Archives of Anesthesiology and Critical Care (Summer 2022); 8(3): 226-229.

Available online at http://aacc.tums.ac.ir

Research Article

Female Genital Tuberculosis in Infertile Women

Marina Mustafa[1], Bilqees Amin[2], Saima Gayas[3]*

[1]*MMC Watlar, Ganderbal, Jammu and Kashmir, India.*

[2]*District Hospital, Ganderbal, Jammu and Kashmir, India.*

[3]*SDH Kangan, Ganderbal, Jammu and Kashmir, India.*

ARTICLE INFO

Article history:
Received 09 December 2021
Revised 01 January 2022
Accepted 22 January 2022

Keywords:
Genital;
Tuberculosis (TB);
Infertile

ABSTRACT

Background: Keeping in view the endemicity of tuberculosis in Jammu and Kashmir and the lack of information about the prevalence of Female Genital TB, this study was primarily undertaken to diagnose the genital tuberculosis in infertile women and to determine the utility of the existing standard diagnostic tests in our hospital.

Methods: A prospective cross-sectional study was conducted over a period of 1 year. A total of 500 women attended Gynaecology OPD to evaluate the incidence of genital tuberculosis using CBNAAT (Cartridge based nucleic acid amplification test) and culture to diagnose female genital tuberculosis.

Results: Majority of the respondents (82.35%) were having primary infertility. Majority of the respondents (91.20%) were negative for genital tuberculosis and followed by positive patients for genital tuberculosis (8.80%). the sensitivity and specificity for CBNAAT (Catridge Nucleic Acid Amplification) samples 82.40% and 100% respectively while as, the sensitivity and specificity for microscopic culture (Ziehl Neelsen) were 37.84% and 98.20% respectively.

Conclusion: FGTB is a prevalent condition, particularly among infertile women. Early detection and treatment can lead to successful pregnancies. Individualization, counselling, and a multidisciplinary approach will produce greater results in the advanced stages. ART should only be provided to a select few patients after establishing that the disease is dormant, as hormonal treatment of ART can result in disease reactivation, which is highly counterproductive.

Tuberculosis (TB) continues to be a serious public health issue across the world, with 10 million people contracting active TB each year and 1.33 million people dying1. The majority of tuberculosis deaths (85%) occur in poor nations, particularly Asia (55%) and Africa (30%), with the majority of cases (75%) occurring in the 15-45year age group1. Multidrug-resistant (MDR) and extensively drug-resistant (XDR) tuberculosis, both of which have a high morbidity and death rate, are serious concerns [1].

In 1993, the World Health Organization (WHO) proclaimed tuberculosis (TB) to be a global emergency and proposed the Directly Observed Treatment Short-course (DOTS) to combat the illness worldwide, particularly in poor countries [2]. By the end of 2005, India's Revised National TB Control Programme (RNTCP) had implemented the DOTS across the country, identifying nearly 71% of cases and treating over 87 percent of them, resulting in a seven-fold reduction in mortality [3].

Morgagni originally described female genital TB (FGTB) in 1744 on the autopsy of a young woman who died of TB peritonitis [4]. FGTB, a form of extrapulmonary tuberculosis (EPTB), is becoming more common in young women over the world [5-7]. Menstrual disorder and infertility are caused by the FGTB in women [6,8-11]. Early identification and appropriate combination therapy regimens with acceptable medication doses can help these women avoid further harm and infertility [8-11].

The authors declare no conflicts of interest.

*Corresponding author.
E-mail address: saimagayas648@gmail.com

Infertility is a global health issue affecting approximately 8-10% of couples. It is a multidimensional problem with social, economic and cultural implications, which can take threatening proportions in countries with strong demographic problems, such as India. Female genital tuberculosis can lead to infertility. Keeping in view the endemicity of tuberculosis in Jammu and Kashmir and the lack of information about the prevalence of Female Genital TB, this study was primarily undertaken to determine the prevalence of genital tuberculosis in infertile women and determine the utility of the existing standard diagnostic tests in our hospital.

Aims and Objectives:

The aim and objective of our study is "to compare the results of different diagnostic methods used in screening for female genital tuberculosis in infertile women attending Gynecology OPD".

