

STUDY OF GENITAL TUBERCULOSIS IN INFERTILE WOMEN

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ABSTRACT

AIM

To determine the incidence of female Genital Tuberculosis (GTB) and to analyse clinicopathological features for GTB and comparison of Polymerase Chain Reaction (PCR), Acid Fast Bacillus (AFB) staining and Histopathology (HPR).

STUDY SETTING

A prospective study conducted on 50 infertile patients in the Department of Obstetrics and Gynaecology at Krishna Hospital, Karad, for a period of 2 years between December 2013 and December 2015.

METHODS

Patients were investigated for the presence of Mycobacterium Tuberculosis (MTB) on samples collected by endometrial curettage by PCR, AFB and HPR. Additional tests like Hysterosalpingography (HSG) Laparoscopic chromopertubation and hysteroscopy were performed if not done earlier.

RESULT

PCR demonstrated MTB DNA in 9 patients, and 2 were positive with AFB and HPR. Within positive patients HSG findings were suggestive of TB in 3 cases and laparoscopy in 5 cases and hysteroscopy in 4 cases. Two MTB PCR positive patients conceived spontaneously after 6 months of anti-tubercular treatment.

CONCLUSION

Genital tuberculosis is a diagnostic challenge if untreated it is chronic, progressive and destructive disease. Early diagnosis is crucial because once the infection damages the tubes, reverting tubal patency is very difficult. Molecular tests like DNA PCR have enabled us to detect the organism in its latent stage and initiation of treatment early in the disease can prevent many irreversible changes in the female genital tract.

KEYWORDS

Anti-Tubercular Treatment, Hysterosalpingography, Tuberculosis, Genital Tuberculosis.

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INTRODUCTION

Tuberculosis is a disease of antiquity. Evidence of tuberculosis has been demonstrated in the Neolithic and ancient Egyptian remains. Skeletal remains of prehistoric humans dating back to 8000 BC found in Germany have shown evidence of the disease. Ancient Hindu and Chinese scripts also have documented the existence of this disease.^[1]

Tuberculosis remains a worldwide public health problem despite the fact that the causative organism was discovered more than a hundred years ago and a vaccine and highly effective drugs are available making tuberculosis both a preventable and curable disease.^[2] The problem of tuberculosis is acute in developing countries, which account for 95% of cases, the South and the East Asian region accounting for 40% of them.^[3]

Although the pulmonary form is the most commonly encountered, it is all too frequently forgotten that tuberculosis is a disseminated disease. Genital tract disease usually originates from haematogenous dissemination from a focus elsewhere in the body.^[4] The fallopian tubes like their embryological male homologue, the epididymis are the initial sites of pelvic involvement following haematogenous dissemination of the bacilli.^[5] When tuberculosis affects the genital organs, it leads to devastating effects resulting in infertility; and less commonly as menstrual disturbances and pelvic pain syndromes. The incidence of tuberculosis is estimated to be between 5.7-19% of all infertile women, the incidence being higher in cases evaluated for infertility due to tubal causes.

The prevalence of infertility is about 10-20% among couples (With somewhat equal prevalence among men and women). There are many factors that can affect female fertility. Some, such as tubal or age factor and others.

Female Genital Tuberculosis (FGTB) is still a major cause of infertility in India in spite of the availability of specific therapy. The prevalence of FGTB in infertility clinics shows marked variations in different countries ranging between 15 and 25% in 80-90% of cases, FGTB affects young women between 18 and 38 years of age and is an important cause of infertility.

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Genital Tuberculosis (GTB) predominantly affects individuals below 40 years of age and peak age frequency ranges between 21 and 30 years of age.

MATERIAL AND METHODS

A prospective study.

Study Population

50 outdoor patients who came for the treatment of infertility in the Department of Obstetrics and Gynaecology at Krishna Hospital, Karad.

Duration

2 years from December 2013 to December 2015.

Aim of our study was to see the incidence of GTB in infertility to analyse the clinicopathological features of GTB positive patients and to compare different diagnostic method like PCR, AFB staining and histopathology.

