



## Diagnostic Challenges of Female Genital Tuberculosis

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### ABSTRACT

**Background:** India accounts for one fifth of the global incidence of tuberculosis (TB) annually. Genital tract TB is one of the extra pulmonary presentations of TB leading to infertility among Indian women. Genital TB is a chronic disease and often asymptomatic with very few specific complaints. Infertility is the most common clinical presentation of genital TB. Herein, we report a case of 32-year-old female patient suffering from abdominal pain and infertility for the last 8 months. **Methods:** Hysterosalpingography (HSG) and ultrasonography (USG) did not reveal characteristic radiological appearances of TB although USG detected the presence of a large fibroid in the right uterine wall. Histology, microscopy for acid fast bacilli, liquid culture and nucleic acid amplification assay targeting 64kDa protein encoding gene, the IS6110 element of endometrium biopsy were negative for tubercle bacilli. **Results:** Since the diagnosis of genital TB is elusive, antitubercular treatment (ATT) using isoniazid, pyrazinamide, rifampicin, and ethambutol was prescribed for two months followed by maintenance therapy with isoniazid and rifampicin for four months without any pregnancy outcome. **Conclusion:** However, the patient conceived spontaneously after surgical removal of fibroid. Relating infertility to female genital tuberculosis due to high prevalence of TB in the country and ignoring the presence of uterine fibroid might not have been the right decision taken by the gynaecologist. This suggests the urgent need for an accurate method intended for diagnosis of female genital tuberculosis.

**Keywords:** Female genital tuberculosis, infertility, extra pulmonary tuberculosis, uterine fibroid

### INTRODUCTION

TB is declared as “global health emergency” by World Health Organization (WHO) in 1993 and 2006. Despite more than a century of research, tuberculosis (TB) remains one of the leading causes of death in the world. According to WHO statistics, 25,000 active cases are diagnosed every day and of these patients approximately 5000 die every day. The control of tuberculosis among developing nations was pioneered by India in 1962. But, WHO named India the worst performer among developing nations, with 17 per cent of the Indian population carrying 26 per cent of the global TB burden, in 2012 which was India’s golden jubilee year of TB control.

Mycobacterium tuberculosis, the causative agent of tuberculosis is carried in airborne particles, called droplet nuclei, of 1-5 microns in diameter. Infectious droplet nuclei are generated and the bacilli have an easy escape route to the environment when a lung TB (pulmonary tuberculosis) patient coughs, sneezes, shouts, spits, or sings. Thus, lung TB is the critical link in the chain of transmission of bacilli which contaminate air. As tubercle bacilli spread through the air we breathe in; everyone is at risk of infection.

One third of world population is infected with TB. Life time risk of TB following infection is approximately 5-10%. India accounts for one fifth of the global incidence of tuberculosis annually. Genital tract TB is one of the extra pulmonary presentations of TB leading to infertility among Indian women. Genital tuberculosis afflicts 14 million people and is a major socioeconomic burden in India [1]. Genital TB is a chronic disease and often asymptomatic with very few specific complaints. Infertility is the most common clinical presentation of genital TB [2].

### CASE REPORT

A 32-year-old nulliparous woman presented to the hospital with 8-month history of lower abdominal pain and infertility. She had a history of amenorrhoea and irregular menstrual cycles due to hypothyroidism and polycystic ovarian syndrome. She had been taking 100 micrograms of Levothyroxine tablets for hypothyroidism for six years. Polycystic ovarian syndrome was treated initially with Metformin followed by oral contraceptive agents. The patient had regular menstrual cycles after three-year treatment for polycystic ovarian syndrome even though she still had hirsutism. The patient never had diabetes, weight gain or acne. The patient had a single episode of menorrhagia and ultrasound sonography (USG) revealed the presence of a small intramural uterine fibroid of 1 inch diameter before her marriage.

