufficient negative pressure, the needle was removed, and the pressure was applied to the area of aspiration to avoid bleeding or hematoma formation.

The aspirated material was smeared on minimum three clean glass slides and later, they were both wet-dried and air-dried for staining. Smears were stained by hematoxylin and Eosin (H and E), May Grunwald Giemsa (MGG) and Pap stain. Special stain for Acid Fast Bacilli (Ziehl nelson stain) was carried out whenever required. The details regarding history of the patient, personal details of the patient, local examination findings and microscopic findings were recorded.

**RESULTS**

In this study total 470 cases were included, age ranged from 2 months to 90 years (Table 1), 286 (61 %) were male and 184 (39%) were female (Table 2). Maximum incidence observed in the age group of 21 to 30 years (Table 1).

**Table 1: Distribution of cases in different ages (n=470).**

Age ranges (years)	Cases no. (%)
0-10	33 (7.1)
11-20	89 (18.9)
21-30	135 (28.7)
31-40	63 (13.4)
41-50	51 (10.9)
51-60	54 (11.4)
61-70	33 (7.1)
71-80	10 (2.1)
81-90	02 (0.4)
Total	470 (100)

**Table 2: Distribution of cases in both sexes (n=470).**

Sex	Cases no. (%)
Male	286 (61)
Female	184 (39)
Total	470 (100)

**Table 3: Distribution of cases on the basis of bilaterality (n=470).**

	Cases no. (%)
Unilateral	437 (92.9)
Bilateral	33 (7.1)
Total	470 (100)

**Table 4: Distribution of number of swelling at each site (n=470).**

Number of swelling	Cases no. (%)
Single	408 (86.8)
Multiple	62 (13.2)
Total	470 (100)

**Table 5: Distribution of cases according to the fixity of the nodes to the underlying tissue (n=470).**

Movement	Number of swelling	Cases no. (%)
Fixed	Single	76 (16.1)
Mobile	Multiple	394 (83.9)
Total	Total	470 (100)

There were 437 (92.9 %) unilateral swellings and 33 (7.1 %) bilateral swellings (Table 3). There were 76 (16.1 %) fixed swellings and 394 (83.9 %) mobile swellings (Table 5). There were 127 (27 %) swellings with soft consistency, 318 (67.6 %) had firm consistency and 25 (5.4 %) had hard consistency (Table 6).

**Table 6: Distribution of cases according to the consistency of swellings (n=470).**

Consistency	Cases no. (%)
Soft	127 (27.0)
Firm	318 (67.6)
Hard	25 (5.4)
Total	470 (100)

**Table 7: Distribution of cases according to the AFB staining (n=470).**

AFB staining	Cases no. (%)
Not done	263 (55.9)
Negative	72 (15.3)
Positive	135 (28.8)
Total	470 (100)

All this hard swelling further diagnosed as neoplastic in cytological diagnosis. There were 207 cases in which

AFB staining (Zeihl Neelsen staining) was done and out of this, 135 cases showed AFB positivity (Table 7).

**Table 8: Distribution of cases according to the cytological diagnosis (n=470).**

Diagnosis	Cases no. (%)	
Granulomatous lymphadenitis (tuberculosis)	207 (46.2)	
Filarial lymphadenitis	1 (0.2)	
Chronic reactive hyperplasia	72 (16.1)	
Acute suppurative inflammation	25 (5.6)	
Sialadenitis	1 (0.2)	
Keratinous cyst	10 (2.3)	
Benign cystic lesion	6 (1.3)	
Lipoma	12 (2.6)	
Lymphoproliferative lesion	4 (0.8)	
Appendage tumor	1 (0.2)	
Mucoepidermoid carcinoma	2 (0.4)	
Metastasis	Metastasis from squamous cell carcinoma	68 (15.3)
	Metastasis from carcinoma	31 (6.9)
	Metastasis from adenocarcinoma	2 (0.4)
	Metastasis from mammary carcinoma	1 (0.2)
	Metastasis from nasopharyngeal carcinoma	1 (0.2)
Non-Hodgkin lymphoma	5 (1.1)	
Total	449 (100)	

There were 21 cases in which there was no conclusive opinion possible (Due to inadequate sample, patient not allowed repeat aspiration etc.) and in 449 cases conclusive opinion given. Out of 449, 111 (24.7 %) cases were neoplastic and 338 (75.3 %) cases were non-neoplastic (Table 9).