Methods

A prospective cross-sectional study was conducted over a period of 1 year. A total of 500 women attended Gynaecology OPD to evaluate the incidence of genital tuberculosis using CBNAAT (Cartridge based nucleic acid amplification test) and culture to diagnose female genital tuberculosis.

The data was obtained from the women using a semi-structured questionnaire. Direct interviews were used to collect socio-demographic information. Following registration, a thorough history was obtained, which included demographic information, socio-economic status, education status, gynecological complaints, numerous risk factors, and a tuberculosis history (TB). Previous tests and therapy were documented in order to rule out alternative causes of infertility. All women were given an explanation of the method, and their consent to participate in this study was obtained. Following a medical and gynecological examination, all patients were subjected to the following investigations:

Blood tests: "

- CBC (Complete Blood Count)
- PBF (peripheral blood Film)
- ESR (Erythrocyte Sedimentation Rate)

- Mantoux (Tuberculin) test (poor sensitivity and specificity)
- Chest X-ray- PA view
- USG - PELVIS and TVS (Transvaginal sonography)
- HIV I AND II tests and VDRL
- Endometrial biopsy, curettage or aspirate- Premenstrual Endometrium sample taken (with help of pipelle's sampling curette) for CBNAAT and Culture
- Histopathology examination (HPE)
- Culture using Lowenstien- Jensen (LJ) medium
- Molecular methods - CBNAAT (Cartridge Based Nucleic Acid Amplification Test/ Gene Xpert)

Inclusion criteria

- Women attending gynaecology outpatient department with following criteria:
  - All participants were Kashmiri women
  - Age 20 to 45 years
  - Women with history of infertility, primary or secondary.
  - Married for >1 year and living with husband

Exclusion criteria

- The presence of any infertility factor other than Genital TB such as
  - PCOS
  - Hyper-prolactinemia
  - Hypothalamic amenorrhea
  - Premature ovarian failure/ Premature ovarian insufficiency
  - Ovarian tumor
  - Patients having history of ovarian surgery or complication with endometriosis or pelvic adhesions.

Statistical analysis

Statistical software SPSS and Microsoft Excel was used to carry out the statistical analysis of data. Chi-square test used for qualitative data whenever two or more than two groups was used to compare. Level of significance was set at $P \leq 0.05$.

Results

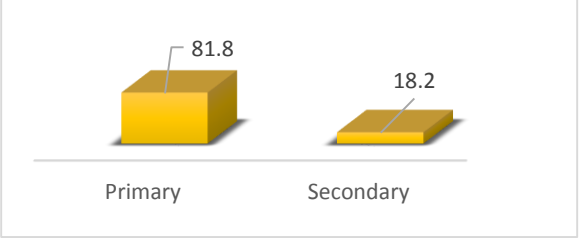
Table 1- Results of specific diagnostic tests on endometrial samples

Tests	No. of samples	Positive result (%)
Histopathological examination (HPE)	500	Nil
AFB smear	500	Nil
Culture	500	32 (6.40)
GeneXpert	170	18 (7.65)

Table 2- Distribution of confirmed cases of genital tuberculosis among primary and secondary infertile patients

Infertility	Frequency (N)	Percentage (%)
Primary	36	81.80
Secondary	8	18.20
Total	44	100

Figure 1- Percentage distribution of confirmed cases of genital tuberculosis among infertile patients

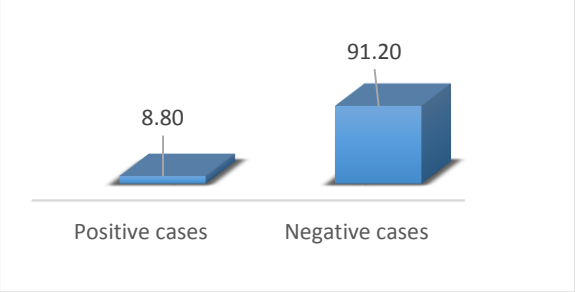


Inference: The data presented in (Table 1,2) reveals that majority of the respondents (82.35%) were having primary infertility and followed by patients from secondary infertility (17.65%). Statistically Frequency distribution is not uniform (P value<0.01).

