

Cervical lymphadenopathy – diagnosis by F.N.A.C., a study of 219 cases

A. B. Pandav¹, P. P. Patil¹, D. N. Lanjewar¹

¹Department Of Pathology, Government Medical College, Miraj, Maharashtra, India.

Abstract

Objective: Cervical lymphadenopathy is one of the commonest presentations in inflammatory and neoplastic disorders. Fine needle aspiration cytology (FNAC) a simple, and reliable technique can be used as a routine OPD procedure for establishing etiology of cervical lymphadenopathy. In this study we describe cytomorphological patterns of FNAC of cervical lymph nodes and its utility in establishing diagnosis.

Methods: This study was carried out at Government Medical College and Hospital, Miraj on 219 clinically diagnosed cases of cervical lymphadenopathy over a period of two years. FNAC was carried out in all these patients. Biopsy and special stains were done in selected cases. Patients included in the present study were in the age group of 11 months to 80 years.

Results: 83/219 (38%) cases were of tubercular lymphadenitis, 52/219 (24%) cases show Metastatic tumours, 49/219(22%) hyperplastic lymph nodes, 24/219 (11%) acute lymphadenitis, 8/219 (3.7%) Lymphoma and 3/219(1.4%) were Leukemic Lymphadenopathy. Tubercular lymphadenopathy was found with increasing frequency through adolescence (43.30%) to young adulthood (54.75%) & (48.18%) in adulthood. 67/219 (30.59%) cases of tuberculosis were in age group of 11-40 yrs. 39/219 (17.8%) cases of metastatic tumours were in the age group of 31-60 yrs. Highest incidence of metastatic malignancy was seen in the fifth decade (35%).

Conclusions: 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: Cervical Lymphadenopathy, Fine Needle Aspiration Cytology

INTRODUCTION

Lymphadenopathy is the most common cause of swelling in the neck and is one of the commonest presentations in inflammatory and neoplastic disorders.^[1] Etiological diagnosis of enlarged lymph nodes is of immense importance to the clinician as well as to the patients. FNAC has been successfully adopted as a special technique to diagnose the cause of lymphadenopathy and the method is now being adopted as a routine in most of the centres. FNAC is a simple, quick, inexpensive and is equally reliable procedure which can be used as a routine OPD procedure for diagnosis of lymphadenopathy.^[2]

METHODOLOGY

This study was carried out at Government Medical College Hospital, Miraj on 219 clinically diagnosed cases of cervical lymphadenopathy over a period of two years from August 2001 to July 2003. In each case detail history, clinical presentation of cervical lymph nodes and clinical examination along with necessary routine as well as special investigations if indicated were carried out. Aspiration was done as OPD procedure using 21-23 gauge needles. Three to four smears were obtained by multiple passes. Smears are dipped immediately in the ether alcohol solution for minimum of 30 min for H & E or PAP staining. Air dried smears are stained with Leishman stain. Extra air-dried slides were kept ready for Zeihl-Neelsen 20% staining for acid-fast bacilli (AFB) whenever tuberculosis was suspected clinically. The diagnoses were classified according to

Address for correspondence*

A. B. Pandav

Department Of Pathology, Government Medical College, Miraj, Maharashtra, India.

Email : dramitpandav@gmail.com

various cytomorphological patterns and correlated with patient's age. In 40 cases cytology and histopathology correlation was available.