Various cytological diagnosis in present study (n=449) were; 207 (46.2 %) cases of granulomatous lymphadenitis (tuberculosis), 1 (0.2 %) case of filarial lymphadenitis, 72 (16.1%) cases of chronic reactive hyperplasia, 25 (5.6 %) cases of acute suppurative inflammation, 1 (0.2 %) case of sialadenitis, 10 (2.3 %) cases of keratinous cyst, 6 (1.3 %) cases of benign cystic lesion, 12 (2.6 %) cases of lipoma, 4 (0.8 %) cases of lymphoproliferative lesion, 1 (0.2 %) case of benign appendage tumor, 2 (0.4 %) cases of mucoepidermoid carcinoma, 103 (22.9 %) cases of metastasis and 5 (1.1 %) cases of non-Hodgkin lymphoma (Table 8).

Out of 103 cases of metastasis, 68 cases were metastasis from squamous cell carcinoma, 31 were metastasis from carcinoma (no squamous differentiation), 2 cases were metastasis from adenocarcinoma, 1 case was metastasis from mammary carcinoma and 1 case was metastasis from nasopharyngeal carcinoma (Table 8).

**Table 9: Distribution of cases according to the neoplastic and non-neoplastic category (n=449).**

Diagnosis	Cases no. (%)
Neoplastic	111 (24.7)
Non-neoplastic	338 (75.3)
Total	449 (100)

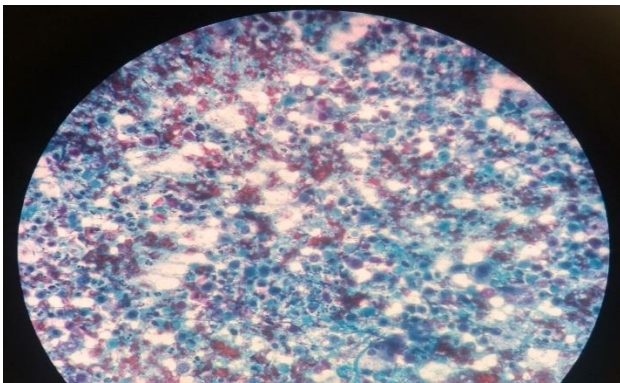
**Table 10: Age wise distribution of cases according to the diagnosis (n=449).**

Age range in year	Granulomatous Lymphadenitis. (TB)	Filarial Lymph.	CRH	Acute Sup. Inflamm.	Sialadenitis	Keratinous Cyst	Benign cystic lesion	Lipoma	NHL	Mucoepidermoid carcinoma	Appendage tumor	Lymphoproliferative lesion	Metastasis
0-10	8	0	13	8	1	0	1	0	0	0	0	0	0
11-20	56	0	18	6	0	1	0	0	0	0	1	1	3
21-30	87	1	27	3	0	3	3	2	0	0	0	3	1
31-40	39	0	2	2	0	2	0	2	1	1	0	0	8
41-50	8	0	6	3	0	3	0	6	1	1	0	0	22
51-60	3	0	5	1	0	1	1	1	0	0	0	0	39
61-70	4	0	1	2	0	0	0	0	3	0	0	0	23
71-80	2	0	0	0	0	0	1	1	0	0	0	0	6
81-90	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	207	1	72	25	1	10	6	12	5	2	1	4	103

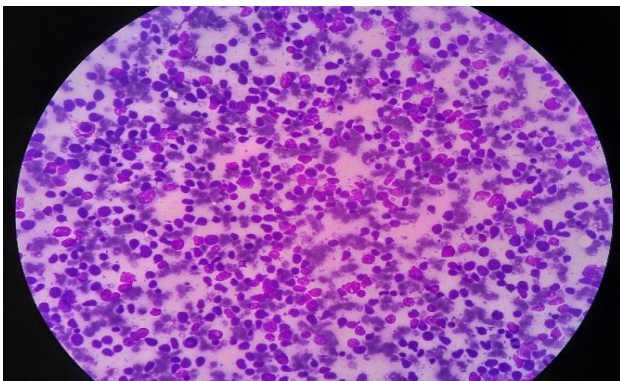
**Table 11: Sex wise distribution of metastatic lesions (n=103).**

Sex	Case no. (%)
Male	86 (83)
Female	17 (17)
Total	103 (100)