Table 3- Distribution of Positive and Negative cases among the under studied population

Infertility	Frequency (N)	Percentage (%)	Prevalence
Positive cases	44	8.80	8.80
Negative cases	456	91.20	
Total	500	100	

Figure 2- Percentage distribution of Positive and Negative cases among the under studied population



Inference: The data presented in (Table 3) reveals that majority of the respondents (91.20%) were negative for genital tuberculosis and followed by positive patients for genital tuberculosis (8.80%). Statistically Frequency distribution is not uniform (P value<0.01). The overall prevalence of the under studied population was 8.80.

Table 4- Comparison of culture positive in Microscopy and CBNAAT

Culture Positive Specimens (148)	
MICROSCOPY Positive	56
MICROSCOPY Negative	92
CBNAAT Positive	122
CBNAAT Negative	26

Inference: The data presented in (Table 4) reveals that 148 of the confirmed samples, in culture confirmed samples 122 were detected positive by CBNAAT and 56 were detected positive by microscopy.

Table 5- Sensitivity and Specificity in CBNAAT and Microscopy

	Samples	
	MICROSCOPY	CBNAAT
Sensitivity	37.84%	82.40%
Specificity	98.20%	100%

Inference: -The data presented in (Table 5) reveals that the sensitivity and specificity for CBNAAT (Catridge Nucleic Acid Amplification) samples 82.40% and 100% respectively while as, the sensitivity and specificity for microscopic culture (Ziehl Neelsen) were 37.84% and 98.20% respectively.

Discussion

A total of 500 patients with infertility were taken in the study. An overview of the literature reveals that, "infertile patients with genital tuberculosis is an epidemic in the whole world and is believed to get worse at the end of this decade. Given this hard fact and looking towards the data available, it is evident that scanty references are available on this aspect and with this idea the present study was undertaken".

Specific Diagnostic Tests on Endometrial Samples: During the present study various diagnostic test were done to determine the positive cases of the genital tuberculosis among infertile women. In culture (6.40%) were reported the positive cases and also by GeneXpert method (7.65%) were the positive case of this disease. This is in agreement with the previous studies. This finding is in conformity with the incidence of GTB was reported to be 2%, similarly, 2.08% in their study and reported incidence of GTB in females as 1.25% [12-14].

Confirmed cases of Genital Tuberculosis among Infertile Women: During the current study the total number of the respondents were 500 in which total 44 confirmed cases were reported 36 cases from the primary infertility and 8 cases from secondary infertility. This is in agreement with the previous studies. Our results were comparable to Sharma et al. [12] and Patel et al. [13]. Other studies which were comparable to our study reported infertility as main symptom in 52.5% and 58.3% of GTB cases respectively (132,147). The result of present study was in conformity (44%) and (70.6%) were reported of females with GTB showing primary infertility [13,15].

"In a cross-sectional study conducted in 2004 entailing a population of more than 495,000 women, the five-year primary infertility incidence was 18.8%, and secondary infertility was 0.8%-21.6% [16]. The current infertility incidence was 14.2% in an Indian survey in 2007 [17]. Cumulative and current infertility incidences were 24.9% and 3.4%, respectively, in a study of 10,783 women in Iran in 2009 [18]. Canada surveyed 4,412 women in 2010 and described a 15.6% current infertility incidence [19]. The infertility incidence in 2,151 newly married couples in China was 14.2% in 2012 [20]".

On the basis of laboratory testing, a total of 44 (14.6 percent) women were diagnosed with genital tuberculosis. Infertile patients had a very high frequency of FGT (20%), according to the study. The incidence of infertility in China was 12.1 percent, which was similar to earlier findings [2,16]. This might be explained by the fact that medical conditions in these rural regions are still behind, women's self-care is inadequate, and women are more likely to have infertility.

Conclusion

FGTB is a prevalent condition, particularly among infertile women. Early detection and treatment can lead to successful pregnancies. Individualization, counselling, and a multidisciplinary approach will produce greater results in the advanced stages. ART should only be provided to a select few patients after establishing that the disease is dormant, as hormonal treatment of ART can result in disease reactivation, which is highly counterproductive.