RESULTS

A total of 219 cases were included in this study. Their Age and sex distribution is shown in Table 1. There was male predominance and maximum number of cases (21%) were in age group of 21-30 years. The various causes of cervical lymphadenopathy were classified according to cytomorphological patterns,^[3] and their frequency of occurrence in relation with different age groups was shown.³ Tuberculous lymphadenopathy was the commonest (38%) followed by metastatic lymphadenopathy (24%) and reactive lymphadenitis (22%). The few cases were identified in the 'leukemic lymphadenopathy' category (1%). Cytomorphologically tuberculous lesions were classified in to three groups as described by J.P. Singh et al.^[4] 'Epithelioid cell granuloma with necrosis' was commonest cytomorphological type of tuberculosis forming 46% of cases (Figure 1 and Figure 2). Total AFB positivity was 27%. Maximum number of AFB positivity was seen in the group of 'Caseous necrosis with or without polymorphonuclear cells (PMN) and occasional epithelioid cells' (56.0%). Subtyping of the metastatic lesions by cytomorphological features was attempted, described according to studies by L.G Koss et al,^[5] Das D.K et al,^[5] and Skoog et al.^[6] In metastatic group, squamous cell carcinoma was commonest forming 84% of cases (Figure 3). In 40 cases with cyto-histopathological correlation, 2 cases were false negative, those were cases of reactive lymphadenitis and tuberculous lymphadenitis respectively (Table 5). In almost all the groups diagnostic accuracy by FNAC was 100% except in reactive lymphadenitis (90%) and Tuberculous lymphadenitis group (94%).

Table 1: Age and Sex distribution of cases.

Age group (Years)	Number of cases		Total	Percentage
	Male	Female		
0-10	10	9	19	8.7 %
11-20	15	27	42	19.2 %
21-30	18	28	46	21.0 %
31-40	19	23	42	19.0 %
41-50	19	7	26	11.9 %
51-60	21	5	26	11.9 %
61-70	5	7	12	5.5 %
71-80	6	-	6	2.7 %
Total	113 (51.6%)	106 (48.4%)	219	100 %

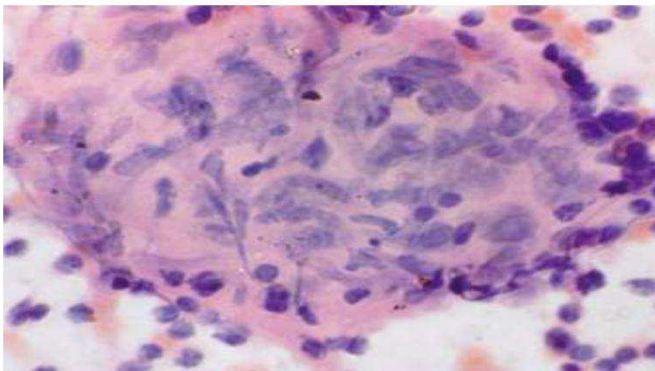


Figure 1: Shows epithelioid cell granuloma.

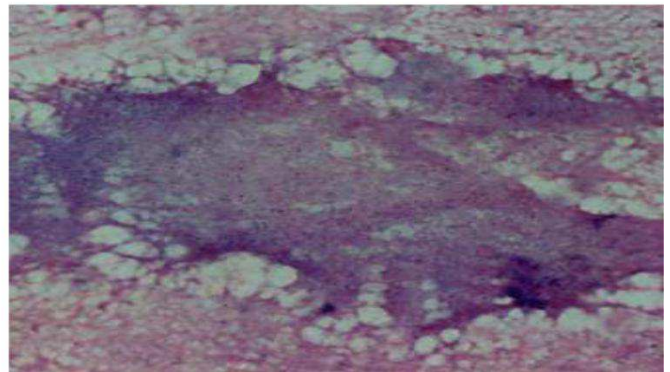


Figure 2: shows caseous necrosis.

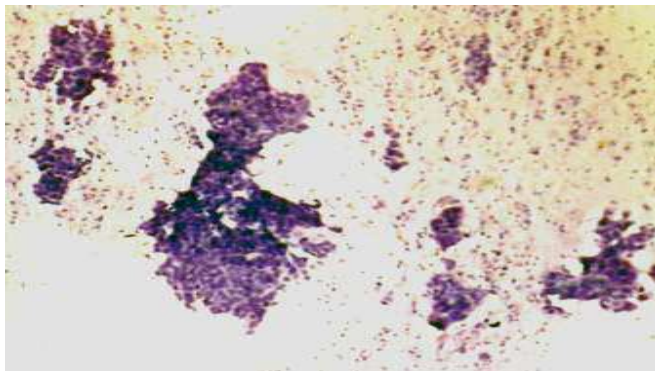


Figure 3: Shows Metastatic squamous cell carcinoma.

