Fine Needle Aspiration Cytology (FNAC) as a Diagnostic Tool for the Diagnosis of Cervical Lymphadenopathy

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ABSTRACT

Introduction: Fine Needle Aspiration Cytology (FNAC) is a simple, quick and inexpensive method that is used to sample superficial masses like cervical lymph node found in the neck and is usually performed in the outpatient clinic. **Objective:** To evaluate the usefulness of Fine needle aspiration cytology in diagnosis of palpable Cervical Lymph node and to correlate the cytological findings with the final histological diagnosis. **Methods:** This study was carried out at sterling hospital Vadodara on 31 clinically diagnosed cases of cervical lymphadenopathy over a period of one and half years from January 2013 to June 2014. FNAC was carried out in all these patients. Biopsy, Immunohistochemistry and special stains were done in selected cases. Patients included in the present study were in the age group of 3 years to 82 years.

Results: 14/31 (45.16%) cases were of granulomatous lymphadenitis, 8/31 (25.81%) cases showed metastatic tumors, 4/31 (12.9%) reactive lymph nodes, 2/31 (6.45%) abscess, 2/31 (6.45%) Non Hodgkin's Lymphoma and 1/31 (3.23%) benign cystic lesion. Sensitivity of study was 90% and specificity for malignancy was 100%.

Conclusion: The most frequent causes of cervical lymphadenopathy are tuberculosis, metastatic malignancies and reactive lymphadenitis. FNAC alone can help in establishing the diagnosis in large number of cases. In certain situation it can be enough for diagnosis in proper clinical setting to avoid surgical procedure like biopsy.

Key Words: Biopsy, Cervical Lymphadenopathy, Fine Needle Aspiration Cytology

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INTRODUCTION

Lymphadenopathy is the most common cause of swelling in the neck.[1] Cervical Lymphadenopathy (C.L.) is a fairly common clinical presentation. It is often a diagnostic challenge to medical professionals. A person with cervical Lymphadenopathy has swollen lymph glands in the neck. Lymph nodes most often swell in response to infection or inflammation. CL can be presented as isolated or as a part of generalized Lymphadenopathy. Less commonly, lymph gland swelling can be a sign of cancer.[2]

Cervical Lymphadenopathy may be the only clinical finding or one of several nonspecific findings, and the discovery of swollen lymph nodes will often raise the specter of serious illness such as lymphoma, acquired immunodeficiency syndrome or metastatic cancer. The physician's task is to efficiently differentiate the few patients with serious illness from the many with self-limited disease .[3] Fine needle aspiration cytology is a simple, quick and inexpensive method that is used to sample superficial masses like those found in the neck and is usually performed in the outpatient clinic. FNAC causes minimal trauma to the patient and carries virtually no risk of complications.[4]

MATERIALS AND METHOD

This study was conducted at Pathology Department of Sterling Hospital, Vadodara from January 2013 to June 2014. Patient's ages ranged from 3 to 92 years. Out of 31 patients of Cervical Lymphadenopathy, 25 patients were found to be male while the rest 6 were female. Routine FNAC was performed by the attending pathologist. Aspiration was done with 5 ml disposable syringe fitted with 23 gauge needle and material spread on glass slides was air dried for staining with May Grunwald Giemsa stain and wet fixed in 95% ethylalcohol and stained with Hematoxylene and eosine stain. FNAC aspirates were also stained by AFB stain and the adequacy of diagnostic material assessed. Results of FNAC were available on the day of examination. In 10 cases cytology and histopathology correlation was available.

OBSERVATION AND RESULTS

A total of 31 cases were included in this study. Their Age and sex distribution is shown in Table 1. There was male predominance and maximum numbers of cases were in age group of 51-60 years. From 31 patients of Cervical Lymphadenopathy, 25 (80.65%) patients

were found to be male while the rest 6 (19.35%) were female.

Table 1: Distribution of Age with Gender in cases

Age group (Years)	Number of cases		Total	%
	Male	Female		
1-10	1	-	1	3.23
11-20	6	1	7	22.58
21-30	1	3	4	12.90
31-40	3	-	3	9.68
41-50	2	-	2	6.45
51-60	7	2	9	29.02
61-70	3	-	3	9.68
71-80	1	-	1	3.23
81-90	1	-	1	3.23
Total	25	6	31	100

In the present study, out of a total of 31 patients, 21 patients (67.74%) had benign lesions and 10 patients (32.26%) had malignant lesions. Table 2 showed the patients suffering from Malignancy comprising of Non Hodgkin's lymphoma (Figure 4) and Metastatic malignancy include only Males.