Limitations

This study had certain selection biases, which are discussed in this section. The study sample was obtained from a single obstetrics and gynaecology facility. One single centre may not be indicative of all genital tuberculosis in infertile clients in the Kashmir valley, especially given significant cultural disparities between different locations.

This study was carried out with limited resources and time. Furthermore, the researcher was not working full-time at the hospital during the trial, thus close observation and substantial contact with the clients were limited.

References

[1] World Health Organization. WHO global tuberculosis report 2018. Geneva: WHO; 2018.

[2] World Health Organization. WHO report on the TB epidemic. TB a global emergency. WHO/ TB/ 94.177. Geneva: WHO; 1994.

[3] New Delhi: Ministry of Health and Family Welfare; 2018. Central TB Division, Directorate General of Health Services. India TB. Report: Revised National Tuberculosis Control Programme: Annual status report.

[4] Morgagni JB. [De Sedibus et Causis meorboram] Epistola. 1744; 30:34.

[5] Pesut D, Stojsić J. Female genital tuberculosis--a disease seen again in Europe. Vojnosanit Pregl. 2007;64:855–8.

[6] Grace GA, Devaleenal DB, Natrajan M. Genital tuberculosis in females. Indian J Med Res. 2017; 145:425–36.

[7] Golden MP, Vikram HR. Extrapulmonary tuberculosis: An ov erview. Am Fam Physician. 2005; 72:1761–8

[8] Kumar S, Sharma JB. Female genital tuberculosis. In: Sharma SK, Mohan A, editors. Tuberculosis. 3rd ed. Delhi: Jaypee; 2015. pp. 362–71.

[9] Neonakis IK, Spandidos DA, Petinaki E. Female genital tuberculosis: A review. Scand J Infect Dis. 2011; 43:564–72.

[10] Sharma JB. Tuberculosis and obstetric and gynecological practice. In: Studd J, Tan SL, Chervenak FA, editors. Progress in obstetrics and gynaecology. Vol. 18. Philadelphia: Elsevier; 2008. pp. 395–427.

[11] Sharma JB. Current diagnosis and management of female genital tuberculosis. J Obstet Gynaecol India. 2015; 65:362–71.

[12] Sharma P, Mehta M, Dhanjal DS, Kaur S, Gupta G, Singh H, et al. Emerging trends in the novel drug delivery approaches for the treatment of lung cancer. Chem Biol Interact. 2019; 309:108720.

[13] Patel S, Dhand PL. Hospital based study on female genital tuberculosis in Central India. Int J Med Res Review. 2016; 4(2):20-6.

[14] Srinivas Rao MS, Pavani K, Uma M, Krishna K, Vinayaraj EV, Dass M. To evaluate the prevalence of female genital tuberculosis in Hyderabad. Int J Res Med Sci. 2013; 1(4):421-3.

[15] Rana T, Singh UB, Kulshrestha V, Kaushik A, Porwal C, Agarwal N. Utility of reverse transcriptase PCR and DNA-PCR in the diagnosis of female genital tuberculosis. J Med Microbiol. 2011; 60(4):486-91.

[16] Chattopadhyay SK, Sengupta BS, Edrees YB, Al-Meshari AA. The pattern of female genital tuberculosis in Riyadh, Saudi Arabia. Br J Obstet Gynecol 1986; 93:367-71.

[17] Emembolu JO, Anyanwu DO, Ewa B. Genital tuberculosis in infertile women in northern Nigeria. West Afr J Med. 1993; 12:211-2.

[18] Margolis K, Wranz PA, Kruger TF, Joubert JJ, Odendaal HJ. Genital tuberculosis at Tygerberg Hospital — prevalence, clinical presentation and diagnosis. S Afr Med J. 1992; 81:12-5.

[19] Sivanesaratnam V, Lim BH, Sivanesan S, Menon A. Pelvic tuberculosis: an uncommon gynaecological problem in Malaysia. J Trop Med Hyg. 1986; 89:167-9.

[20] Shahzad, Khurram. "Understanding mechanisms of ketamine-induced human urinary tract damage." PhD diss., University of York, 2011.