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Prevalence of female genital tuberculosis, its risk factors and associated clinical features among the women of Andaman Islands, India: a community-based study



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ABSTRACT

Objective: There is scarcity of information on the prevalence of female genital tuberculosis (FGTB) in the community. The present study was carried out to estimate the prevalence of FGTB, its risk factors and associated clinical features.

Study design: Community-based cross-sectional survey.

Methods: This study was carried during October 2011 and May 2014 in the Andaman Islands. A total of 13,300 women aged 20–59 years were primarily screened using a structured questionnaire. About 721 (5.4%) were found initially eligible for screening for genital tuberculosis by clinical examination and specimen collection for laboratory tests but only 460 (63.8%) expressed their willingness. Endometrial specimens were collected from 405 (88%) subjects. The association of the potential risk factors with genital tuberculosis was tested by Chi-squared test. A similar analysis was performed to identify clinical features associated with genital tuberculosis.

Results: The estimated prevalence of FGTB was 45.1 cases per 100,000 women (95% confidence interval [CI]: 16.6–98.1). Infertility and oligomenorrhoea were identified as clinical features associated with FGTB. Past history of tuberculosis and history of close contact with tuberculosis cases were identified as risk factors.

Conclusions: This study shows the prevalence of FGTB among the female population of the Andaman Islands. Though the estimated prevalence was close to the expected prevalence, but as only 63.8% of the eligible women could be adequately screened, a much higher prevalence of FGTB could not be ruled out. Infertility, oligomenorrhoea, past history of tuberculosis and contact with tuberculosis case were identified as factors associated with genital tuberculosis.

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Introduction

In India, tuberculosis (TB) is a major public health problem. Pulmonary TB is the most common presentation but extra-pulmonary tuberculosis (EPTB) is also an important clinical problem.^{1,2} The term EPTB has been used to describe isolated occurrences of TB at body sites other than the lung. However, as per the guidelines of the World Health Organization when an extra-pulmonary focus is evident in a patient with pulmonary TB, that patient would be categorised under pulmonary TB.³

In India, EPTB comprises 20% of all TB cases and in different districts of the country its prevalence varies between 8.3% and 13.1%.⁴ The proportion of EPTB cases has risen due to co-infection with HIV.⁵ The extra-pulmonary sites commonly involved are lymph node, pleura, genitourinary tract, bones and joints, meninges and peritoneum. Lymphadenitis, characteristically involving cervical chain, is the most common form of EPTB. Genital TB, a form of EPTB rare in the developed countries, is an important cause of morbidity in women in India and many developing countries. Female genital tuberculosis (FGTB) affects 12% of patients with pulmonary TB and accounts for 15%–20% of EPTB cases.⁶ The disease may remain asymptomatic or may lead to pelvic pain, fever, menstrual disturbances and vaginal discharge. Being a chronic disease, the bacteria remain for a long time and slowly destroy the organs. Sometimes it may lead to accumulation of fluid in the abdomen. In very advanced disease conditions, large pus-filled masses may form in the tubes or ovaries.

The most common initial symptom of genital TB is infertility which may be caused even by early or minimal disease. Fallopian tubes which transport eggs from the ovaries to the uterus are the most common organs involved and are affected in almost 100% of the cases, while endometrium is involved in 50%, ovaries in 20%, cervix in 5% and vagina and vulva in <1%.^{7,8} However, a few reports have found the endometrium to be the most commonly involved site.⁹ When the fallopian tube is involved, there is blockage in the passage of eggs from the ovaries, which leads to infertility. Direct inoculation of tubercle bacilli can take place over the vulva or vagina from a male partner suffering from active genitourinary TB during sexual intercourse.^{10,11} It is estimated that about 5%–10% of infertile women in the world over suffer from genital TB, although this varies from less than 1% in the United States to about 18% in India.¹²

The Andaman and Nicobar Islands have been endemic for TB. In a survey for pulmonary TB carried in the year 1996 in Little Andaman Island, a total of 190 (11.18%) chest symptomatic and five sputum positive cases were identified in the samples of 1700 persons aged 10 years and above drawn from that population.¹³ In another study to assess the TB situation in the tribal community of Car Nicobar island, a significant increase in TB was found between 1986 and 2002, despite the introduction of a national TB programme 15 years ago. This highlights the need for the implementation of a revised national TB control programme (RNTCP) with Directly Observed Treatment, Short-Course (DOTS) strategy in these islands.¹⁴ RNTCP was launched in these islands on 18th July, 2005. Keeping in view the high prevalence of TB in these

islands and the lack of information about the status of FGTB, this study was undertaken to estimate the prevalence and to determine the risk factors of FGTB among the population of Andaman and Nicobar Islands.

Methods

The study protocol was approved by the Institutional Ethics Committee of Regional Medical Research Centre, Port Blair.

Study design and period

The study was a community-based cross-sectional survey among the women of the Andaman group of Islands and was carried out between October, 2011, and May, 2014. The Andaman Island is divided into two major districts viz., North and Middle Andaman District and the South Andaman District. These districts are further divided into three tehsils in North and Middle Andaman and two tehsils in South Andaman District. The study was conducted in all the three tehsils of North and Middle Andaman District viz., Diglipur, Mayabunder and Rangat, and two tehsils of South Andaman District viz., Ferrargunj and Port Blair. The target population of the study was women aged 20–59 years. A sample of the target population was selected by cluster sampling with representation of rural and urban areas proportionate to rural urban structure of the population.

Sampling strategy and sample size

Assuming a prevalence of 4/1000 for pulmonary TB and the estimate that about 12% of patients with pulmonary TB among women in the reproductive age group develop FGTB, the expected prevalence of FGTB would be 48/100,000. To estimate this prevalence in a population of about 50,000 women in the age group of 20–59 years with an absolute precision of 0.05% with 95% confidence limits and allowing for a design effect of two for cluster sampling, the sample size required was 13,300. Villages/municipal wards were the sampling units. Number of units required to get the required sample size were selected randomly after stratifying the sampling units into rural/urban strata. The rural urban ratio of population of Andaman is 2.5:1.¹⁵ Following this in the present study, 42 villages and three municipal wards were surveyed and the study subjects were enrolled from villages of the rural areas and wards of the urban strata in the ratio of 2.5:1, giving a sample of 10,000 from rural and 3000 from urban.

Collection of data

A house to house survey was conducted in each of the selected villages/wards and all the women of the age group 20–59 years were enrolled. All women were interviewed and subjected to primary screening by using a structured questionnaire that was pretested for face and content validities. Trained nurses conducted the interview. The questionnaire sought information about identity, demographic details, medical history, personal and family history, and

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