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The importance of CBNAAT along with FNAC in the diagnosis of extra pumonary tuberculosis. A two-year study

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Abstract

In India, EPTB constitutes about 10-15% of total TB cases which involve primarily the pleura, lymph nodes, gastrointestinal tract and other organs with a significant case mortality rate (25 to 50%). Fine needle aspiration cytology (FNAC) is one of the simple and rapid diagnostic technique, but it is having low specificity. Due to these limitations, we need another diagnosing modality so in December 2010, WHO endorsed CBNAAT/Gene Xpert MTB/RIF1(Cepheid, USA) for use in TB laboratories.

Aims & Objectives - To emphasize the importance of CBNAAT along with FNAC in correct diagnosis of extrapulmoary tuberculosis.

Method - The above study was conducted in the Department of Pathology, Mahatma Gandhi Memorial Medical College and M.Y. Hospital, Indore. All the patiets having peripheral lymphadenopathies and features of extrapulmonary tuberculosis should be included in this study.

Result - The present study supports combined use of FNAC and CBNAAT for early diagnosis of tuberculosis.

Conclusion - The present study highlights the utility of CBNAAT from FNAC material as an adjuvant in the diagnosis of Tuberculosis lymphadenopathy as it improves the diagnostic efficacy mostly in the suspected cases of tuberculosis.

Keywords: Extrapulmonary tuberculosis, CBNAAT, FNAC, Lyphadenopathies

Introduction

Tuberculosis most commonly affects the lungs but it can also affects the other sites, a form known as extrapulmonary Tuberculosis [1]. In India, EPTB constitutes about 10-15% of total TB cases which involve primarily the pleura, lymph nodes, gastrointestinal tract and other organs with a significant case mortality rate (25 to 50%).[2] In 2003 a total of 9312 patients were diagnosed with tuberculosis and 18.35% were in extrapulmonary sites. A 34% of them had tuberculous lymphadenitis.[3]

There is no single diagnostic test is available which satisfy to all the demand of rapid, affordable and easy confirmatory test. Diagnosis of Extra Pulmonary TB (EPTB) still remains challenging, since the number of Mycobacterium Tuberculosis Bacilli (MTB) present at the site of diseased tissue is often low and sample from deep-seated organs are difficult to obtain. Histology is time- consuming and remains difficult to undertake and establish the diagnosis of TB with high specificity [4]

Laboratory investigations which are used – CBC, erythrocyte sedimentation rate (ESR), fine needle aspiration cytology (FNAC), histopathology (HPE) of samples, and Mantoux test, Zeihl- Neelsen (ZN) smear, culture.

CBNAAT is one of the latest techniques used to amplify Mycobacterium Tuberculosis specific sequence of the genes. X-pert assay detects

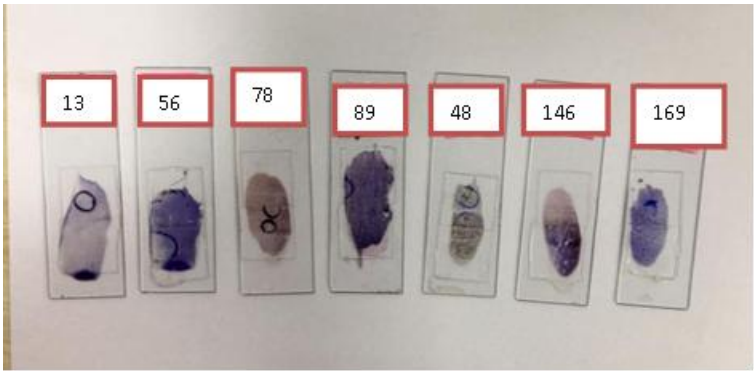
Tuberculosis with high sensitivity of >97% and specificity of 99.2 %. WHO recommends Gene X-pert (CBNAAT) to be used as initial diagnostic test in patients suspected of having tuberculosis. [5]

Aims & Objectives - To emphasize the importance of CBNAAT along with FNAC in correct diagnosis of extrapulmoary tuberculosis.

Method - The above study was conducted in the Department of Pathology, Mahatma Gandhi Memorial Medical College and M.Y. Hospital, Indore. All the patiets having peripheral lymphadenopathies and features of extrapulmonary tuberculosis should be included in this study.

1. In this study the subjects selected will be the patient referred from OPD, IPD and pulmonary medicine of M. Y. Hospital Indore.
2. Patient"s informed consent will be taken.
3. After that proper clinical examination and detailed history will be obtained.
4. Cases presented with the swelling (lymphadenopathies) were subjected first to FNAC.
5. Then the aspirated material is spread over the slide.
6. The extra aspirated material send for CBNAAT. Aspirated material mixed in a vial containing I ml normal saline.