The patient had received Bacillus Calmette-Guérin (BCG) vaccination at birth and there was no history of contact with TB. She had been married for three years and suffered infertility. Infertility was treated with follicle stimulating hormone and luteinizing hormone. Hysterosalpingography (HSG) showed that both her fallopian tubes are patent. HSG and USG did not reveal characteristic radiological appearance of TB. Two cycles of intrauterine insemination (IUI) also did not result in pregnancy.

As USG detected the presence of a large uterine fibroid about 3-inch diameter on the right uterine wall, diagnostic laparoscopy was performed and endometrium biopsy was taken. Histology, microscopy for acid fast bacilli, liquid culture (BACTEC) and nucleic acid amplification assay targeting 64kDa protein encoding gene, the IS6110 element of endometrium biopsy were negative for tubercle bacilli. Since the diagnosis of genital TB is elusive antitubercular treatment (ATT) using isoniazid, pyrazinamide, rifampicin, and ethambutol was prescribed for two months followed by maintenance therapy with isoniazid and rifampicin for four months without any pregnancy outcome. The patient continued ATT for nine months. The gynaecologist noticed inflammation of the cervix during routine examination. The patient also underwent electrocautery of cervix to remove inflamed tissue of the cervix. During this period the fibroid uterus grew in size to more than that of 14-week pregnancy.

The patient underwent laparoscopic myomectomy to remove intramural fibroid. Recovery of the patient was marked by normalization of menstrual cycle and complete resolution of pelvic pain. She conceived spontaneously ten months after surgical removal of fibroid. She gave birth to a healthy baby boy weighing 2.8 kg after full term pregnancy through elective caesarean section. Relating infertility to female genital tuberculosis due to high prevalence of TB in the country and ignoring the presence of uterine fibroid should not have been the right decision taken by the gynaecologist. The patient ought to have saved two years of her infertility treatment period and a smaller surgical scar on her uterine wall had she underwent myomectomy as the first step for treating infertility. She also has had avoided ATT as fibroid was her primary cause of infertility not genital tuberculosis. This suggests the urgent need for an accurate method intended for diagnosis of female genital tuberculosis.

### DISCUSSION

In women of reproductive age, uterine fibroids are a major cause of morbidity [3]. Nearly 40% women are diagnosed with benign uterine fibroids in reproductive years. In approximately 5-10% of the patients presenting with infertility, fibroids are present [4]. According to an international internet-based survey uterine fibroid causing multiple bleeding and pain symptoms can also have a negative impact on different aspects in women's life like sexual life, performance at work and personal relationships [5]. When performed by an experienced surgeon, laparoscopic myomectomy can be considered a safe treatment modality, in terms of good outcome of pregnancy and extremely low failure rates.

### CONCLUSION

The diagnosis of pulmonary tuberculosis has become simpler with the advent of biosensors utilizing bio-optical technology [6] and nanotechnology [7]. Even today, it is difficult to diagnose female genital tuberculosis. Isolated ovarian TB can mimic the presentation of ovarian cancer [8]. Pelvic ultrasound and hysterosalpingography examinations may be of some help in diagnosing the disease. Demonstration of tubercle bacilli in menstrual blood or endometrial curettage can provide definitive diagnosis of the disease [9]. Histopathological evidence in premenstrual endometrium biopsy and polymerase chain reaction (PCR) [8,10,11] for TB diagnosis is also dependable. Magnetic resonance imaging (MRI) is not sufficiently specific for the diagnosis of female genital tuberculosis even though it

is the most sensitive procedure [12]. Recently multiplex PCR was found to be the most efficient diagnostic tool for the diagnosis of uterine tuberculosis [13]. The diagnostic dilemma of female genital tuberculosis arises because of “varied clinical presentations, diverse results on imaging and laparoscopy, and a mixed bag of bacteriological and serological tests” [14]. More research is needed in the early and precise diagnosis of female genital tuberculosis to prevent infertility among women of reproductive age.

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