



## Evaluation Of Incidence And Clinical Characteristics Of Genital Tuberculosis In Central Bihar, India

Chandan Kumar<sup>1\*</sup>, Dr Naresh Kumar<sup>2</sup>

<sup>1</sup>\*Research Scholar (MSc in microbiology), Department of Clinical Microbiology, Lovely Professional University Phagwara Orchid ID: 0000-0002-5034-2143 Email ID: pappu.bishnupur@gmail.com

<sup>2</sup>Associate Professor & Head of Lab, Department of Medical Laboratory Science, Lovely Faculty of Applied Medical Sciences, Lovely Professional University Phagwara, Punjab, India  
Email ID: naresh.kumar@lpu.co.in

\*Corresponding Author:- Chandan Kumar

\* Research Scholar (MSc in microbiology), Department of Clinical Microbiology, Lovely Professional University Phagwara. Orchid ID: 0000-0002-5034-2143 Email ID: pappu.bishnupur@gmail.com

### Abstract

Morbidity and mortality are substantially impacted by genital tuberculosis. The lack of distinct symptoms and clinical characteristics in patients with genital tuberculosis poses a significant clinical challenge in terms of early detection and management. The current research investigated the incidence and assessment of clinical characteristics of genital tuberculosis in Central Bihar, India. The research was conducted from January 22 to April 23 in different parts of Begusarai district, Central Bihar, India, following the application of inclusion and exclusion criteria to 342 subjects. The patient classification for this investigation is predicated on their clinical history and symptoms. The patients are further classified based on the results of their pathological examination into two groups - symptomatic and asymptomatic. The highest percentage of incidence is asymptomatic clinically strong suspected i.e., 36.3%. The current investigation identifies the total incidence of tuberculosis in 45 (13.1%) patients as positive, of which 25 (17.2%) are female and 20 (10.8%) are male out of 342 patients. Due to comparatively lower standards of living and poorer personal hygiene, the percentage of genital tuberculosis incidence in developing countries is high. Tuberculosis at any stage cannot be diagnosed with a single test at this time. Thus, a substantial amount of radiological and pathological investigation, as well as clinical history have constituted the majority of the diagnostic process.

CC License  
CC-BY-NC-SA 4.0

**Keywords:** Genital tuberculosis, incidence, clinical characteristics, Bihar, clinical history, pathological diagnosis

### 1. Introduction:

Cases of genital tract tuberculosis have been documented in autopsy series, and more recently in laparoscopy series involving infertility and pelvic pain in patients presenting with chronic pelvic pain and menstrual irregularities (Mishra et al., 2019; 2020). The Global TB Report estimated that there are 10.4 million new cases of tuberculosis (TB) worldwide, 3.5 million of which were in women, resulting in 2 million fatalities (Bhargava et al., 2021). Developing countries account for more than 95% of newly diagnosed cases and fatalities of

tuberculosis, with 75% of patients falling within the most economically productive age bracket (15–54 years), thereby imposing a significant financial strain on both the family and the nation (Patel et al., 2022; Onakpoya, 2022). The geographic location of India significantly influences the incidence of genital tuberculosis in cases of infertility due to lack of awareness and poor hygiene, with rates ranging from 1% to 19% in different regions of India (Sharma et al., 2023). India has one of the world's greatest prevalence rates of tuberculosis. In different parts of India, the rates range from 16.1% to 19%. The percentage of genital tuberculosis incidence in Patna, Bihar is 54.71%, 11.2% in Uttar Pradesh, and 8% in Karnataka (Girish, 2020; Saxena et al., 2022; Sharma et al., 2019). The incidence percentage differs with different genders. The incidence of female genital TB recently reported in India ranges from 45.1 cases per 100,000 infertile women (45.5%) in community-based research ranging from Andaman Island to India (Shree, 2020). Concerned by the worldwide incidence, mortality, and morbidity associated with tuberculosis (Kamath et al., 2022; Kumar et al., 2018); the World Health Organization (WHO) advocated the Directly Observed Treatment Short Course (DOTS) strategy, a novel and efficacious approach to tuberculosis control that incorporated five fundamental components. Case detection among patients with respiratory symptoms using sputum smear microscopy; short-course treatment that is standardized, directly observed, and monitored; uninterrupted supply of anti-TB drugs; and a government commitment to prioritizing tuberculosis control. By adopting DOTS through the Revised National TB Control Program of India, India obtained a 70% case detection rate and an 85% cure rate (Bhargava et al., 2021; Kaur et al., 2021).