Previous records of investigations, treatment, coital history, history of recurrent vaginitis, menstrual pattern (Cycle duration and amount of flow, i.e. oligomenorrhoea, menorrhagia) and history of dysmenorrhoea and dyspareunia was noted.

Preliminary tests were done including semen analysis, hysterosalpingography and a subsequent diagnostic hysteroscopy if not done previously.

Sample Collection

Three endometrial samples were collected by Dilatation and Curettage at the time of hysteroscopy.

1st endometrial tissue was placed in formalin preservative and was sent for histopathology examination and the other two in normal saline and were sent for AFB staining and Polymerase Chain Reaction.

Treatment

All those with positive PCR were counselled and treated with anti-tubercular drugs. They were subjected to four drug regime (HRZE) INH 300 mg, Rifampicin 450-600 mg, Pyrazinamide 1200-1500 mg, Ethambutol 800-1200 mg for 2 months followed by same doses of INH and Rifampicin for 4 months.

Parameter	Total No.	TB Positive
Age		
<21	3	0
22-25	32	3
26-29	5	1
30-33	10	5
Socioeconomic Class		
Lower	4	3
Middle	41	5
High	5	1
Menstrual Flow Pattern		
Hypomenorrhoea/oligomenorrhoea	15	5
Polymenorrhagia	5	1
Normal	30	3
Total	50	9
Symptoms		
Fever	8	4
Weight Loss	10	3
Chronic Pelvic pain	12	3
Dysmenorrhoea	12	4
Clinical Details of Patients		

RESULT

Among the 50 patients of infertility, 9 were diagnosed to be suffering from FGTB on the basis of PCR alone and within these 9 two were positive with HPR and AFB staining.

8 were of primary infertility and 1 was a case of secondary infertility. Duration of infertility was less than 5 years in 5 positive cases and 5 cases were in the age group of 30 to 33 years. Prevalent in middle and lower socioeconomic strata, i.e. 8 cases.

Oligomenorrhoea and dysmenorrhoea was seen in 5 cases. Within positive patients HSG was suggestive of TB in 3 cases and laparoscopy was suggestive in 5 cases and hysteroscopy in 4 cases.

Treatment to all affected individual was given. After a followup of 6 months, spontaneous pregnancies were achieved in 2 women, after initiation of Anti-Tubercular Treatment.

Findings on HSG	
Uterine Findings	
Findings	No.
Normal	6
Intravasation of Contrast	1
Irregular Cavity	2
Tubal Findings	
Bilateral Free Spill	6
Bilateral No Spill	3
Laparoscopic Chromopertubation	
Free spill	4
No spill	4
Loculated tubes with spill	1
Uterine Cavity on Hysteroscopy	
Normal Study	5
Tubercles	1
Mild-to-moderate Intra-Uterine Adhesions and fibrosis	2
Severe adhesion (distorted cavity)	1
Findings of Patients with Genital Tuberculosis	

DISCUSSION

In this study, 50 women with infertility were taken. Out of them 9 were diagnosed to have GTB. The high incidence in the study population correlates well with studies conducted among infertile women in developing countries.^[6] GTB was responsible for 44% of cases of tubal blocks in the study population.

Among the positive cases 88% were cases of primary infertility. Schaefer.^[7] estimated that 85% of cases of genital tuberculosis had primary infertility. Jindal.^[8] reported 68% incidence of primary infertility.

In studies covering women of all age groups, Schaefer.^[7] reported that 68% of their patients with genital tuberculosis were in the young age group, Nagpal.^[9] mentions a 74% incidence in the 21-30 years' age group. Thus genital tuberculosis is predominantly a disease affecting women in their fertile years.

This is justified as after the puberty the blood supply to the pelvic organs increases and as a result more bacilli could reach this site and infect the reproductive organ. According to Jha A et al and Gungorduk K genital TB is rare after menopause.^[10,11] Apart from infertility, the other major presenting complaints described include abnormal bleeding, pelvic pain and menstrual irregularity. In a study done by Singh N et al,

revealed menstrual abnormalities in 30% patients in which menstrual abnormality were in the form of hypomenorrhoea and secondary amenorrhoea.^[12]

In our study, 6 (66%) out of the 9 women of tuberculosis had menstrual abnormalities with hypomenorrhoea in 5 cases (55%).

