



## Value of fine needle aspiration cytology(FNAC) in the diagnosis of Tubercular lymphadenitis : a study in a tertiary care hospital of Assam, India.

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### Abstract

Tuberculosis is a major health problem in developing countries. The aim of this study was to evaluate the importance of Fine Needle Aspiration Cytology (FNAC) in the diagnosis of Tubercular lymphadenitis. The present study was carried out in Gauhati Medical College and Hospital, Guwahati, Assam, India during the period from January 2014 to December 2014. Cytological examination of Fine Needle Aspiration smears of 226 cases were studied from the patients complaining of lump in the cervical region of the neck and out of these cases, Acid Fast Bacilli (AFB) stain were also carried out on a total of 160 cases. Fine needle aspiration samples were stained with May Grunwald and Giemsa stain and their cytological diagnosis established. Fine Needle Aspiration samples were also stained with Ziehl Neelsen Stain for Acid Fast Bacilli (AFB). Age group of the patients varied from 1-70 years. We correlated our Fine Needle Aspiration Cytology (FNAC) findings with Acid Fast Bacilli (AFB) stain and Histopathology. The sensitivity was found to be 91.17% and specificity was found to be 73.04%.

**Keywords:** fine needle aspiration cytology, lymphadenitis, caseous necrosis, acid fast bacilli, histopathology.

### 1. Introduction

Tuberculosis is a serious chronic pulmonary and systemic disease caused by Mycobacterium tuberculosis. The source of transmission is humans with active tuberculosis who release mycobacteria present in the sputum. Tuberculosis is a major health problem in developing countries such as India. According to the World Health Organisation (WHO), Tuberculosis is estimated to affect more than a billion individuals worldwide, with 8.7 million cases and 1.4 million deaths each year (Kumar V *et al.*) Tuberculosis flourishes wherever there is poverty, overcrowding and chronic debilitating illness. If untreated, the disease may be fatal within five years in 50-65% cases. (Fauci *et al.*) Developing countries, particularly in South East Asia have experienced a

major increase in the burden of tuberculosis, a major public health problem; that is compounded by the emergence of multidrug resistant tubercular bacilli (WHO 2002). In patients with cervical lump, Tuberculosis remains a common cause. Tubercular cervical lymphadenitis is commonly encountered in clinical practice. Tubercular lymphadenitis is the most common extrapulmonary form of Tuberculosis and cervical lymph nodes are the most commonly affected group of nodes. Lymph node tuberculosis present as painless swelling of the lymph nodes, most commonly at posterior cervical and supraclavicular sites. Lymph nodes are usually discrete and non tender in early disease but may be inflamed and have a fistulous tract draining caseous material (Fauci AS *et al.*).

Differentiation between tubercular and

inflammatory cause of cervical lump is important because the treatment is different. However the definitive diagnosis require either culture for Mycobacterium or an invasive excisional lymph node biopsy, both of which can result in delay in the diagnosis.

In the present study, we tried to evaluate the importance of fine needle aspiration cytology(FNAC) in the diagnosis of tubercular lymphadenitis.

## 2. Materials and methods

The study was carried out in the Department of Pathology, Gauhati Medical College and Hospital, Guwahati, Assam, India from January 2014 to December 2014. The study was performed after permission from the Institutional Ethical Committee vide letter no. MC/233/2013/334 dtd.27-11-2014. The fine needle aspiration samples were collected from the patients irrespective of their age and sex attending the OPDs of Gauhati Medical College and Hospital and clinically suspected of having Tubercular lymphadenitis after taking due consent from the patients. Both males and females more than one year of age with well palpable and enlarged cervical lymph nodes were included. Exclusion criteria was age below one year and known cases of malignancy, allergy or skin disorders and sexually transmitted

diseases (STD).

## 3. Study design

The patients presenting with cervical lymphadenopathy and clinical suspicion for tuberculosis were subjected to-

1. Clinical History and examination of the patients.
2. Preparation of smears after aspiration of material by Fine Needle Aspiration technique and staining by May Grunwald and Giemsa stain and reporting by light microscopy.
3. Ultrasound guided Fine Needle Aspiration and preparation of slides in selected cases.
4. Fine Needle Aspiration smear examination for Acid Fast Bacilli will also be done by Ziehl Neelsen stain.
5. Histopathological examination on biopsy material will be done to correlate the Fine Needle Aspiration Cytology findings.