Generally, a patient with genital tuberculosis exhibits no indications or symptoms (Gangania et al., 2017). Although they appear healthy, the majority of cases become apparent only after the patient has sought treatment for infertility (So et al., 2017). In clinical manifestation, patients with acute or chronic tuberculosis frequently experience fever (40–70%), weight loss (40–90%), and abdominal discomfort as symptoms (Kaur et al., 2020; Singh et al., 2020). Constipation, fever (40–70%), weight loss (40–90%), abdominal pain (80–95%), abdominal distension (11–20%), and diarrhoea are frequently reported by patients (Pradhan et al., 2022; Singh and Singh, 2023). Anorexia, malaise, and fatigue are also observed as symptoms of genital tuberculosis (Nandan et al., 2020; Yadav et al., 2023). Malabsorption symptoms such as abdominal pain, nausea, and vomiting may be observed in cases of ileocecal tuberculosis (Husain et al., 2022; Esmail et al., 2018). The objective of the current study is to determine the incidence and evaluate the clinical features of genital tuberculosis in the central region of Bihar, India.

## 2. Material and method:

This study was carried out from Jan 2022 to April 2023 upon 342 subjects selected by the inclusion and exclusion criteria from camping at different parts of Begusarai district, Central Bihar, India.

The patients were selected based on the exclusion criteria: patients aged > 50 years. The inclusion Criteria are as follows: a person having symptoms of infertility, mild fever in the evening, chronic coughing, weight loss, and loss of aptitude. Further criteria include primary and secondary infertile females, post-menopause women with abnormal uterine bleeding (AUB), irregular menstrual cycle, presence of lymph node or gland, and past history of tuberculosis either subject or family member.

Patients are primarily classified on the basis of their clinical history and physical appearance into two groups symptomatic and asymptomatic, later symptomatic patients are classified based on pathological findings.

## 3. Result and Discussion:

In the results, 342 patients were divided based on clinical features and physical appearances into 252 asymptomatic and 90 symptomatic, later based on pathological findings. 252 asymptomatic patients are further divided into 192 asymptomatic clinically healthy patients, 49 asymptomatic clinically mild suspected patients, 11 asymptomatic clinically strong suspected patients, 90 symptomatic patients further divided into 70 symptomatic clinically mild suspected patients, 20 symptomatic clinically strong suspected patients,

Asymptomatic clinically healthy are 192 patients. Among this group 8 out of 192 patients (4.16%) (3 male and 5 female patients) are positive. The asymptomatic patients look physically fit in appearance but are a close relative to the active patient suffering from TB.

Asymptomatic clinically mild suspected were 49 patients out of 252 patients. Patients of this group appear to be weak and underweight based on their physical appearance and economic status. Out of the 49 patients, 6 were positive (12.2%).

Asymptomatic clinically strong suspected 11 patients out of which 4 patients (36.3%) were positive. The patients have poor hygiene as well as low economic status based on which they were strongly suspected. Patients showed the symptoms of MTB, symptomatic clinically mild suspected 70 patients, out of which 15 patients (21.42%) are positive.

