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## A COMPARITIVE STUDY ON CYTOMORPHOLOGICAL SPECTRUM OF TUBERCULOUS LYMPHADENITIS WITH PCR UTILITY

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### ABSTRACT:

**INTRODUCTION:** Tuberculous lymphadenitis is a very common cause of superficial lymphadenopathy in countries like India. Early diagnosis is the keystone of tuberculosis control strategies. Over the past decade, fine needle aspirate cytology (FNAC) has assumed an important role in the assessment of peripheral lymphadenopathy as a possible non-invasive alternative to excisional biopsy. It is a rapid, inexpensive, safe and minimally invasive technique for obtaining tissue diagnosis of lymph nodes(1). PCR is expensive and sensitive technique in identification of MTB(2).**OBJECTIVE:**The objective of this study is to describe the spectrum of morphological features seen on Cytological smears of tuberculous lymphadenitis and compare its diagnosis with AFB staining and PCR technique. **MATERIALS AND METHODS:** is a Prospective study Conducted in Department of Pathology, Sree Balaji Medical College and Hospital Chennai. 50 cases of Tuberculous lymphadenitis, from Jan 2015 to Jan 2016, diagnosed on fine needle aspiration are included in the study.Of all lymph nodes which came for FNAs , one aspirate is taken for Cytological examination one for AFB staining and another for PCR. **RESULTS: Out** of 50 cases showing cytological picture of tuberculous lymphadenitis, smears revealed epithelioid granulomas with caseous necrosis in 44% of cases ,epithelioid granulomas without necrosis in 36% of cases, necrosis and polymorphs only without epithelioid granulomas in 20% of cases .AFB showed positivity only in 66% of cases and PCR showed positivity in 98% of cases.**CONCLUSION:**Tuberculous infection of the lymph nodes follows a Spectrum as the disease progresses , Therefore various morphological features must be kept in mind while inferring a lymph node smears so as not to miss this treatable disease(3). Thus Cytomorphology can be used for diagnosis in developing country like India and PCR should be kept in reserve for equivocal cases due to economical reasons (4).**KEY WORDS:**FNAC , TB lymphadenitis , PCR.

## INTRODUCTION:

Tuberculosis is a major health problem in India. Tuberculosis lymphadenitis is the most common form of extrapulmonary tuberculosis. World wide mortality from Tuberculosis ranges from 2–3 million deaths reported each year(5). In rural India, the prevalence of Tuberculous lymphadenitis in children up to 14 years of age is approximately 4.4 cases per 1000. Early Diagnosis of tuberculous lymphadenitis still faces many challenges, though there are many applied diagnostic tools. The diagnosis of Extrapulmonary TB is difficult in cases clinically mimicking bacterial lymphadenitis(6). Fine needle aspiration cytology is a quick, minimally invasive, and cost-effective technique for the diagnosis of granulomatous diseases(7). Winfred and Grace in their book of Diagnostic cytopathology have described three cell patterns in aspiration of tuberculous lymphadenitis 1. Epithelioid granulomas without caseation necrosis but with lymphocytes, Langhan giant cells are usually absent. 2. Epithelioid granulomas with necrosis. 3. Necrosis without granulomas. Necrotic debris containing polymorphs and scattered histiocytes (8). The Ziehl Neelsen stain for identification of acid-fast bacilli can be used to increase the diagnostic accuracy of Tuberculous lymphadenitis but it is time consuming and less sensitive. The PCR is a sensitive and specific technique which is frequently used now a days in the diagnosis of Tuberculous lymphadenitis for the specific detection of mycobacterium.(9)

## OBJECTIVE:

To investigate the cytomorphological pattern of tuberculous lymphadenitis, and to assess the reliability measures of Ziehl-Neelsen technique and PCR method in identification of *Mycobacterium tuberculosis*.

## MATERIAL AND METHODS:

This is a Prospective study Conducted in Department of Pathology, Sree Balaji Medical College and Hospital Chennai. 50 cases of Tuberculous lymphadenitis, from Jan 2015 to Jan 2016, diagnosed on fine needle aspiration are included in the study. All lymph nodes which came for FNAs were performed by 23-gauge needle, one aspirate is used only for hematoxylin and eosin for Cytologic examination one for AFB staining and another for PCR was taken. On cytological examination which turns out to be tuberculous lymphadenitis is confirmed with Ziehl-Neelsen technique and PCR is performed for all cytological positive cases for Tuberculous lymphadenitis. PCR is performed using oligonucleotide primer for MTB.

