



## TO STUDY THE CYTOMORPHOLOGICAL PATTERNS OF TUBERCULAR LYMPHADENOPATHY AND ITS HISTOPATHOLOGICAL CORRELATION

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### ABSTRACT

**INTRODUCTION:** Tubercular lymphadenopathy is one of the common clinical problems. Practically diagnosis of tuberculosis sometimes creates a challenge to the pathologist and clinician. A combined approach of cytology with aid of special stain and histopathological evaluation helps to confirm the diagnosis.

**AIM** -The present study was carried out to evaluate the different cytological patterns of tuberculous lymphadenitis along with utility of special stain like Acid fast stain and further histopathological evaluation.

**MATERIAL AND METHOD:** Smears from 833 cytologically diagnosed cases of tubercular lymphadenitis were prepared and stained with Hematoxylin and Eosin (H&E), Giemsa and Acid-fast stain. All the smears were categorized into four cytomorphological patterns and correlated with 250 histopathologically available cases.

**RESULT:** Tuberculosis is the major cause of lymphadenopathy. Majority of cases (63 %) were in their second to third decades of life, with male to female ratio of 1:1.4. Cervical region was the most common site of involvement (83.5 %). Smear revealed epithelioid granulomas with caseous necrosis in maximum cases (46.9 %). AFB positivity was seen highest in smear revealing necrosis only with or without epithelioid cell (93,8 %). histopathological correlation was seen in 248 cases out of 250 available cases.

**CONCLUSION:** FNAC has been proved very safe, highly sensitive, and first line investigation in diagnosing tubercular lymphadenitis. The approach to tubercular lymphadenitis attains completeness with cytopathological, Acid Fast stain and histopathological evaluation.

**KEYWORDS :** Tubercular lymphadenitis, FNAC, Acid Fast smear, Granuloma.

### INTRODUCTION

Lymphadenopathy is one of the common conditions encountered in clinical practice. The etiology varies from nonneoplastic to malignant condition (1). In developing countries where the incidence of tuberculosis is high, tubercular lymphadenitis is one of the most frequent cause of lymphadenitis (30-55.2%) (2). Fine needle aspiration cytology is a safe, reliable, rapid and inexpensive method to establish diagnosis of tuberculosis and manage it. Special stain like Ziehl-Neelson stain and excision biopsy helps further to confirm the diagnosis. Hence evaluation of tubercular lymphadenopathy is a complete approach which includes clinical history, radiology, FNAC, AFB staining and histopathological examination.

### MATERIAL AND METHOD

This study was conducted at Jawahar Lal Nehru Medical college and associate group of Hospitals, Ajmer (Rajasthan). Eight hundred and thirty-three cases cytologically diagnosed as tubercular lymphadenitis were studied over a period of three years. After taking clinical history and consent FNAC of enlarged lymph node was done. The procedure was performed using 23/24-gauge needle attached to 10 ml syringe. Aspirated material was smeared on slides. Alcohol fixed smears stained by hematoxylin and eosin (H&E) stain and air-dried smears were stained by Giemsa stain. In addition, Ziehl- Neelson (Z N) stain for acid fast bacilli was done. Corresponding histopathology was available in 250 cases for correlation.

### RESULTS

Out of two thousand and two hundred aspirations from lymphadenopathy, cytological diagnosis of tubercular lymphadenitis was made in 833 cases (37.86%), which constituted most common group of lymphadenopathies diagnosed by fine needle aspiration in this study.

The age group of patients diagnosed cytologically as tubercular lymphadenitis, ranged from 9 months to 77 years. Maximum number of cases (63%) belonged to the age group 10 to 30 years. Male to female ratio was 1: 1.4, with a slight female preponderance. (Table-1)

### AGE AND SEX WISE DISTRIBUTION IN 833 CASES OF TUBERCULAR LYMPHADENITIS (Table 1)

AGE (in years)	Male	Female	Total	Percentage
0-9	52	34	86	10.32
10-19	105	140	245	29.41
20-29	88	192	280	33.61
30-39	49	60	109	13.08
40-49	24	33	57	6.84
50-59	13	27	40	4.80
60-69	7	8	15	1.80
70-79	1	-	1	0.12
80-89	-	-	-	-
90->99	-	-	-	-
<b>TOTAL</b>	<b>339</b>	<b>494</b>	<b>833</b>	<b>100</b>

Cervical group of lymph nodes were most commonly affected (83.5%), followed by axillary (13%) and inguinal lymph nodes (2.7%).

The smears were divided into four groups  
Epithelioid cell granuloma with necrotic material.  
Epithelioid cell granuloma without necrotic material.  
Occasional epithelioid cells with marked necrosis.  
Exudative material.

