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ROLE OF CBNAAT IN DIAGNOSIS OF GENITAL TUBERCULOSIS IN WOMEN

Dr Simran Kousar* Senior Resident, Dept. of Obstetrics and Gynaecology, AIIMS, New Delhi. *Corresponding Author

Dr (Prof.) Anuradha Khanna Professor, Dept. of Obstetrics and Gynaecology, Institute of Sciences Banaras Hindu University, Varanasi.

ABSTRACT

Objective: Female genital TB referring to TB of the uterus, fallopian tubes and/or Ovaries. It poses a diagnostic dilemma because of its varied presentations and lack of sensitive and specific methods of diagnosis, though CBNAAT gives rapid result. India is a country sharing one fourth of the global incidence of tuberculosis. It is much easier to diagnose pulmonary cases, but challenges are with extrapulmonary cases. Genital tuberculosis is considered as an important cause of infertility in young females in India and difficult to diagnose. It requires incorporation of different modalities that should correctly, timely and rapidly diagnose the case. **Methods:** This study was conducted prospectively from October 2016 to June 2018 on 200 endometrial samples from reproductive age group females attending Obstetrics and Gynaecology OPD in obstetrics and gynaecology department of SSH, BHU. Nucleic acid amplification technique was done and their sensitivity in diagnosis of genital tuberculosis was ascertained. **Results:** Out of 200 samples, 1 samples were found positive with CBNAAT. Unlike Pulmonary TB, role of CBNAAT in the diagnosis of female genital TB is limited. **Conclusion:** Infertility in young female per se is usually heart breaking and distressing. Therefore, it is essential to diagnose and treat the cases of genital tuberculosis before irreversible damage of tube may happen. Although, advancement in diagnostic field is there from microscopy to molecular method, but still diagnosis of genital tuberculosis is challenging. Correct diagnosis prevents young female from mental trauma and toxicity of anti-tuberculosis drugs given on suspicion in high prevalence country like India.

INTRODUCTION:

Although genital tuberculosis is prevalent worldwide but still a diagnostic dilemma, so different markers from clinical to lab investigation and procedure (laparoscopy & hysteroscopy) are required. The global prevalence of genital tuberculosis has been increased from 22 million cases in 1995 to 1.86 billion cases in 2005, with a rate of 5-10% in infertility clinics; condition is endemic in India with a prevalence of 3-39%[1]. Genitourinary TB is a common form of extra-pulmonary TB (EPTB) worldwide (27%) with genital TB alone accounting for 9 per cent of all EPTB cases[2]. However, the burden of genital TB in females is underestimated as most of the patients are asymptomatic and usually diagnosed during evaluation for infertility. A study on FGTB among patients with infertility from India has shown an incidence of 3-16 per cent[3]. Higher rates have been reported from tertiary referral hospitals in India probably due to referrals from different parts of the country for the diagnosis and management of difficult and complicated cases[4]. A study among women with infertility registered for *in vitro* fertilization in north India reported the prevalence of genital TB in patients with tubal factor infertility as 48.5 per cent[5]. A survey by the Indian Council of Medical Research (ICMR) reported that prevalence of FGTB in India has increased from 19 per cent in 2011 to 30 per cent in 2015. A multicentric ICMR study team is working on developing a nationally applicable algorithm for diagnosis and management of FGTB (Indian Scientists Developing Diagnostic Algorithm for Female Genital TB. This study was done to assess the role of CBNAAT in diagnosis of genital Tuberculosis in women.

MATERIALS AND METHODS:

This study was conducted prospectively from October 2016 to June 2018 on 200 endometrial samples from reproductive age group females attending Obstetrics and Gynaecology OPD in obstetrics and gynaecology department of SSH, BHU. Nucleic acid amplification technique was done and their sensitivity in diagnosis of genital tuberculosis was ascertained.