Result And Observation – smear preparation



DIAGNOSTIC PERFORMANCE OF CBNAAT VERSUS FNAC

	FNACPOSITIVE	**FNAC NEGATIVE**	**TOTAL**
CBNAATPOSITIVE	54	21	75
CBNAAT NEGATIVE	**69**	32	101
TOTAL	123	53	176

Table showing that out of 123 cases 54 were positive for CBNAAT

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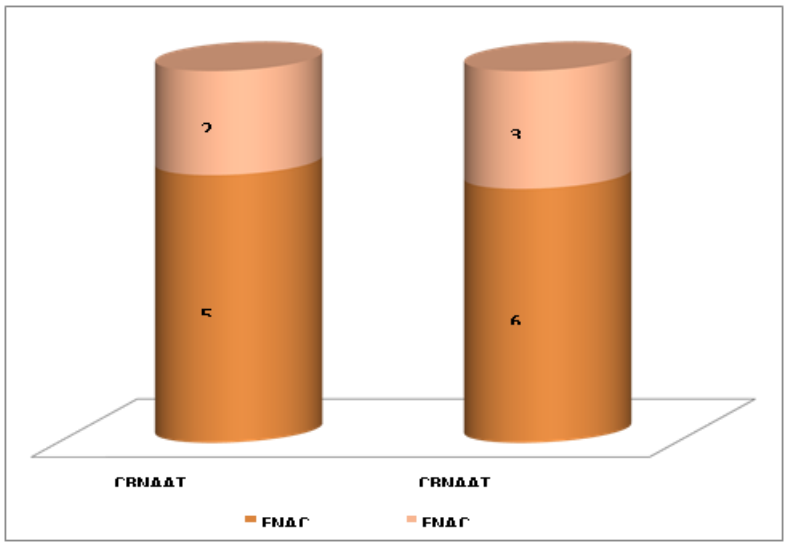

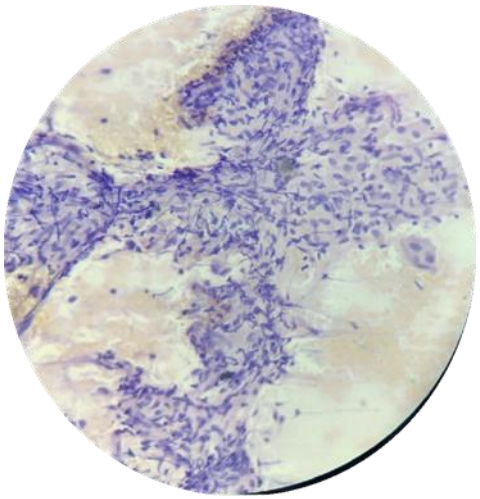

cytological smear shows (40x view) granuloma comprising of epetheloid cells, fibroblast, lymphocytes and few plasma cells features are cof granulomatous lesion (granuloma without necrosis)

COMPARISION OF CYTOMORPHOLOGICAL DIAGNOSIS WITH CBNAAT RESULTS

CYTOMORPHOLOGICAL OR FNA DIAGNOSIS	NO. OF CASES	CBNAAT POSITIVE	CBNAAT NEGATIVE
GRANULOMATOUS LESION	**123**	**54 (43.9%)**	**69 (57%)**
ABCESS	06	06	0
INFLAMMATORY LESION	19	13	06
REACTIVE HYPERPLASIA OF LYMPH NODE	07	01	06

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METASTATIC DEPOSITS OF SCC AND MALIGNANT LESION	15	00	15
OTHER	06	01	05
TOTAL	176	75	101

Table showing statistically significant (P VALUE - .0001) therefore null hypothesis rejected. There is significant difference among different cytomorphological diagnosis with CBNAAT. CBNAAT positive in 54 out of 123 cases (sensitivity- 43.9%)

Discussion - Comparision of CBNAAT positivity with other study

Cytomporphological diagnosis	**CBNAAT positivity in Present study**	**Subhan Ali R et al[6]**
Granuloma with necrosis	**46 (45%)**	21%
Granuloma without necrosis	**3 (21%)**	14%
Only necrosis	2(50%)	66%

In present study CBNAAT was found positive in 43.9% cases among FNAC positive cases whereas overall positivity is 42.6% which is compared with other studies as below

Comparison of CBNAAT sensitivity of different studies with our study

Shakeel et al[7]	36.3%
Gour et al[8]	40%
Srwar et al	51.7%
Moure et al[10]	58.3%
Gupta et al[11]	59.8%

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Conclusion

FNAC as we all know is a first line investigation in diagnosis of lymph node lesions. It as economical and provide high degree of accuracy in diagnosis The present study highlights the utility of CBNAAT from FNAC material as an adjuvant in the diagnosis of Tuberculosis lymphadenopathy as it improves the diagnostic efficacy mostly in the suspected cases of tuberculosis. CBNAAT did not diagnose more case of TB than FNAC however it is significant for diagnosis of TB especially in FNAC negative cases.

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