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STUDY TO FIND OUT THE INCIDENCE OF GENITAL TUBERCULOSIS AS A CAUSE FOR FEMALE INFERTILITY IN SEMI-URBAN POPULATION

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HOW TO CITE THIS ARTICLE:

Kajal P. Parikh, Hemant G. Deshpande, Chandrakant S. Madkar, Sumit Jethani. "Study to find out the incidence of Genital Tuberculosis as a cause for Female Infertility in Semi-Urban population". Journal of Evolution of Medical and Dental Sciences 2014; Vol. 3, Issue 12, March 24; Page: 3223-3226, DOI: 10.14260/jemds/2014/2271

ABSTRACT: BACKGROUND: Infertility is the commonest symptom associated with genital tuberculosis, the presence of which must therefore be excluded before steps are taken to treat infertility. **OBJECTIVE:** To find out the incidence of Genital Tuberculosis as a cause for Female Infertility in Semi-Urban population. **MATERIALS AND METHODS:** The present study was conducted in Semi-Urban population attached to Dr. D. Y. Patil Medical College. 50 cases of infertility were taken and subjected to endometrial PCR(Polymerase Chain Reaction) to detect genital Tuberculosis. **RESULTS:** Out of total 50 cases of infertility 6 subjects came out to be positive for genital tuberculosis and among the 6 positive cases 3 were of primary and 3 were of secondary infertility.

KEYWORDS: Tuberculosis, PCR, Infertility.

INTRODUCTION: Infertility is a life crisis. The number of couple seeking medical help for infertility is increasing dramatically.¹ The incidence of infertility in any community varies between 5 to 15%.² Genital tuberculosis in females occurs secondary to primary disease in the lungs, lymph nodes, urinary tract, bones, joints, and bowel. The spread is usually by hematogenous or lymphatic route. Sexual transmission of Female Genital Tuberculosis (FGTB) has been reported, but direct spread from other intraperitoneal foci is very rare.³ Infertility is the commonest symptom associated with genital tuberculosis, the presence of which must therefore be excluded before steps are taken to treat infertility. If specific investigations for genital tuberculosis are not conducted, the disease may remain undiagnosed because it often causes no physical symptoms.⁴ The diagnostic dilemma arises because of the varied clinical presentation of the disease confounded by diverse results on imaging, laparoscopy, histopathology and a mixed bag of bacteriological and serological tests, each of which has its limitation in diagnostic sensitivity and specificity. Histology demonstrates the typical caseous granulomatous lesions with giant epithelioid cells. Such lesions are highly suggestive of TB but are not diagnostic, as these also appear in fungal infections and sarcoidosis. Microscopy for alcohol and acid fast bacilli (AFB) can provide a quick diagnosis of poor sensitivity and fluorescent auramine O staining marginally improves the same. Conventional bacteriology for isolation and identification of Mycobacteria has its specific advantages of being a conclusive diagnostic test. Molecular diagnostic methods hold the key to the future of better and efficient diagnosis of genital and other forms of extra-pulmonary TB. Fundamentally all the available molecular tests are based on the principle of polymerase chain reaction (PCR). PCR is a rapid, sensitive and specific molecular biological method applied in the laboratories to diagnose multitudes of diseases. PCR based diagnosis of TB has been evaluated to be useful and important in the detection of pulmonary as well as extra-pulmonary TB.⁵ The actual incidence of genital TB cannot be determined accurately in any population because it is estimated that at least 11% of patients are asymptomatic and the disease is discovered as an

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incidental finding. Incidence varies greatly according to socioeconomic and public health conditions; it usually parallels the incidence of pulmonary and abdominal TB. According to the WHO global Tuberculosis Control Report 2007, Genital Tuberculosis has been declared by WHO as a National Emergency in 1993. The incidence of genital tract TB is 0.69% in Australia, 0.07% in the United States, less than 1% in Finland, 4.2% in Saudi Arabia, 5.6% in Scotland, and 19% in India.⁶

MATERIAL AND METHODS: The present study was conducted in Semi-Urban population attached to Dr. D. Y. Patil Medical College & Hospital and Research Center, Pimpri, Pune from July 2011 to September 2013. This Prospective study was undertaken to detect the incidence of Genital Tuberculosis as a cause for Female Infertility. 50 cases were taken between age 20-35 years with history of primary or secondary infertility based on convenience sampling. Patient interview was on a pre-designed pre tested questionnaire and physical examination including detailed history of any hormonal abnormalities or any known case of infertility were ruled out.