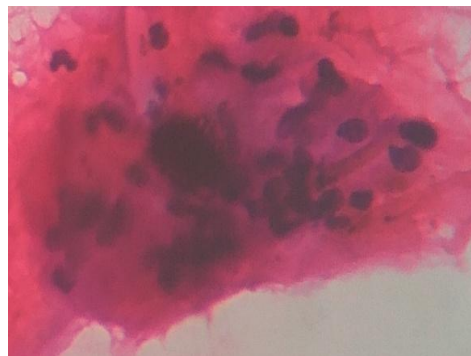
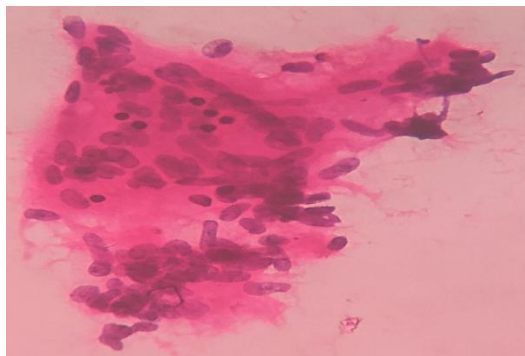
**RESULTS:**

Of all FNA lymph nodes from 2015 to 2016 Jan , we received 50 lymph nodes with cytological picture of tuberculous lymphadenitis, of which 44% smears revealed epithelioid granulomas with caseous necrosis , 36% epithelioid granulomas without necrosis and 20% necrosis and polymorphs only without epithelioid granuloma .AFB showed positivity only in 66 % of cases but, PCR showed positivity in 98% cases .

Comparative Table :

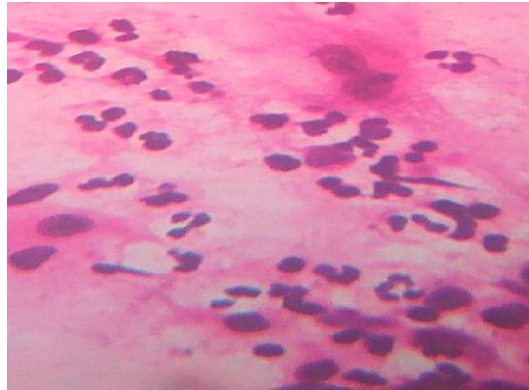
Morphologic features	Percentage %	AFB Positivity %	PCR Positivity %
Epithelioid Granulomas with Caseous Necrosis	44	66	98
Epithelioid Granulomas without Necrosis	36	20	40
Necrosis and Polymorphs only	20	0	0

**CYTOLOGY**



Epithelioid granuloma without Necrosis

Epithelioid granuloma with Necrosis



Neutrophils and fragmented neutrophils

## DISCUSSION:

Tuberculosis is a major health problem in the developing countries. Its incidence is also increasing in the affluent countries due to increased incidence of AIDS(10)Microscopically the disease progresses through early exudative to caseous to late fibrocalcific lesions(11) .If immune status of a person is compromised then the disease again reverts to the early stage. Neutrophils and nuclear dust of fragmented nuclei of neutrophils are seen in early phase and Lymphocytes were seen mostly in the late lesions with well-defined granulomas formation.(10)

Acid-fast bacilli (AFB) positivity in smears depends on the bacillary load of the specimen and the type of the material. Different studies have reported a wide range of AFB positivity ranging from as low as 0% to as high as 75%(11).In our study we had (66 %)positivity .so, in the absence of AFB in samples showing an otherwise characteristic cytology picture should not weigh against the diagnosis of tuberculosis . Aljafari et al showed 96% positive with PCR among all cytologically proven cases of tuberculous lymphadenitis ,and our study showed 98%positivity.

## CONCLUSION:

Tuberculous infection of the lymph nodes follows a Spectrum as the disease progresses Therefore various morphological patterns must be kept in mind while interpreting a lymph node smears so as not to miss this treatable disease. Thus Cytomorphology can be used for diagnosis in developing country like India and PCR should be kept in reserve for equivocal cases due to economical reasons and to use more



specific and sensitive methods, such as, PCR or immunohistochemistry, before reporting the negative results in equivocal cases(9)

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