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Endometrial Fluid study for prevalence of tuberculosis by testing for diagnosis by CB NAAT culture

U Tripathi[1], Mitali Gupta[2,*], Neha katare[1], Saurabh Kumar Singh[3]

[1]*Dept. of Obstetrics and Gynaecology, Gajara Raja Medical College, Gwalior, Madhya Pradesh, India*
[2]*Dept. of Obstetrics and Gynaecology, S.P. Medical College, Bikaner, Rajasthan, India*
[3]*Dept. of Pulmonary Medicine, Gajara Raja Medical College, Gwalior, Madhya Pradesh, India*

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ABSTRACT

Background: The frequency of Genital TB is 0.69% in evolved nations and 19% in non-industrial nations. The fallopian tube is most regularly influenced followed by endometrium and cervix. It is optional to TB concentrate somewhere else in body brought about by Mycobacterium Tuberculosis. History of essential fruitlessness in a lady whose assessment uncovers no evident reason and gives family ancestry or individual history of TB emerges doubt of genital TB.
Objective: 1: To study the prevalence rate and risk factors for endometrial TB in infertile females; 2: To study clinical and reproductive profile of women diagnosed with endometrial TB; 3: To study the importance of CB NAAT over other diagnostic tests in diagnosing TB.
Design: Hospital based cross sectional study done on 100 subjects for one and a half year (June 2017 to July 2019).
Setting: Labour room. Minor OT. OPD
Procedure: 2-5 ml endometrial fluid was retrieved on day 1/2 of menses using pipelles cannula. It was transferred to falcon tube and CB NAAT analysis was done using cartridge.
Results: Out of 100 cases, 4 were detected to be positive for endometrial TB. Out of them, 3 fell in age group of 30-39 years; all belonged to upper middle socioeconomic status. 3 cases had achieved menarche at >14 years of age and one had oligomenorrhoea.
Outcome Measure: Number of patients testing positive for endometrial TB by CB NAAT Culture.
Conclusion: Genital TB is a major cause of infertity and is generally underestimated because of asymptomatic nature of infection and diagnostic challenges. Large multicentric studies are needed to estimate the magnitude of female genital TB. Our study confirmed the usefulness of CB NAAT compared to Chest X-ray and smear microscopy for early diagnosis of suspected endometrial TB. Its simplicity, sensitivity, speed and automation makes this technique a very attractive tool for diagnosis of mycobacterial TB.

1. Introduction

TB stays a significant medical issue in many agricultural nations though genital TB is liable for a critical extent of females who present with fruitlessness. TB influences right around half of the populace in Third World countries.[1–3] The pervasiveness of extra pulmonary TB in India is 20%. Commonness of genital TB is 9-10% of extra pulmonary TB. The fallopian tube is influenced in practically every one of the cases followed by endometrium and cervix.[4,5] It happens in the most monetarily beneficial age of 15-45 years causing fruitlessness in 44-74% of people influenced.

* *Corresponding author*.
E-mail address: mitaligupta1604@gmail.com (M. Gupta).

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A background marked by essential fruitlessness in a lady in whom assessment uncovers no evident reason and who gives a family ancestry or individual history of TB ought to excite doubt of genital TB.[6–8] The historical backdrop of helpless general wellbeing which is persevering over months or years and related with weight reduction, unnecessary exhaustion, second rate fever, or obscure lower stomach inconvenience is regularly found in patients with genital TB. Cartridge based nucleic corrosive intensification test (CBNAAT), explicit for mycobacterium tuberculosis, has been as of late presented for discovery of TB.[9–11] It has an additional benefit of identifying rifampicin opposition as it focuses on the rpoB quality of mycobacterium, which is the basic quality related with rifampicin resistance.[12,13]

2. Materials and Methods

The study was presented to Institutional Ethical Committee (IEC) for ethical clearance, after getting clearance form IEC the study was started. The data were collected from the women using a semi structured questionnaire. The socio-demographic factors will be taken by direct interview. After enrolment, detailed history was obtained regarding demographic details, gynaecological symptoms, and past history of TB. Details of previous investigations and treatment were noted to rule out other causes of infertility. Explanation of procedure to all women participating in study was done. Consent from every women participating in this study was taken after telling the patient to urinate for the purpose of bladder evacuation, the patient was put in dorsal position, Sim's posterior vaginal wall speculum was used to visualise the cervix and vagina. Anterior lip of cervix held with vulsellum. The endometrial fluid was obtained through the use of pipelle's cannula which was inserted through the cervix into the uterine cavity. By twirling the cannula while moving it in and out, the fluid was aspirated and collected into a sterile glass vial containing normal saline. Similarly, multiple samples were aseptically collected and stored at 28oC until transport. All these samples had to be transported within 4 hours of collection. Approximately 2-5 ml sample was collected for each case preferably on day 1 or day 2 of menses. The sample was then transferred to Falcon tube. Each falcon tube was labelled indicating name of the patient, type of fluid, patient Central Registration number and date of collection of fluid. After the above procedure, CB NAAT sampling, the procedure was done.