## 4. Results

A total of 226 cases of cervical lymphadenopathy were studied and correlated. Out of these total cases studied, 93 cases (41.15%) were reported as cytomorphology suggestive of Tubercular lymphadenitis. 84 cases (37.16%) were reported as Reactive lymphadenitis and 49 cases(21.68%) were diagnosed as malignancy.

**Table 1:** Diagnosis on fine needle aspiration cytology(FNAC) in the present study.

Tubercular lymphadenitis (No of cases)	Reactive lymphadenitis (No of cases)	Others(Malignancy) (No of cases)
93	84	49

Out of total 226 cases studied, Tubercular lymphadenitis constituted 41.15% cases: reactive lymphadenitis constituted 37.168% cases whereas only 21.68% cases belonged to the others category .

**Table 2 :** Gender distribution in the present study.

Sex	Tubercular lymphadenitis	Reactive lymphadenitis	Others(Metastasis)
Male	48	43	40
Female	45	41	09
Total	93	84	49

Overall male preponderance were seen in cases of Tubercular lymphadenitis with male: female ratio of 1.06:1. For Reactive lymphadenitis, male: female ratio was 1.04:1.

**Table 3 :** Age and gender distribution in Tubercular lymphadenitis in the present study.

Age (years)	Male	Female
01-10	05	03
11-20	07	11
21-30	20	17
31-40	08	07
41-50	05	04
51-60	00	03
61-70	03	00
Total	48	45

Most of the cases of Tubercular Lymphadenitis were in the age group of 21 to 30 years. Out of 226 cases, 146 (64.6%) cases showed lymphadenopathy with constitutional symptoms while 80 (35.4%) cases showed the presence of lymphadenopathy without constitutional symptoms.

**Table 4 :** Table showing the results of Ziehl Neelsen stain in the present study.

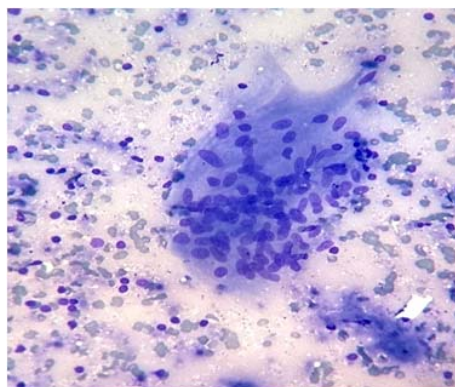
Total cases	Positive cases	Negative
160	50	110

Out of 160 cases stained by Ziehl Neelsen Stain for Acid Fast Bacilli, 50 cases (31.25%) gave positive results while 110 cases (68.75%) gave negative results.

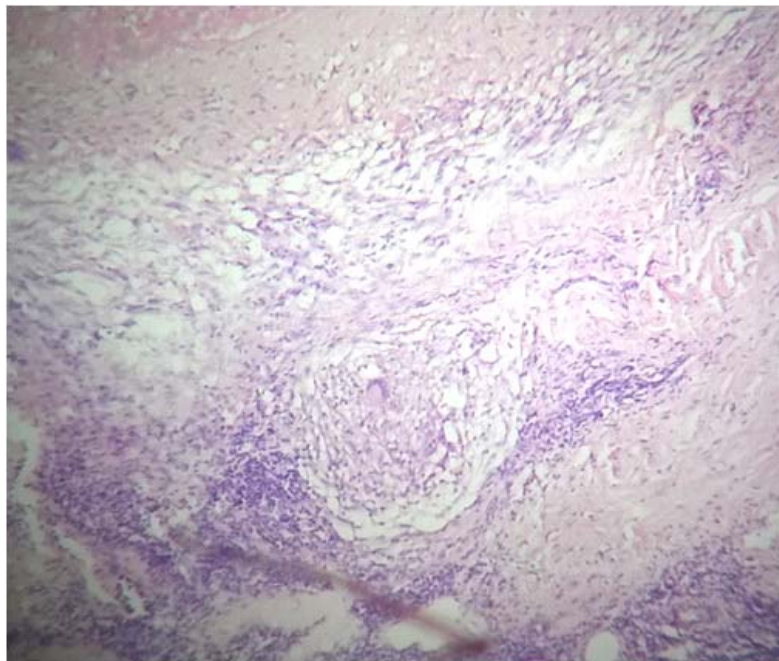
**Table 5:** Table showing results of Histopathology in the present study.