Table 2: Distribution of various lesions of Cervical Lymphadenopathy among Males & Females.

Lesions	Male	Female
Granulomatous lymphadenitis	10	4
Malignancy (Hodgkin's and Metastatic Carcinoma)	10	-
Reactive lymphadenitis	3	1
Abscess (Pyogenic)	2	-
Benign Cystic Lesion	-	1

The various causes of cervical lymphadenopathy were classified according to cytomorphological patterns. Table 3 showed that granulomatous lymphadenopathy was the commonest (45.16%) followed by metastatic lymphadenopathy (25.81%) and reactive lymphadenitis (12.9%). Out of 14 case of Granulomatous lymphadenitis 13 cases had tuberculosis (Figure 1) and one case diagnosed as sarcoidosis on subsequent histopathology (Figure 2). In metastatic group, squamous cell carcinoma was commonest forming 87.5% of cases (Figure 3).

Table 3: Distribution of various lesions of cervical lymph nodes on FNAC

Sr. No.	Cytological diagnosis	No	Percentage
I	Benign lymphadenopathy		
	1) Reactive lymph nodes	04	12.90%
	2) Abscess (Pyogenic)	02	6.45%
	3) Granulomatous lymphadenitis	14	45.16%
II	Metastatic tumours	08	25.81%
III	Lymphoma(Non-Hodgkin's lymphoma)	02	6.45
IV	Cystic	1	3.23
Total		31	100%