2.1. *Inclusion criteria*

1. All cases of infertility who are suspected to have endometrial TB i.e. having manifestations of endometrial TB.
2. All cases of infertility whether primary or secondary infertility.

Fig. 1: Falcon tube

Fig. 2: CB NAAT Machine

2.2. *Exclusion criteria*

1. Critically ill patients and those who are not willing to give consent.
2. Those who underwent surgery or are currently taking treatment for ATT.

3. Results

Out of 100 cases selected of infertility, maximum number of cases fell in the range of 20-29 years of age. This age group corresponds to the middle of the reproductive age group. About one fourth of the cases fell in the range of 30-39 years of age group while none of the infertile patients were noticed above the age of 50 years. Out of these 100 cases,

4 were detected positive for endometrial TB by CB NAAT. Out of these 4, 3 were found in the age group of 30-39 years and one in the age group of 20-29 years.

Table 1: Distribution of cases according to age

Age groups (yrs)	No of cases	Percentage	Positive for CB NAAT
20-29	72	72	1
30-39	26	26	3
40-49	2	2	0
50-59	0	0	0
>60	0	0	0

TB and socioeconomic status are closely linked. Malnutrition, overcrowding, poor air circulation and sanitation factors associated with socioeconomic status increase both the probability of becoming infected and the probability of developing clinical disease. Out of 100 infertility cases, maximum belonged to upper middle class (92%) i.e a score of 16-25 on kuppuswamy scale, while only few (8%) belonged to lower middle class (a score of 11-15) on kuppuswamy scale. Also out of 4 positive cases, maximum (75%) belonged to upper middle class and only one (25%) was from lower middle class.

Kuppuswamy scale considers three parameters – education of head of the family, occupation of the head of the family and monthly income of the family.

Table 2: Socioeconomic status

Socioeconomic status	No of cases	Percentage	Positive for CBNAAT
Upper	0	0	0
Upper middle	92	92	3
Lower middle	8	8	1
Lower	0	0	0

4. Discussion

A total of 100 cases were selected for the study. These cases were comprised of infertility cases (whether primary or secondary) or those manifesting the signs or symptoms of endometrial tuberculosis e.g. menorrhagia, oligomenorrhoea, metomenorrhegia, lymphadenopathy, anemia and underweight. Out of which, 4 cases came out to be positive for endometrial TB by CB NAAT culture.[14–16] They had no evidence of pulmonary TB as shown by their Chest X Ray and other modalities. This clearly shows that CB NAAT is more sensitive than other tests. In each group, age, marital life, socioeconomic status, age at menarche as well as at first intercourse were analysed for any co relation between CB NAAT positive and CB NAAT negative patients. Our study findings suggest that CB NAAT has higher sensitivity for detection of extra pulmonary TB.[17–19] The WHO 2012 has also recommended the CB NAAT for routine use under programmatic conditions. In our study, there is statistically significant relationship between CB NAAT positive patients and socioeconomic status. The association between poverty and health is well documented.[20,21] The founders of social medicine have established the powerful relationship of poverty and ill health that was attributed to abysmal housing, overcrowding, insanitation and poor working conditions.[22]

5. Conclusion

It is clearly evident from our study that the majority of patients were from upper middle class and their education was up to primary class. CB NAAT has detected 4 positive cases while Chest x-ray was not sensitive and could not detect even a single case as positive. CB NAAT detects endometrial TB with greater efficacy than other modalities, also helping in early diagnosis in less than 2 hours. It also detects rifampicin resistance with high specificity and can be used for screening for MDR TB so that early therapy can be started thus decreasing the incidence of MDR TB. WHO recommends CB NAAT for diagnosis of pulmonary and extra pulmonary TB. Genital TB is a significant reason for fruitlessness in ladies and predominance is by and large disparaged in view of the asymptomatic idea of the contamination and analytic difficulties.

Genital TB is an ignored sickness, a vague clinical picture and restricted traditional test represent this issue. Conclusion is troublesome and as often as possible deferred prompting significant effect on the genitourinary parcel system.[23]

Enormous multi centric considers are expected to appraise the size of FGTB and to recognize the most delicate test for determination. Clinicians should know about this significant reason for barrenness and feminine brokenness in ladies. Evaluating for genital TB should be a piece of assessment of fruitlessness and feminine abnormalities.[24]

The greater part of the patients present in cutting edge stage with scarring, extreme fibrosis and grips and treatment results, particularly as to fruitlessness are poor. Thus early finding and right treatment is fundamental to keep away from difficulties and to re-establish richness.

Our examination affirmed the convenience of the CB NAAT contrasted with chest x-beam and smear microscopy for the early conclusion of suspected endometrial TB. Its straight forwardness, affect ability speed and mechanization make this method an alluring instrument for conclusion of mycobacterium tuberculosis.

6. Conflict of Interest

No conflict of interest.

7. Source of Funding

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Author biography

U Tripathi, Associate Professor

Mitali Gupta, Senior Resident

Neha katare, Senior Resident

Saurabh Kumar Singh, Associate Professor

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