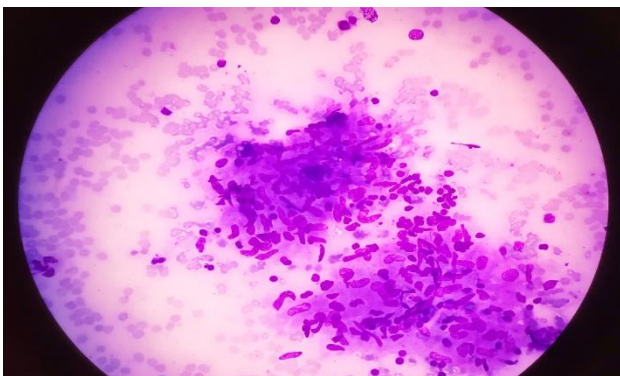
Figure 1 shows malignant squamous cell arranged in dispersed in clusters and scattered singly in necrotic background. Figure 2 shows monomorphic population of lymphoid cells. Figure 3 shows well-formed Epithelioid granuloma. Figure 4 shows lymphocytes in varying stages of maturation.



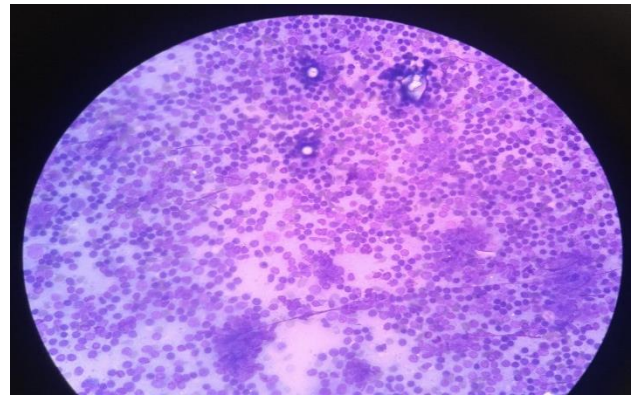
**Figure 1: Metastatic squamous cell carcinoma (pap stain-10 x).**



**Figure 2: Non-Hodgkin lymphoma (Giemsa stain-0 x).**



**Figure 3: TB lymph node (Giemsa stain- 40 x).**



**Figure 4: Chronic reactive hyperplasia lymph node (Giemsa stain-10 x).**

### DISCUSSION

In the present study, 470 cases of various neck swellings aspirated, different data were obtained like age, sex etc. granulomatous lymphadenitis (tuberculosis) was found to be the most common pathology in our study accounting for 46% of cases followed by Metastasis which accounts for 22%. Haque et al, carried out a study showed similar findings, he found granulomatous lymphadenitis constituting 40%, followed by malignant swellings in 20 % of cases.<sup>10</sup> In present study, metastatic lesions were accounts for 103 cases (22 %) and the age group is 41-70 years with male preponderance (83% males) (Table 10, Table 11), this is due to living style with habits of tobacco chewing, cigarette smoking and alcoholism in males. Out of 103 metastatic lesions, squamous cell carcinoma was the commonest primary (66 % cases) and it presents with nodal metastasis. Metastatic squamous cell carcinoma is the earliest diagnosis on FNAC. The primary sites are lip, tongue, oral cavity, tonsil, larynx etc. The present study documents higher incidence of malignancies, particularly metastases in the higher age groups i.e. 41-70 years.

Hirachand et al, also noted that the commonest type of metastatic carcinoma to lymph nodes was of squamous cell variety, this study supports the established fact that metastatic squamous cell carcinoma of the neck is frequent after the age of 40.<sup>3</sup> Over 90% of neck metastasis are comprises squamous cell carcinoma (SCC), whereas adenocarcinoma, undifferentiated carcinoma and other malignancy are less common.<sup>11</sup> Among all the lesions, lipoma was the easiest to diagnose.

### CONCLUSION

From above study we came to conclude that FNAC is a simple, quick, inexpensive, and minimally invasive technique to diagnose different types of cervical swellings. It could differentiate the infective process from neoplastic one and avoids unnecessary surgeries. It has also therapeutic roles in cystic lesions. Thus, FNAC can

be recommended as a first line of investigation in the diagnosis of all cervical swellings. FNAC is very useful for diagnosis of both neoplastic and non-neoplastic conditions.

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