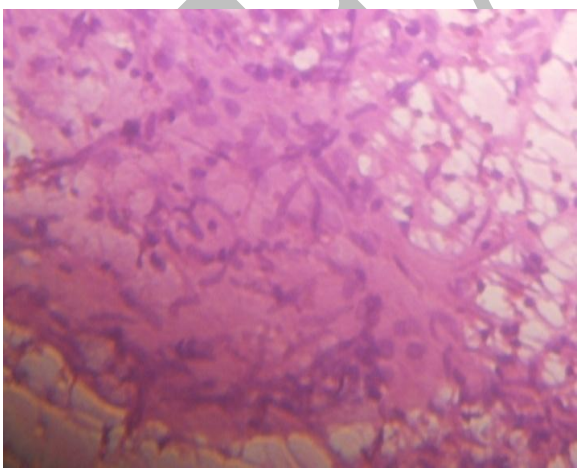

Figure 1: Epithelioid cell granuloma cytology

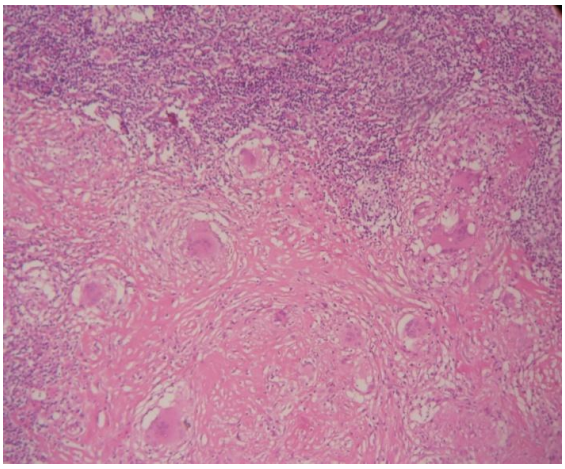

Figure 2: Sarcoid granuloma on histopathology

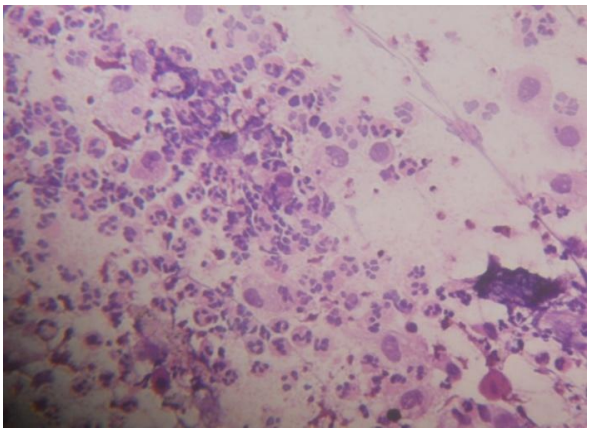

Figure 3: Metastatic Squamous cell carcinoma

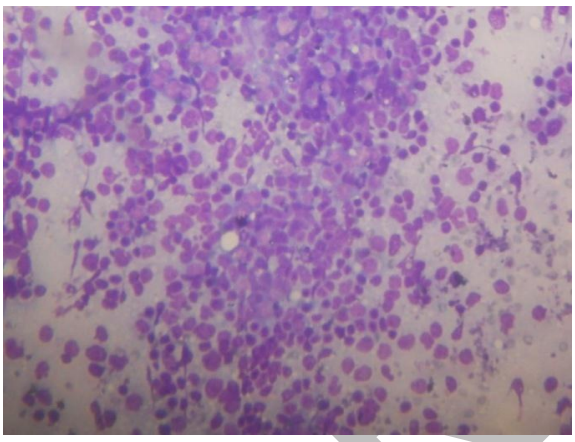

Figure 4: Non-Hodgkin's lymphoma cytology

Cytomorphologically tuberculous lesions were classified in to three groups as described by J.P. Singh et al [5]. 'Epithelioid cell granuloma with necrosis' was commonest cytomorphological type of tuberculosis forming 53.8% of cases. Total AFB positivity was 30.8%. Maximum number of AFB positivity was seen in the groups of Epithelioid cell granulomas with caseous necrosis and Caseous necrosis with occasional epithelioid cells.

Table 4: Cytomorphological features in tuberculous lymphadenitis correlating with AFB Positivity

No	Cytomorphological features	No	Percentage	AFB positivity	Percentage of AFB positivity
1	Epithelioid cell granulomas without caseous necrosis	05	38.46%	00	00%
2	Epithelioid cell granulomas with caseous necrosis	07	53.85%	03	42.9%
3	Caseous necrosis with or without PMN cells and occasional epithelioid cells	01	7.69%	01	100%
Total		13	100 %	04	--

In 10 cases with cyto-histopathological correlation (Table 5), one case of granulomatous lymphadenitis was diagnosed as sarcoidosis and diagnosis was confirmed by raised AEC level. One patient had cervical lymphadenopathy along with base of tongue nodular lesion cytology from lymph node reported as suspicious for metastatic carcinoma or lymphoma which was on histopathology and IHC diagnosed as B cell type - Non Hodking Lymphoma.

Table 5: Correlation of Histological and cytological diagnosis

Histopathological diagnosis	Cytological diagnosis	No
Tuberculosis	Tuberculosis	05
Metastetic Squmous cell carcinoma	Metastetic Squmous cell carcinoma	02
Sarcoidosis	Granulomatous inflammation	01
B cell - Non hodking lymphoma	Suspicious for Metastatic carcinoma OR Lymphoma	01
NHL - Diffuse large B cell lymphoma	Non hodking lymphoma	01
Total		10

DISCUSSION

In our study 10 patients who underwent excision biopsy, in 9 patients the FNAC report matched with the final histopathology report. Thus there were 90 true positives, 1 false negative and no false positives, sensitivity would be 90% and the specificity of FNAC for malignancy would be calculated as 100%.

The well-defined role of FNAC in the investigation of lymphadenopathy has previously been studied .[6,7] In the context of granulomatous disorders, the possible etiology is wide and the use of FNAC with other ancillary tests (microbiological, immunohistochemical, radiological, biochemical and special staining techniques) is useful for obtaining a definitive diagnosis. FNAC as a first line screening method has been recommended in suspected malignancy.[8]

Tuberculosis lymphadenopathy constituted the commonest lesion followed by metastatic malignancies and reactive lymphadenitis, which is correlating with most of the studies of Indian authors.[1,5,9,10]

The pattern of AFB positivity in different cytomorphological pattern of tuberculous lymphadenopathy was similar to other Indian studies.[11,12,13] AFB positivity is maximum in cases showing caseous necrosis with occasional epithelioid cells.

Metastatic malignancies comprised of second largest group in our study. Metastatic squamous cell carcinoma formed bulk of the lesion, followed by metastatic adenocarcinoma. Diagnostic accuracy of metastatic carcinoma found in this study is comparable with other studies.[6,12,14] In the present study only one case was diagnosed

as suspicious for metastatic carcinoma or lymphoma, in such situation biopsy and IHC is warranted to make definite diagnosis.

CONCLUSION

Commonest diseases causing cervical lymphadenopathy are tuberculosis, metastatic malignancies and reactive lymphadenitis. It is believed by many authors that in non-Hodgkin's lymphoma biopsy is mandatory, and we also believe in it.

Fine Needle Aspiration Cytology is a simple, safe, rapid, cost effective and reasonably accurate method of establishing the diagnosis of cervical lymphadenopathy. Its overall accuracy in comparison with the histopathological study is very high and may obviate the need of excision biopsy when the findings are compatible with the clinical diagnosis. Thus in conclusion this simple procedure should be advocated by the clinicians so that early diagnosis of cervical lymphadenopathy is possible in shortest periods of time as it has implication on therapy.

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