Schaefer.^[7] considers pelvic pain, an important symptom of pelvic tuberculosis occurring in about 50% of patients. Simon et al^[13] recorded that pelvic pain was the initial symptom in 45% of their patients, but it was usually mild and chronic in nature. Morris et al^[14], however, considers that patients who present with infertility rarely have pelvic or abdominal pain or other symptoms.

Three of our patients with tuberculosis complained about significant pelvic pain. Constitutional symptoms such as fever in 4 (44%), weight loss in 3 (33%) were reported among the positive cases.

An analysis of the socio-economic background reveals that genital tuberculosis unlike its more widespread pulmonary counterpart tends to affect both the affluent and the impoverished.

Two patients (22%) had a previous history of tuberculosis. Schaefer.^[15] mentions an incidence of pulmonary tuberculosis in 20% cases of women with genital tuberculosis.

Only 6 out of the 9 patients with tuberculosis showed patent tubes on hysterosalpingography. Bilateral tubal blocks were common in 3 (33%), especially cornual blocks.

A study done by J B Sharma et al among 40 women diagnosed with tuberculosis 11 (27.5%) had abnormal hysterosalpingography finding, which is consistent with my study.^[16] Nagpal.^[9] records a 30% incidence of bilateral tubal blocks.

Diagnostic laparo-hysteroscopy was particularly useful to confirm cases suspected on hysterosalpingography. Presence of intrauterine adhesions on hysteroscopy, presence of adhesions on the uterine surface, in the cul-de-sac and on the hepatic surface; thickening of tubes; presence of hydrosalpinx; presence of tubercles in the peritoneal cavity and on the omental surface during laparoscopy provides clues to the diagnosis, which can be confirmed by laboratory methods before initiating therapy. Similar findings are mentioned by Charles D.^[4] Marana R.^[17] Avan BI.^[18] Raut VS.^[19] and Yang Y.^[20]

Confirmation of diagnosis was done by laboratory methods; 2 cases showed the characteristic granulomas on histopathological examination, 2 stained positive for acid-fast bacilli and 9 specimens were positive by PCR Jindal.^[8] reported endometrial involvement in 84% cases, but none of them revealed acid-fast bacilli on staining.

Rozati et al observed PCR to be positive in 43% suspected cases of female genital tract tuberculosis in contrast to 5.2%, 7.8% and 11.5% detection rate with AFB staining, culture and HPR respectively.^[21]

The pregnancy rates reported in a few studies in female genital tuberculosis cases with positive PCR ranging from 19.35% to 59.8%. Suman Puri and Bhavana Bansal investigated 60 patients for genital tuberculosis by PCR technique 28 patients were positive (46.6%) and the pregnancy rate was 19.35%.^[22] a study by Vidushi, Alkakraiplani and others on genital tuberculosis in 196 cases fertility outcome after anti-tubercular treatment was 31%.^[23] V. N. Jindal, S. Verma and Y Bala in their study of 443 cases on

fertility outcomes following anti-tubercular treatment showed overall pregnancy rate of 59.8%.^[24]

In our study treatment to all affected individual was given. Spontaneous pregnancies was achieved in 2 out of 9 women, after 6 months of anti-tubercular treatment.

In highly prevalent country for tuberculosis as in India, Tuberculosis should be considered while treating infertile couples. Infertility can be improved by early screening, diagnosing and then prompt treatment.

CONCLUSION

- Genital tuberculosis is a diagnostic challenge if untreated it is chronic, progressive and destructive disease.
- Early diagnosis is crucial, because once the infection has damaged the tubes reverting tubal patency is very difficult.
- Molecular tests like DNA PCR have enabled us to detect the organism in its latent stage, and initiation of treatment early in the disease can prevent many irreversible changes in the female genital tract.
- Further studies are required to understand the disease in its latency and evolve treatment algorithms.
- A better awareness and understanding of the epidemiology, the manifestations of the disease and the scope for diagnosis and treatment will go a long way in reducing the morbidity associated with this elusive disease.

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