**Table 1: Percentage of incidence of asymptomatic and symptomatic patients**

	No. of total patients	No. of positive patients	Percentage of incidence (%)
Asymptomatic clinically healthy	192	8	4.16
Asymptomatic clinically mild suspected	49	6	12.2
Asymptomatic clinically strong suspected	11	4	36.3
Symptomatic clinically mild suspected	70	15	21.42
Symptomatic clinically strong suspected	20	12	60

Symptomatic clinically strong suspected-20 (9 male and 11 female) patients, 12 patients are positive. The clinical characteristics of positive male patients are described in Table 2. These are coughing mixed with blood, fever, penis sore and weight loss along with most of the patients whose physical appearance and symptoms indicated that they are affected. It is a universal misconception that all women lack knowledge awareness and understanding of personal hygiene and sanitary napkins. The clinical manifestations of positive female patients are depicted in Table 3. The clinical symptoms are vaginal discharge, abdominal pain, fever, weight loss, amenorrhea, secondary infertility, coughing, and one patient is primarily infertile. According to Mishra et al., (2020), among the clinical manifestations, irritative voiding symptoms were the most prevalent (69.81%), followed by haematuria and flank discomfort (56.60%). The organ most frequently impacted was the kidney (62.26%), with the urinary bladder (24.53%), prostate (9.43%), and epididymis (1.89%) following suit in that order of prevalence.

**Table 2- Clinical characteristics of Symptomatic clinically strong suspected male patients**

Symptoms	No of Patients	Pathological Findings
Coughing mixed with blood, fever and weight loss	02	TLC-14200 & 16400 Hb- 9.2 & 9.0 gm% ESR- 70 mm & 120 mm MT- Both Positive AFB- <b>Both Positive</b>
Coughing, fever, weight loss	06	TLC-6700 to 11400/cumm DLC- 4 has neutrophilia > 75 % 2 has lymphocytosis 55 to 65% Hb-9.0 to 11.5 gm% ESR- 60 to 110 mm 1st hr MT- POSITIVE -04 AFB- <b>POSITIVE-02</b> Rest four patients are strongly suspected. So, their blood samples are collected for TB Gold, out of 4 one patient is TB Gold- <b>POSITIVE-01</b> Rest 3 patients are also much suspected, but TB Gold is Negative. So their sputum samples are collected for gene xpert. Gene xpert- <b>POSITIVE-01</b> But rest two patient are pathologically negative.

Penis sore	01	<p>One patient has sore in his penis. He has family history of tuberculosis. History of fever and weight loss. Pus discharge from penis. He has five children. His wife is also positive by AFB smear examination. All five children are very weak and underweight they are under precaution treatment from RNTCP.</p> <p>Pathological findings are-</p> <p>TLC-13500/cumm</p> <p>DLC – Neutrophilia (85%)</p> <p>Hb- 10.0 gm%</p> <p>ESR-80 mm 1st hr</p> <p>MT- POSITIVE</p> <p>TB GOLD- <b>POSITIVE-01</b></p> <p>ZN Stain of pus- Negative</p>
------------	----	--

**Table 3-** Clinical characteristics of Symptomatic clinically strong suspected female patients

Symptoms	Number of Patients	Pathological findings
Vaginal discharge, abdominal pain, fever, weight loss and one patient is primary infertile	05	<p>TLC- 4500 to 8000/cumm</p> <p>Hb-6.2 to 9.0 gm%</p> <p>ESR-70 to 120 mm 1st Hr.</p> <p>Pap smear-01 suggestive of tuberculosis. 5 pap smears are collected by gynecologist and done cytological examination. But 4 are negative and one is suggestive of tuberculosis. All 5 these patients blood samples are collected for TB Gold test. Result TB Gold- <b>POSITIVE-02</b>. In these two positive patients, one is that primary infertile patient.</p>
Amenorrhea+ fever+ weight loss.	01	<p>Our team visited a home where a woman found lying on bed. She is very weak, unable to walk and unable to coughing. She is unmarried and underweight. Her father was old TB patient.</p> <p>Pathological findings are-</p> <p>TLC-5100</p> <p>DLC-Lymphocyte-62%</p> <p>Hb-6.8 gm%</p> <p>MT- POSITIVE</p> <p>AFB Sputum- Unable to give sputum sample.</p> <p>TB Gold- Negative</p>
Coughing and weight loss	03	<p>TLC-11400</p> <p>DLC-Neutrophils-82%</p> <p>MT-POSITIVE-01 X Ray-</p> <p><b>POSITIVE-01</b></p> <p>Sputum AFB- <b>POSITIVE-01</b></p> <p>Total <b>POSITIVE cases-02</b></p>
Secondary Infertility, coughing, history of fever and weight loss.	02	<p>TLC-8600 &amp; 11700</p> <p>DLC-within normal limit &amp; Neutrophilia-76%</p> <p>Hb-10.8 gm% &amp; 9.4 gm%</p> <p>AFB-Negative &amp; <b>POSITIVE</b></p> <p>TB Gold 1st -Negative</p> <p>Gene Xpert- Negative</p>