All patients were evaluated with Routine blood investigations (including CBC, LFT, RFT, URINE, Sr. TFT, Sr. Prolactin, Sr. FSH, Sr. LH) and Endometrial PCR (Polymerase chain reaction).

ETHICAL CONSIDERATION: Written informed consent was taken from all the patients and Institutional Ethical clearance was obtained from the Ethics committee before the start of the study.

DATA ANALYSIS: Data was entered in MS Excel Sheet 2010 and analyzed using Epi Info version 6.0 and SPSS version 17.0

RESULTS: The study was conducted on 50 subjects from year July 2011 to September 2013. The results are as follows, Out of total 50 subjects of infertility 6 cases came out to be positive for genital tuberculosis on endometrial PCR.

Endometrium PCR	No. of cases	Percentage (%)
Positive	6	12%
Negative	44	88%
Total	50	100%

Table 1: Endometrial PCR wise distribution of cases study group

II Among 6 positive PCR cases of genital TB, 3 had primary and 3 had secondary infertility and among 44 negative PCR cases, 34 had primary and 10 had secondary infertility.

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Infertility	PCR		Total
	Positive	Negative	
Primary	3	34	37
Secondary	3	10	13
Total	6	44	50

Association between infertility and PCR in study group.

DISCUSSION: The present study of “Endometrial Polymerase Chain Reaction to rule out Genital Koch’s in Infertility” was conducted at Dr. D. Y. Patil Medical College, in the department of Obstetrics and Gynecology to study the incidence of Genital Tuberculosis as a cause for Female Infertility in Semi-Urban population. A total of 50 Cases of Female Infertility were studied for their Etiological factors based on Polymerase Chain Reaction.

In our study it was observed that Endometrial PCR for female genital tuberculosis was positive in 6 cases and negative in 44 cases in study group. Kulshrestha V, Kriplani A, Agarwal N, Singh UB, Rana T. (2011) compared modalities for diagnosing genital tuberculosis (GTB) and to assess fertility outcome after antitubercular therapy (ATT).

Out of 196 women recruited, 187 underwent laparoscopy. Genital tuberculosis was diagnosed in 118 (60.2%). In 41.3%, PCR was positive from endometrial aspirates which was little high compared to our finding. Geetika Goel⁷, Ritu Khatuja, Gita Radhakrishnan, Rachna Agarwal, Sarla Agarwal, Iqbal Kaur (2013) studied Role of newer methods of diagnosing genital tuberculosis in infertile women.

Out of total 546, 52 samples were inadequate for opinion and 13(2.63%) had their endometrial biopsy report positive for evidence of tuberculosis such as chronic inflammation or granuloma. A total of 20 patients had their PCR report as positive out of 90 samples sent (22.2%). In present study PCR was positive among 12% of cases.⁸

Author	% PCR positive
Kulshrestha V ⁸	60.2%
Geetika Goel et al ⁷	22.2%
Mondal SK ³	5.88%
Present study	12%

Our study concluded that the type of infertility whether primary or secondary was not significantly associated with endometrial PCR finding in the study group. It revealed out of 6 positive cases of genital TB, 3 were with primary infertility and 3 were with secondary infertility. In a study conducted by Khanna A, Agrawal A.⁹ (2011) aimed to find an effective diagnostic modality for the genital tuberculosis. A total of 100 infertile women were clinically evaluated, premenstrual endometrial biopsy for histopathology, culture and tubercle bacilli polymerase chain reaction (TBPCR) was performed. A majority of 58 women had primary infertility and 42 had secondary infertility. In our study 37 had primary and 13 had secondary infertility.

CONCLUSION: Female genital TB is a curable disease and if detected in the early state and treated can improve conception rate significantly. PCR represents rapid and sensitive method for detection of

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mycobacterium DNA in early female genital TB and may be a useful adjunct to diagnostic modalities in genital TB. To conclude, good history taking, along with correct sampling using various imaging modalities and use of multiplex PCR will certainly turn around the diagnostic difficulty of genital TB which in future can go in a great way in reducing the cost burden in a developing country like India where the prevalence of Tuberculosis is rampant.

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Date of Submission: 20/02/2014.
Date of Peer Review: 21/02/2014.
Date of Acceptance: 01/03/2014.
Date of Publishing: 24/03/2014.