



AN OBSERVATIONAL ANALYTICAL STUDY ON THE PREVALENCE OF FEMALE GENITAL TRACT TUBERCULOSIS AND ITS RELATION TO FEMALE INFERTILITY

Obstetrics & Gynaecology

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ABSTRACT

INTRODUCTION: Tuberculosis is an infectious disease caused by Mycobacterium species, which are the acid fast bacillus.

OBJECTIVES: The present study investigates the prevalence of genital tract tuberculosis among infertile women and its relation to infertility.

MATERIALS AND METHOD: The present study is an hospital based analytical and observational study. Department of gynecology and obstetrics, IPGMER hospitals. March 2018 to august 2020. 100 female patients with infertility.

CONCLUSION: In our study we reported 11 cases of female with genital tract tuberculosis, diagnosed during laparoscopy, confirmed by CBNAAT, conventional culture method and histopathological examination.

KEYWORDS

Mycobacterium species, Female genital tract tuberculosis and endometrium

INTRODUCTION

Infertility is a worldwide problem. World Health Organization has defined infertility as failure to conceive despite over 12 months of regular and unprotected intercourse. Primary infertility is the term used to describe a couple that has never been able to conceive, after a minimum of one year of attempting to do so through unprotected intercourse^{1,2}. Secondary infertility is the term used to describe a couple who has previously been able to achieve another pregnancy³.

Tuberculosis is an infectious disease caused by Mycobacterium species, which are the acid fast bacillus. Disease could be either primary that involves either the lungs (M. tuberculosis) or the intestines (M.bovis). Secondary tuberculosis may involve all organs systems of the body including genital tract⁴.

Female genital tract tuberculosis (FGTB) as a cause of infertility is uncommon in developed countries. It is one of the commonest causes of infertilities among developing countries⁵. It is therefore suggested that every patient consulting for infertility in developing countries should be investigated for female genital tract tuberculosis (FGTB). Predisposing factors include poverty, ill health, and immunosuppressant. In addition to infertility it gives rise to a number of sequel including chronic pelvic pain, ectopic pregnancy and pelvic adhesions.

The incidence of genital tuberculosis is higher than one might imagine, due to the lack of reports in the literature, and may account for a significant amount of female infertility. The incidence of FGTB, a type of extrapulmonary TB (EPTB) is increasing in young women globally^{6,7}. The FGTB causes menstrual dysfunction and infertility in women^{6,8}.

Early detection and suitable combination treatment regimens with adequate dosages of drugs can reduce damage and future infertility in these women⁸.

Frequency of involvement of genital organs is fallopian tubes 100%, endometrium 90%, ovaries 20%, cervix, vulva and vagina 1%.

OBJECTIVES

The present study investigates the prevalence of genital tract tuberculosis among infertile women and its relation to infertility.

MATERIALS AND METHOD:

Study design: The present study is an hospital based analytical and observational study.

Place of study: Department of gynaecology and obstetrics, IPGMER hospitals.

Period of study: march 2018 to august 2020.

Study population: 100 females who are fulfilling one or both the inclusion criteria and attending gynaecology OPD.

Sample size: 100 female patients with infertility.

INCLUSION CRITERIA:

1. Infertile women
2. Family history of tuberculosis

EXCLUSION CRITERIA:

1. Infertile husband
2. Women with PCOS

METHODOLOGY:

100 infertile women attending gynaecology outpatient department with chief complaints of infertility were enrolled in our study. Patients were scanned for possible presence of female genital tract tuberculosis by examination and relevant investigation. Various aspects like age, symptoms, signs, and socio-economic factors of the patients were evaluated.

Genital tuberculosis was diagnosed based on several imaging modalities. laparoscopic findings and culture and histopathological examination.

Outcome definition:

Prevalence of female genital tract tuberculosis and its relation to female infertility has been identified.

Data collection and interpretation:

Once the patient comes to IPGMER gynaecology OPD with chief complaints of infertility, and fulfills inclusion and exclusion criteria, she is asked to give an informed consent. Then a detailed history and examination was conducted and patient was admitted in the hospital for further evaluation. The maximum prevalence of FGT is observed in the 2nd and 3rd decades of life. The duration of infertility and contraception usage was also taken as a part of history. Detailed sexual history including timing and frequency of coitus, dyspareunia, coital difficulties and the menstrual irregularities (if any) were also noted. In case of secondary infertility, the history of previous pregnancies, postabortal and puerperal sepsis, ectopic pregnancy, ovulation induction, ovarian cystectomy or appendectomy were also recorded.