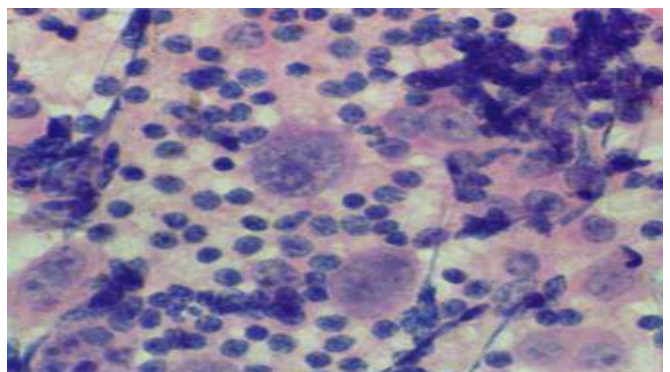


Figure 4: shows Hodgkin's lymphoma Showing RS cells.

Table 2: Distribution of various lesions of cervical lymph nodes on FNAC ^[3]

Sr. No.	Cytological diagnosis	No. of cases	Percentage
I.	Benign lymphadenopathy		
	1) Hyperplastic lymph nodes	49	22.4 %
	2) Acute lymphadenitis	24	10.9 %
	3) Tuberculous lymphadenitis	83	37.8 %
II.	Lymphoma		
	1) Hodgkin's lymphoma	1	0.5 %
	2) Non-Hodgkin's lymphoma	7	3.2 %
III.	Metastatic tumours	52	23.8 %
IV.	Leukemic lymphadenopathy	3	1.4 %
Total		219	100%

Table No. 3: Distribution of cases in relation of Age.

Age group	Benign lymphadenopathies			Lymphomas		Leukemic lymphadenopathy	Metastatic tumours
	Hyperplastic lymphnodes	Acute lymphadenitis	Tuberculous lymphadenitis	Hodgkin	NHL		
0-10	12	4	3	-	-	-	-
11-20	13	6	20	-	2	-	-
21-30	8	6	25	1	1	1	4
31-40	6	2	22	-	-	1	11
41-50	4	3	5	-	3	1	10
51-60	3	1	6	-	1	-	18
61-70	3	2	2	-	-	-	5
71-80	-	-	-	-	-	-	4
Total	49	24	83	1	7	3	52

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

Sr. No.	Cytomorphological features	No. of cases	Percentage	AFB positivity	Percentage of AFB positivity
1.	Epithelioid cell granulomas without caseous necrosis	20	24.1 %	2	10.0 %
2.	Epithelioid cell granulomas with caseous necrosis	38	45.8 %	6	15.8 %
3.	Caseous necrosis with or without PMN cells and occasional epithelioid cells	25	30.1 %	14	56.0 %
Total		83	100 %	22	26.50%

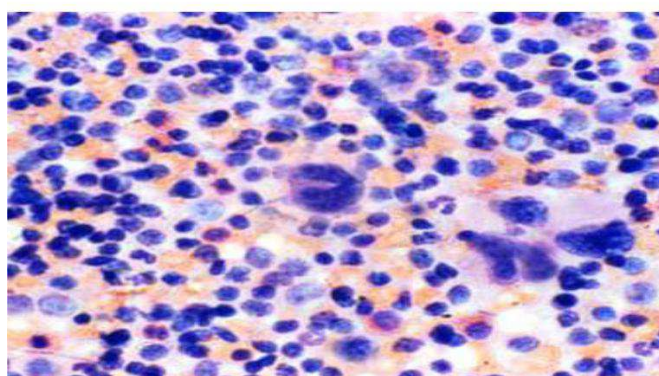
DISCUSSION

FNAC forms an important tool to aid in the diagnosis of cervical lymphadenopathy. Maximum number of cases in present study was recorded in the age group of 21- 30 years, which is comparable with those of other studies by P. Bhargav et al^[1] and S. Rajshekar et al.^[7] In this study maximum cases of tuberculosis were found in his age group is also true for our study.^[1,7] We found

two false negative cases. One in cytodagnosis of reactive lymphadenitis, which turned out to be tuberculosis and other which was granulomatous lymphadenitis on FNAC, turned out to be metastatic squamous cell carcinoma on histopathology. Tuberculosis lymphadenopathy constituted the commonest lesion followed by metastatic malignancies and reactive lymphadenitis, which is correlating with most of the studies of Indian authors.^[1,4,7-9] The pattern of AFB positivity in different cytomorphological

