

## A case of endometrial tuberculosis leading to infertility in a young woman

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### REVIEW ARTICLE

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#### ABSTRACT

The morbidity and mortality due to tuberculosis (TB) is high worldwide, and the burden of disease among women is significant, especially in developing countries. Mycobacterium tuberculosis bacilli reach the genital tract primarily by haematogenous spread and dissemination from foci outside the genitalia with lungs as the common primary focus. Genital TB in females is a chronic disease with low-grade symptoms. The fallopian tubes are affected in almost all cases of genital TB, and along with endometrial involvement, it causes infertility in patients. A case report is presented herewith where a woman suffering from endometrial tuberculosis resulted in blockage of the fallopian tube and eventually in damaged uterus. A result of which she could not conceive even after three transfers of in vitro Fertilization.

**Keywords:** Endometrial Tuberculosis, infertility, in vitro Fertilization.

#### 1. Introduction

The exact incidence of female genital tuberculosis (TB) is difficult to ascertain given the quiescent nature of the disease and the varied diagnostic methods. Subfertility might be the only symptom of genital TB and is associated with tubal damage in a majority of cases. (1) Hematogenous spread is thought to be the process by which the tubercle bacilli implant into the mucosa of the fallopian tubes and subsequently affect the endometrium by direct extension. (2)

Diagnosis of female genital TB requires a high index of suspicion due to its asymptomatic nature and the high probability of the disease mimicking other gynecological conditions. (3) In addition to the diagnostic challenge, fertility outcomes after treatment are not impressive (4) particularly in the background of another factor causing subfertility. A diagnostic hysteroscopy and endometrial biopsy that are often necessary to arrive at a diagnosis are not without challenges of accessibility and cost in TB-endemic regions. The coexistence of genital TB with other gynecological conditions such as polycystic ovary syndrome (PCOS) leads to a delay in diagnosis and compounds the challenges in treatment of subfertility. The

objective of this case report is to highlight the challenges in diagnosis and management of genital TB, particularly in the background of other subfertility factors, and to consider pragmatic approaches in the treatment of subfertility in TB-endemic areas. (5)

Tuberculosis (TB) is a major public health problem worldwide despite a declining trend in mortality, with effective diagnosis and treatment. An estimated 10.4 million people developed TB in 2015 and more than half of the TB cases (60%) were seen in South-East Asia and Western Pacific Regions<sup>1</sup>. About 60 per cent of TB cases and deaths occur among males, but the disease burden is high among women also. (6) In 2015 nearly 500,000 women died from TB, and among them, 28 per cent had human immunodeficiency virus (HIV) co-infection. Genital TB in females is well recognized as an important aetiological factor for infertility in countries with high prevalence of TB. Genital TB usually occur secondary to TB in other sites (primarily, the lungs). The spread is generally through haematogenous or lymphatic routes. (7)

Tuberculous infection of the female genital organs can result in infertility, dyspareunia, menstrual irregularities and chronic pelvic inflammatory disease (PID). (8) Drug therapy

for female genital TB (FGTB) is similar to the standard treatment regimens used for pulmonary TB. In patients with infertility, conception rate is not very encouraging after anti-TB treatment (ATT). (7, 9)

Many couples seek help for infertility. The main causes of infertility are failure to ovulate, tube damage, endometriosis and low sperm count. (10)

Tuberculosis is a worldwide problem. The signs and symptoms of pulmonary tuberculosis include cough, sputum, haemoptysis, breathlessness, weight loss, anorexia, fever, malaise, wasting, and terminal cachexia. (11)

Tuberculosis is a global emergency. As per WHO, 9 million cases of tuberculosis occurred in 2013 which is an increase from 8.6 million in 2012. The Western Pacific and Southeast Asia had 56% cases of tuberculosis with India and China bearing the highest burden. (12)

Mycobacterium tuberculosis reaches the genital tract mostly by haematogenous spread and dissemination with lung being the prime focus. Female genital tuberculosis is a chronic disease having low grade symptoms. It involves the fallopian tubes and endometrium and cause infertility. Atypical symptoms are presented which mimic other gynaecological conditions. Infertile women having genital tuberculosis have low conception rates and carry a high risk of ectopic pregnancy and miscarriage.

Female genital tuberculosis may lead to infertility and is involved in 5 to 15% cases in India. Mycobacterium tuberculosis is the causative organism for this. It affects the fallopian tubes, endometrium, ovaries and cervix. If the endometrium is healthy, in vitro fertilization and embryo transfer is required to attain successful pregnancy. Surrogacy or adoption is needed if endometrium is damaged. (13, 14)

In vitro Fertilization is an assisted method of reproduction which was introduced in the year 1978. Louise Brown was the first child to be born via this technique. (15)

## 2. Case study

We present a report of a lady patient who is a resident of Coochbehar district, West Bengal,

Indian. She is non-vegetarian and does not have smoking, drinking habits or history of drug abuse.

She had regular menstrual cycles since her early teens. She neither had a history of pelvic pain nor a history suggestive of previous urinary tract infections. Once she got fever and coughs for which she was treated with Isoniazid, Rifampicin, Pyrazinamide and Ethambutol for two months by a local doctor. Her infection got cured and over a period of time she stopped consuming the medications. However, after six months of the therapy stoppage, she started getting irregular menstrual cycle along with abdominal cramps and scanty periods.

She got married at the age of 28 years old and couldn't conceive for four years respectively. A body scan revealed blockage in her fallopian tubes and later she was suggested to go for IVF (In Vitro Fertilization). For the same, she visited Aspire Fertility Centre, Bangalore where the patient consulted Dr. Ashwini G. B., who is a renowned gynecologist and infertility medicine specialist. The patient was advised for certain tests for fertility which included egg fertility test.

It was found from the fertility test that, the collected eggs showed good fertility i.e. 23 out of 26 eggs got fertilized in vitro. Later, freshly fertilized embryos were transferred to her uterus but the  $\beta$ -HCG (Human Chorionic Gonadotropin) blood test was negative for pregnancy. In second attempt frozen eggs were transferred into the uterus, but it was not successful too. She was advised for the hormonal injections after two attempts of IVF. Even after consecutive hormonal injections, the uterus size did not increase beyond 4 mm.

As per the advice of doctor the subject underwent hysteroscopy to remove the extra adhesions of linings and later she was diagnosed with endometrial tuberculosis. Her chest X-ray and PCR (Polymerase Chain Reaction) tests also confirmed the infection.

After diagnosis treatment with anti-tubercular medications Isoniazid, Rifampicin, Pyrazinamide and Ethambutol with Pyridoxine for a period of 09 months was given. She was using Meprate (Medroxyprogesterone) tablets

to regulate her monthly periods after completion of the primary treatment of endometrial tuberculosis.

The size of her uterus was still lesser than 4 mm after taking the hormonal injections. She underwent PRP (Platelet Rich Plasma) infusion in order to heal and normalize the uterus. This treatment increased the uterus size to 7 mm and third embryo transfer attempt was done. At the end of third attempt, the  $\beta$ -HCG blood test revealed a negative pregnancy result.

Hence it was proved that, the Tuberculosis which had occurred in her teenage culminated to endometrial tuberculosis. The later blocked her fallopian tubes and eventually caused damage to her uterus. Either surrogacy or adoptions were the only options left for her to experience motherhood.

### 3. Conclusion

From the above presented case, it could be concluded that active tuberculosis if not treated at the initial phase may develop into latent tuberculosis. Endometrial tuberculosis which is a latent form of tuberculosis may cause blocked fallopian tubes along with damage to the endometrial lining of uterus which ultimately results in infertility in women.

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### Conflict of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

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