The patients will undergo the laboratory test of blood hemoglobin, total leukocyte count (TLC), differential leukocyte count (DLC-polymorph, lymphocytes, eosinophils, basophils), erythrocyte sedimentation rate (ESR).

HSG was done in all the patients to know the tubal patency. Baseline trans-abdominal ultrasound for uterus, ovaries and pelvic organs was

done. Laparoscopy was done to see the conditions of fallopian tubes, tubal potency, ovaries, tubo-ovarian masses and endometrial samples for HPE, CBNAAT and culture were obtained.

Table: Distribution of pelvic surgery, Hysterosalpingography and Endometrium for HPE

		Frequency	Percent
Pelvic surgery	Chocolate cystectomy	1	1.0%
	Myomectomy	1	1.0%
	No history of pelvic surgery	96	96.0%
	Unilateral simple cystectomy	1	1.0%
	Right sided partial salpingectomy for ectopic pregnancy	1	1.0%
	Total	100	100.0%
Hysterosalpingography	Bilateral beaded appearance of the tube	1	1.0%
	Bilateral cornual block	12	12.0%
	Hydrosalpinx	1	1.0%
	Normal spillage of the dye	86	86.0%
	Total	100	100.0%
Endometrium for HPE	normal	98	98.0%
	TB granuloma	2	2.0%
	Total	100	100.0%

RESULT AND DISCUSSION

Prevalence of tuberculosis has been reported variably from different parts of the world among different racial and ethnic groups. Compared to developed countries, genital tract tuberculosis is more prevalent in developing countries. In our study genital tract tuberculosis was prevalent in 11(11.0%) patients. **Grace GA et al** (2017) found that the morbidity and mortality due to tuberculosis (TB) is high worldwide, and the burden of disease among women is significant, especially in developing countries. **Mascarenhas MN et al** (2012) found that Infertility prevalence was highest in South Asia, Sub-Saharan Africa, North Africa/Middle East, and Central/Eastern Europe and Central Asia. The prevalence of genital tract tuberculosis in other studies were- **Shahzad** (2012) 42 as 20%, **Khanna and Agarwal** (2011) 52 as 26%, **Nadgouda et al** (2010) 10 as 10%.

In our study, proportion of patients with genital tuberculosis was significantly higher between 22 years and 35 years. **Shahzab** (2012) also found maximum prevalence of female genital tract tuberculosis in 2nd and 3rd decade of life of the patients in his study. In our study, of the 11 patients diagnosed with genital tuberculosis, 9(9.0%) belong to low socio economic status, and all of them had infertility for less than 5 years duration, showing a significant association between socio-economic status and the duration of infertility with genital tuberculosis, **Shahzab** (2012) also found similar association in his study.

In our study 10 patients out of 11 patients diagnosed with genital tuberculosis presented with complaints of oligomenorrhea showing a significant relationship between genital tuberculosis and menstrual irregularities specifically oligomenorrhea. **R.Parvez et al** also found a similar relationship between menstrual irregularities and genital tuberculosis.¹²

In our study, 1(1.0%) patient had bilateral beaded appearance of the tubes, 1(1.0%) patient had hydrosalpinx, 12(12.0%) patients had bilateral cornual block, 86(86.0%) patient had normal spillage of the dye and no visible pathology on hysterosalpingography.

On laparoscopic evaluation we found that, 1(1.0%) patients had beaded appearance of the tube with tuboovarian mass, 1(1.0%) patients had bilateral beaded tubes with peritubal adhesions, 4(4.0%) patients had bilateral cornual block, 88(88.0%) patients had bilateral spillage of the dye, 2(2.0%) patients had bilateral tubal block, 1(1.0%) patients had hydrosalpinx, 1(1.0%) patients had peritubal adhesions with a small ovarian cyst, 1(1.0%) patients had tuboovarian mass with omental adhesions and 1(1.0%) patients had unilateral delayed spillage and contralateral normal spillage of the dye.