The groups - A - consisted of 391 (46.9%) patients, group-B consisted of 224 (26.8%) cases, group- C consisted of 113(13.5.5%) patients and group- D consisted of 105 (12.6%) patients.

The overall AFB positivity in this study was (40.9%). Maximum AFB positivity (93.8%) was seen in smear from lesion having only marked necrosis followed by smears from exudative material (89.5%), then smear from granuloma with necrosis (25.3%). Least positivity (18.2%) was seen in smear prepared from lesion with granuloma without necrosis. (Table-2)

**DISTRIBUTION OF CASES ACCORDING TO CYTOLOGY AND AFB POSITIVITY (TABLE-2)**

Cytology in smear	Number	AFB positive number & %	AFB negative number & %
Group A	391(46.9 %)	89(22.7 %)	302(77.3 %)
Group B	224(26.8 %)	42(18.7 %)	182(81.3 %)
Group C	113(13.6 %)	106(93.8 %)	7(6.2 %)
Group D	105(12.7 %)	94(89.5 %)	11(10.5 %)
TOTAL	833	331(39.7 %)	502(60.3 %)

Histopathological correlation was available in 250 cases which included 81 male and 169 female subjects. Cytological and histopathological correlation was present in 248 cases, remaining two cases were diagnosed as metastatic squamous cell carcinoma on histopathology, making the false positive rate of 0.3% and overall accuracy of 99.9 % for FNAC.

**AGE AND SEX WISE DISTRIBUTION IN 250 HISTOPATHOLOGICAL CASES OF TUBERCULAR LYMPHADENITIS**

AGE (in years)	Male	Female	Total	Percentage
0-9	10	6	16	6.40
10-19	22	43	65	26.00
20-29	25	77	102	40.80
30-39	14	19	33	13.20
40-49	5	11	16	6.40
50-59	2	7	9	3.60
60-69	1	3	4	1.60
70-79	1	3	4	1.60
80-89	1	-	1	0.40
90->99	-	-	-	-
TOTAL	81	169	250	100

**DISCUSSION**

FNAC is a simple, non-invasive, inexpensive investigative tool in the diagnosis of peripheral lymphadenopathy. Tubercular lymphadenitis constituted commonest group of lymphadenopathies diagnosed by fine needle aspiration, numbering 833 patients (39.7%) out of 2200 patients of lymphadenopathy. The results of our study were in accordance with studies conducted by Venkat Raghavan ATM (3) et al and Mitra SK et al (4).

In this study, the age range of patients was from 9 month to 77 years. Majority of cases (72.2%) were 10-30 years old with male-to-female ratio off 1:1.4. Similar findings were also seen in studies conducted by Nomani et al (5), however as per Venkat Raghavan ATM et al (3) majority cases were 20-40 years old. These results suggest that tuberculosis is most commonly seen in young population. High incidence in females maybe due to poor nutritional status and overall lower standard of living in developing countries. However, Bezabih et al (6) found slight male predominance.

In our study, cervical lymph node involvement was found most commonly (83.5%) followed by axillary lymph node (13.8). Similar studies are also found with Fantanilla et al (7) and Nidhi et al(8).

Like other studies (9,10,11) our study also revolve around four basic pattern namely -epithelioid cell granuloma with necrotic material, epithelioid cell granuloma without necrotic material, occasional epithelioid cells with marked necrosis and exudative material. However, Ruquiya et al (12) and Chandan Rajesh et al (13) describe seven patterns of tubercular lymphadenitis.

Most common cytological pattern in our study was epithelioid granulomas with caseous necrosis in 46.9%. This result was in agreement with Aneetha et al (14) and Mitra SK et al (4).

The Overall positivity rate for AFB stain was 40.2% with maximum positivity amongst smears showing necrosis only with or without epithelioid cell (76.3%). Our study is correlating with other studies (3, 4 and 8).

Histopathological correlation was available in 250 cases (30 %). Cytological and histopathological correlation was present in 248 cases (99.2%), remaining two cases were diagnosed as metastatic squamous cell carcinoma on histopathology, making the false positive rate of FNAC 0.3% and overall accuracy of 99.9 %, similar to study of Venkat Raghavan ATM et al (3). Hence FNAC is a useful tool for routine cytodagnosis with diagnostic accuracy ranging from 84,2% to 100 % (16)

**CONCLUSION**

This study highlights the usefulness of FNAC as a simple, inexpensive, relatively painless, rapid, repeatable and reliable investigation in diagnosing tubercular lymphadenitis, especially in OPDs, peripheral Hospitals and dispensaries. The sensitivity and diagnostic accuracy can be further be increased by complementary cytomorphology with acid fast staining and histopathological correlation. In conclusion, findings from the present study emphasize a definite need for a combination of tests for diagnosing tubercular lymphadenitis.

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