Tubercular Lymphadenitis	Reactive Lymphadenitis
12	10

Out of 22 cases sent for Histopathological examination, 12 cases (54.5%) came out to be due to Tubercular Lymphadenitis while 10 cases (45.45%) came out to be due to Reactive Lymphadenitis.



**Fig. 1 :** Photomicrograph of an epithelioid granuloma on fine needle aspiration cytology (FNAC).



**Fig. 2 :** Photomicrograph of a granuloma on biopsy.

## 5. Discussion

Tuberculosis is a chronic pulmonary and extra pulmonary disease commonly found in the developing countries. In patients with extrapulmonary Tubercular lymphadenitis, Fine Needle Aspiration Cytology (FNAC) has an important role in the diagnosis which aid the clinicians to start therapy at the earliest.

In the present study, maximum incidence of Tubercular lymphadenitis were observed in the age group of 21 to 30 years. Similar observations were reported by (Kumar H *et al.*,2013) and (Laishram RS *et al.*,2010) who found the age group between 20 to 30years of age to be most commonly affected.

Gender distribution : In the present study showed predominance of male compared to female(48:45).In the study by( Poudel A *et al.*,2014), the male to female ratio was 37:20.

Diagnosis of Tubercular lymphadenitis by Fine Needle Aspiration Cytology (FNAC) in the present study was reported to be 41.15% of patients with cervical lymphadenopathy. Similar studies by (Nidhi P *et al.*,2011) found incidence to be 55% and ( Poudel A *et al.*,2014)found incidence to be 36.8%

In the present study, Ziehl Neelsen stain for Acid Fast Bacilli(AFB) on Fine Needle Aspiration smears showed Acid Fast Bacilli (AFB) positivity to be 31.25%.Similar studies by (Nidhi P *et al.*, 2011) found Acid Fast bacilli (AFB) positivity to be 71%

and (Kumar H *et al.*,2013) found Acid Fast Bacilli(AFB) positivity to be 35.57% and (Thakur B *et al.*,2013)found Acid Fast Bacilli (AFB) positivity to be 26.67%.

In the present study, we could correlate the findings of Fine Needle Aspiration Cytology(FNAC) diagnosis reported as Tubercular lymphadenitis with 160 cases of Acid Fast Bacilli(AFB) positivity and 12 cases of biopsy reported as Tubercular lymphadenitis.

In the present study, we could correlate our Fine Needle Aspiration Cytology findings with very few lymph node biopsy samples sent for histopathological examination. In other literature by Lau SK *et al.*,1990, 68 surgical specimens out of 108 Fine Needle Aspiration Cytology(FNAC) were confirmed to have granulomatous lymphadenitis.

The sensitivity and specificity in the present study was found to be respectively 91.17% and 73.04%. Similar studies by Shrestha D *et al.*,2010 found sensitivity and specificity to be 85.7% and 94.8% and Malakar D *et al.*,1990 found sensitivity and specificity to be 79.1% and 94% .

## 6. Conclusion

Tuberculosis remains a common cause in patients with cervical lymphadenopathy. The presenting clinical features may be difficult to differentiate Tubercular and

non tubercular lymphadenitis. Fine Needle Aspiration Cytology (FNAC) is a highly specific tool in the diagnosis of Tubercular lymphadenitis and surgical excision may be avoided at many instances. Therefore the take home message is that patients with enlarged lymph nodes (commonly cervical) i.e. cervical lymphadenopathy should approach the doctor soon so that fine needle aspiration cytology (FNAC) may report a diagnosis of Tuberculosis and treatment may be started early to cure the patient

completely with a minimum expense. Regularity and complete medical treatment will kill the organisms and patients may reach back to lead a healthy and normal life.

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