The prevalence of endometrial tb in this study by CBNAAT and culture was 11.0%. However histopathological examination identified only 2 (2.0%) cases. While all culture positive TB samples were also CBNAAT positive for Mtb, only one histopathological proven

endometrial TB was culture and CBNAAT positive. Similar results were obtained in a study done by **Abdissa et al** (2018), where instead of CBNAAT they have used PCR method and obtained a similar result.¹³

We found that in TB culture positive, 7(63.6%) patients had Parity P0+0, 1(9.1%) patients had Parity P0+1 and 3(27.3%) patients had Parity P1+0. Association of Parity vs TB culture was not statistically significant ($p=0.8111$). In TB culture positive, 7(63.6%) patients had Primary Infertility and 4(36.4%) patients had Secondary Infertility. Association of Infertility vs TB culture was not statistically significant ($p=0.7016$). In TB culture positive, 2(18.2%) patients had family h/o tuberculosis. Association of family h/o tuberculosis vs TB culture was statistically significant ($p=0.0109$). In TB culture positive, 8(72.7%) patients had LC Socio-Economic Status, 1(9.1%) patients had LMC Socio-Economic Status, 1(9.1%) patients had MC Socio-Economic Status and 1(9.1%) patients had UMC Socio-Economic Status. Association of Socio-Economic Status vs TB culture was not statistically significant ($p=0.4798$). In TB culture positive, 2(18.2%) patients were Irregular, 3(27.3%) patients were Oligomenorrhea and 6(54.5%) patients were Regular. Association of Duration of infertility vs TB culture was statistically significant ($p<0.0001$). In TB culture positive, 1(9.1%) patients had amenorrhea Menstrual Volume, 3(27.3%) patients had Hypomenorrhea Menstrual Volume and 7(63.6%) patients had Normal Menstrual Volume. Association of Menstrual Volume vs TB culture was statistically significant ($p<0.0001$).

Our study showed that in TB culture positive, 10(90.9%) patients had Non-veg dietary history and 1(9.1%) patients had veg dietary history. Association of dietary history vs TB culture was not statistically significant ($p=0.5093$). In TB culture positive, 11(100.0%) patients had not HTN. Association of HTN vs TB culture was not statistically significant ($p=0.4729$). In TB culture positive, 1(9.1%) patients had DM. Association of DM vs TB culture was not statistically significant ($p=0.5093$). In TB culture positive, 10(90.9%) patients had No history of pelvic surgery Pelvic surgery and 1(9.1%) patients had Unilateral simple cystectomy Pelvic surgery. Association of Pelvic surgery vs TB culture was not statistically significant ($p=0.0750$). In TB culture positive, 2(18.2%) patients had Hypothyroid. Association of Hypothyroid vs TB culture was not statistically significant ($p=0.0334$). In TB culture positive, 1(9.1%) patients had Bilateral beaded appearance of the tube Hysterosalpingography, 8(72.7%) patients had Bilateral cornual block Hysterosalpingography, 1(9.1%) patients had Bilateral cornual block Hysterosalpingography and 1(9.1%) patients had Hydrosalpinx Hysterosalpingography. Association of Hysterosalpingography vs TB culture was statistically significant ($p<0.0001$).

We showed that association of Laproscopic findings vs TB culture was statistically significant ($p<0.0001$). In TB culture positive, 8(72.7%) patients had positive for m.tuberculosis CBNAAT and 3(27.3%) patients had positive for tuberculosis CBNAAT. Association of CBNAAT vs TB culture was statistically significant ($p<0.0001$). In TB culture positive, 1(9.1%) patients had past history of TB. Association of past history of TB vs TB culture was statistically significant ($p=0.0042$). In negative for TB, the mean Age (mean $\pm$ s.d.) of patients was 27.1573 ± 4.0561 . In positive for TB, the mean Age (mean $\pm$ s.d.) of patients was 29.1818 ± 3.7635 . Difference of mean Age with both TB culture was not statistically significant ($p=0.1190$). In negative for TB, the mean duration of infertility (mean $\pm$ s.d.) of patients was 2.5000 ± 1.4981 . In positive for TB, the mean duration of infertility (mean $\pm$ s.d.) of patients was 2.4091 ± 1.2413 . Difference of mean duration of infertility with both TB culture was not statistically significant ($p=0.8474$).

SUMMARY AND CONCLUSION

In our study we reported 11 cases of female with genital tract tuberculosis, diagnosed during laparoscopy, confirmed by CBNAAT, conventional culture method and histopathological examination.

A comprehensive history taking, along with correct sampling using various imaging modalities, will certainly lead to diagnosis of genital tract tuberculosis.

It must be noted that infertility due to genital tract tuberculosis is irreversible in majority of cases and our study is a good educational lesson that can be used in obstetrics for better diagnosis and handling of patients with similar problems. The prevalence of genital tuberculosis among infertile women is high. It seems that exact planning and action

for the prevention and treatment of genital tuberculosis can reduce the infertility prevalence and prevent the negative consequences of infertility

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