342 patients met the inclusion and exclusion criteria. After intense counselling and pathological and radiological findings of the present work, overall, 45 patients were positive (13.1%), out of which were 20 males (5.8%) and 25 females (7.2%).

The incidence of tuberculosis is 13.1% at Begusarai, Central Bihar in the present study.

20 males out of 207 males (9.6%) 25 females out of 135 (18.5%) are positive. Total confirmed cases of genital tuberculosis are 9 (2.6%) out of which male genital tuberculosis is 2 (0.58%) and female genital tuberculosis is 7 (2.04%). However, complications arise when the characteristics are inconsistent, and a considerable degree of clinical suspicion is required to establish the diagnosis. In the present investigation, 12 patients (3.5%) showed infertility symptoms, out of which 2 males (0.58%) and 10 females (2.92%) were positive. Infertility due to tuberculosis in males is 0 and females was 4 (1.16%). An estimated 11% of individuals do not exhibit any symptoms other than infertility; in such cases, a diagnostic evaluation is necessary to exclude all common causes of infertility which is in support of the investigation by (Saxena et al., 2022).

With the results discussed above, poor personal hygiene and standard of living are the primary underlying causes of tuberculosis and other diseases. The prevalence of tuberculosis is significantly lower in developed nations characterized by high standards of living and personal hygiene, as opposed to neglected. In developing countries, the disease is more prevalent because of comparatively lower standards of living and personal hygiene (Saxena et al., 2022; Onakpoya, 2022; Sharma et al., 2023). On certain occasions, even when every clinical symptom is indicative of tuberculosis, all diagnostic tests return negative results. Thus, the majority of diagnoses have been established through the process of radiological and pathological investigations, as well as clinical history.

#### 4. Conclusion:

Due to the presence of alternative causes or prior tuberculosis-related harm in infertility, other symptoms, such as weight loss, fever, coughing with blood, and abdominal pain, have a high rate of false-positive results; therefore, each patient must be approached with extreme caution. A person who is closely related to the active patients asymptomatic and appears fit and healthy is also at risk when comes to genital tuberculosis. The research demonstrates that the laboratory investigation, which continues to employ pathological and microbiological, combines numerous minimally invasive diagnostic modalities and is suitable for concluding genital tuberculosis.