Table No.5: Correlation of Histological and cytological diagnosis.

FNAC diagnosis	No. of cases	Histopathological diagnosis					Accuracy (%)
		Reactive	Acute	T.B	Metastasis	Lymphoma NHL	
Reactive lymphadenitis	10	9		1			90
Acute lymphadenitis	1		1				100
Tuberculous lymphadenitis	17			16	1		94.11
Metastatic tumour	6				6		100
Lymphoma (NHL)	6					6	100
Total	40						

**Figure 5: shows Lymph node involved by CML.**

pattern of tuberculous lymphadenopathy was similar to other Indian studies^[5,8,10]. AFB positivity is maximum in cases showing caseous necrosis with occasional epithelioid cells. Sometimes in absence of AFB positivity the diagnosis of highly suspicious of tuberculosis was given in these lesions with strong clinical suspicion, high ESR and chest X-ray findings. 5/219 cases in present study were comprised of HIV infection. In four (80%) cases tuberculosis was identified while one case showed reactive lymphadenopathy. which was correlating with other studies.^[7,13] The tuberculosis in HIV positive cases showed caseous necrosis, while granulomas were less and ill formed. Similar findings were found by Shenoy et al.^[13] 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.^[8,11,12] In the present study only one case of Hodgkin's lymphoma which was diagnosed on FNAC due to preserved Reed Sternberg (RS) cells (Figure 4). In lymphoma group, with presence of RS cell, the cytological diagnosis of Hodgkin's lymphoma is easy. FNAC is helpful in diagnosis of Hodgkin's lymphoma though biopsy is recommended for confirmation and classification. The cytology of Leukemic lymphadenopathy (Chronic Myeloid Leukemia) revealed cells of myeloid series viz, myeloblasts, myelocyte, metamyelocytes, band cells,

neutrophils intermingled with lymphoid cells (Figure 5). The lymph node involvement by CML especially in blast crisis is quit ecommon. Diagnostic accuracy inleukemic lymphadenopathy can be increased significantly by clinical history, peripheral smear, bone marrow diagnosis and application of special cytochemical stains^[14,15,16]. In this group there were no false positive cases.

CONCLUSION

Commonest diseases causing cervical lymphadenopathy are tuberculosis, metastatic malignancies and reactive lymphadenitis. Non representative sampling usually in small metastatic deposits may be an important cause of false negative diagnosis and granulomatous reaction to metastatic tumours may be misinterpreted as granulomatous lymphadenitis on FNAC. In such cases biopsy should be advised. It is believed by many authors that in non-Hodgkin's lymphoma biopsy is mandatory, and we also believe in it. Whenever necrosis is abundant in cases of metastatic malignancy, cytomorphological interpretation of smears should be with caution. We feel that though FNAC is considered complimentary to biopsy, in proper clinical setting certain situation it alone can help in establishing diagnosis. 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. . Due to poor preservation of architecture by improper fixation and being a cellular organ, histopathology of lymph node may cause diagnostic problem to pathologist. In these situations, fine needle cytology definitely has upper hand over biopsy in making diagnosis. However it should be remembered that a positive diagnosis is valuable but a negative result may be non-contributory. The high accuracy rate of aspiration biopsy of cervical lymph nodes calls for it's wide application in daily practice. Thus in conclusion this simple procedure should be advocated by the clinicians so that early diagnosis of cervical lymphadenopathy is possible in shortest perios of time as it has implication on therapy.

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