Inclusion criteria:

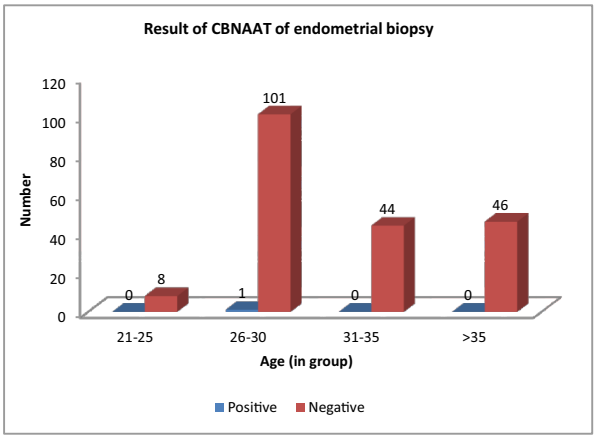
1. Patient attending Gynaecology. OPD and ward of obstetrics and gynaecology department of SSH, BHU
2. In reproductive age group with features suggestive of GTB diagnosed clinically, laboratory tests, radiologically, histopathologically with or without history of infertility.
3. With history of tuberculosis in family and contacts.
4. With history of tuberculosis in past including GTB or of some other type without treatment.

Exclusion criteria: All those who had history of ATT intake in past 3 years.

Statistical Analysis: Appropriate statistical analysis has been carried out to analyse case data. Collected data were analysed by chi square test, independent student T-test and other statistical test. p-value of less than <0.05 is taken as significant.

RESULTS:

Age	Number of cases	Positive	Negative	Chi-square value	P-value
21-25	8	0	8		
26-30	102	1	101		
31-35	44	0	44	0.966	0.81
>35	46	0	46		
Total	200	1	199		



Total 200 women of different age groups from 20-40 years

were enrolled for the study with clinical features of genital TB, supported with TB suggestive test like ESR / Hysterosalpingography/ laparoscopy/ hysteroscopy. All cases underwent Cartridge Based Nucleic Acid Amplification Test (CBNAAT).

Only one case showing CBNAAT positive of endometrial biopsy. So CBNAAT can not be considered as a diagnostic tool, so we still need other test.

DISCUSSION:

CB-NAAT (Cartridge Based Nucleic Acid Amplification Test) is a heterogenous group of tests that use either the Polymerase Chain Reaction (PCR) Technique or Transcription Mediated Amplification (TMA) or other forms of nucleic acid. These tests vary in which sequence they detect and varying their accuracy.

The two most common commercially available tests are the amplified mycobacterium tuberculosis direct test (MDT-Gen probe) and Amplicor (Roche diagnostic).

- Detects TB in few hours compared to culture.
- Provide results within 2 hours.
- Greater positive predictive value (>95%), diagnostic sensitivity 50%, specificity 100% and negative predictive value 98%.
- Currently available in India as Xpert MTB/RIF (aka GeneXpert)
- More rapid lab test, detects disease at early stage, early management of TB, Hence improved outcome, Prevents Inappropriate treatment, early management of TB related infertility (a major concern).

It is Cartridge based- closed system automated processing, so less prone to contaminate on it involves Real time PCR-involves 2 sets of primers (for Mtb and for Rif resistance) use in two successive runs of polymerase chain reaction. It also detects resistance to INH along with rifampicin but It is done only in smear positive cases So, sensitivity became less. It requires atleast 200 TB bacilli for the test to be positive. It is useful in diagnosis of multidrug resistance TB. WHO approved sample for CBNAAT- sputum, CSF, Lymph node and other limited tissue. Still no recommendation on use of gene x-pert for genital sample (WHO 2013). Until now majority of work of CB-NAAT has been done for pulmonary TB taking specimen of sputum or other respiratory content for diagnosis.

In our study CBNAAT was performed in 200 cases but only 1 case was positive. That case also had pulmonary TB. This CBNAAT positive cases refused laparohysteroscopy due to financial reason. Comparing the results of these 2 advanced TB test for genital TB we found that cases with positive CBNAAT had positive TBPCR also.

CONCLUSION:

High index of suspicion for FGTB is must for diagnosis. Unlike Pulmonary TB, role of CBNAAT in the diagnosis of female genital TB is limited. Clinical diagnosis is still the most important way of diagnosing FGTB. Although, advancement in diagnostic field is there from microscopy to molecular method, but still diagnosis of genital tuberculosis is challenging.

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