#### 5 References

1. Mishra, K. G., Ahmad, A., Singh, G., & Tiwari, R. (2020). Current Status of Genitourinary Tuberculosis: Presentation, Diagnostic Approach and Management-Single Centre Experience at IGIMS (Ptana, Bihar, India). *Indian Journal of Surgery*, 82, 817-823.
2. Sharma, D., Depan, A., Yadav, K., Narayan, S., & Sharma, A. (2019). *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, 8(6), 2286-2293.
3. Sharma, J. B., Sharma, S., Sharma, E., Dharmendra, S., & Singh, S. (2023). Immune disturbances in female genital tuberculosis and latent genital tuberculosis. *American Journal of Reproductive Immunology*, 89(2), e13632.
4. Saxena, R., Shrinet, K., Rai, S. N., Singh, K., Jain, S., Jain, S., ... & Jain, M. (2022). Diagnosis of genital tuberculosis in infertile women by using the composite reference standard. *Disease Markers*, 2022.
5. Girish, S. (2020). *Evaluation of Genital TB Infertail Women by Endometrial Tb PCR and HPE-Its Correlatioonto Hysteroscopy Features* (Doctoral dissertation, Rajiv Gandhi University of Health Sciences (India)).
6. Mishra, K. G., Ahmad, A., Singh, G., & Tiwari, R. (2019). Tuberculosis of the prostate gland masquerading prostate cancer; five cases experience at IGIMS. *Urology Annals*, 11(4), 389.
7. Gangania, P. S., Bisht, D., & Singh, V. A. (2017). Current concepts of diagnosis for mycobacterial infections in female genital tract. *Indian J Microbiol Res*, 4, 7-13.
8. So, P. N. H., & Villanueva, A. R. T. (2021). Serologic and urinary characteristics of laboratory-confirmed genitourinary tuberculosis at a tertiary hospital in the Philippines. *BMC urology*, 21(1), 1-34.
9. Kaur, M., Malik, R., Dutta, K., & Khera, K. (2020). A rare case report of large bilateral vulval elephantiasis. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, 9(6), 2642-2646.

10. Bhargava, A., Bhargava, M., & Juneja, A. (2021). Social determinants of tuberculosis: context, framework, and the way forward to ending TB in India. *Expert Review of Respiratory Medicine*, 15(7), 867-883.
11. Singh, A. K., Kumar, A., & Dhole, T. N. (2020). Recent trends and changing aetiology of acute encephalitis syndrome in India. *Asian Journal of Research in Infectious Diseases*, 3(1), 33-47.
12. Nandan, L. D. T. Magadh Medical College and Hospital, Gaya, Bihar, India 2 Senior Resident, Department of Paediatrics, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar, India Corresponding Author: Dr. Manjul Vijay. *European Journal of Molecular & Clinical Medicine (EJMCM)*, 7(11), 2020.
13. Yadav, P., Azam, M., Ramesh, V., & Singh, R. (2023). Unusual Observations in Leishmaniasis—An Overview. *Pathogens*, 12(2), 297.
14. Shree, A. (2020). *Role of Diagnostic Hystero-Laparoscopy in Evaluation of Female Infertility* (Doctoral dissertation, Rajiv Gandhi University of Health Sciences (India)).
15. Kumar, A., Paswan, S. S., Kumar, B., & Raj, P. (2018). The diagnostics significance of serum cancer antigen-125 in abdominal tuberculosis. *International Surgery Journal*, 5(2), 474-477.
16. Pradhan, S., Mishra, A., & Sahu, K. (2022). Tropical Diseases in Women. In *Skin Diseases in Females* (pp. 355-389). Singapore: Springer Nature Singapore.
17. Singh, N. S., & Singh, D. P. (2023). Neglected tropical diseases: a brief review on Indian perspectives.
18. Kamath, S. D., Kumari, S., Sunder, A., KAMATH, S. D., & SUNDER, A. (2022). A study of the profile of scrub typhus in a tertiary care hospital in Jharkhand: an underestimated problem. *Cureus*, 14(7).
19. Husain, A. A., Nayak, A. R., Jain, R. K., Dagainawala, H. F., Tumane, R., Jawade, A., ... & Kashyap, R. S. (2022). Tuberculosis in Mine Workers: Advances in Current Diagnostic Landscape. In *Medical Geology in Mining: Health Hazards Due to Metal Toxicity* (pp. 49-81). Cham: Springer International Publishing.
20. Patel, B., Jain, A., Shah, A. D., & Shah, K. V. (2022). TB AND OTHER CHEST INFECTIONS.
21. Onakpoya, I. J. (2022). Drugs used in the treatment of tuberculosis and leprosy. *Side Effects of Drugs Annual*, 44, 311-331.
22. Esmail, A., Sabur, N. F., Okpechi, I., & Dheda, K. (2018). Management of drug-resistant tuberculosis in special sub-populations including those with HIV co-infection, pregnancy, diabetes, organ-specific dysfunction, and in the critically ill. *Journal of thoracic disease*, 10(5), 3102.