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## Case Report

# Intestinal tuberculosis and inflammatory bowel disease; the usual challenging differential diagnoses: A case report <sup>☆</sup>

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### ABSTRACT

Intestinal Tuberculosis (TB) is a very rare presentation of TB, presenting with a nonspecific symptom that mimics Crohn's disease, making diagnosis challenging. We present a case of intestinal tuberculosis in a 37-year-old female who had long-term abdominal pain and diarrhea and showed all the signs of inflammatory bowel disease (IBD) during a thorough clinical, endoscopic, radiologic, and histologic examination. Seven months of right mid- and lower-abdominal discomfort brought a 37-year-old woman to our hospital with pain, diarrhea, bloating, and tiredness worsening after meals. A CT scan of the abdomen highly suggested inflammatory bowel disease. A colonoscopy revealed a patulous ileocecal valve with terminal ileum ulcerations, ileal stenosis, cecum, and valve ulcers, where biopsies findings suggesting also IBD. While planned to start mesalazine; PCR TB testing of biopsy material confirmed tuberculosis. She recovered well following conventional intestinal TB therapy. Intestinal TB is called the great mimicker because its symptoms resemble different illnesses. Misdiagnosis can lead to incorrect treatment, life-threatening complications, and mortality. This paper's radiology, macroscopy, and histopathology highly suggested Crohn's disease, however, intestinal TB was the diagnosis. TB quadrable treatment significantly benefited patients. Consider intestinal TB in this scenario, especially in patients coming from endemic TB areas is highly recommended. The importance of our case report is increasing the awareness that intestinal TB can mimic inflammatory bowel disease and other disorders such as chronic disease and malignancy, for which the treatment is completely different and could lead to fetal outcome; therefore, we should maintain a high level of suspicion when evaluating patients with nonspecific symptoms, particularly in endemic areas of the disease, to obtain a correct diagnosis and appropriate treatment.

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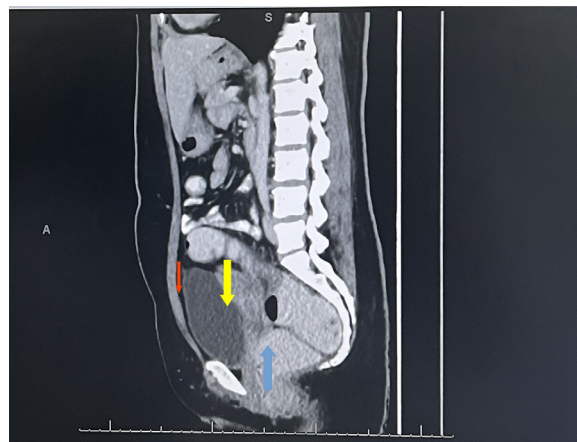
## Introduction

Tuberculosis (TB) is a centuries-old bacterial infection caused by the mycobacterium tuberculosis complex (MTBC), which includes *Mycobacterium tuberculosis*, *Mycobacterium africanum*, *Mycobacterium bovis*, and *Mycobacterium canetti*. According to the World Health Organization (WHO), this illness is one of the leading causes of infectious disease-related death worldwide. It is regarded as the second-leading factor in declining morale after HIV [1,2]. Any organ in the body may be affected by TB, which is divided into pulmonary and extrapulmonary forms. Pulmonary TB accounts for 80%-85% of all TB cases and affects the pleura, lymph nodes, belly, skin, joints, meninges, and bones [3].

On the other hand, about 20% of TB patients have extrapulmonary TB, and only 10% have intestinal TB [4]. The primary challenge in treating individuals with intestinal TB is determining a diagnosis. This is caused by inaccurate clinical symptoms that may mimic various illnesses. This is why intestinal TB is known as the great mimicker. A culture of *M tuberculosis* utilizing intestinal mucosal tissue samples is the gold standard test for intestinal TB. However, due to the paucibacillary nature of these bacteria, it is challenging to identify *M tuberculosis* with this technique, increasing the likelihood of false negative results. Numerous other illnesses, such as Crohn's disease and intestinal cancer, have symptoms remarkably similar to those of intestinal TB; thus, there are still numerous problems with using different diagnostic techniques. Incorrect treatment delivery may occur from a wrong diagnosis of intestinal TB, which can lead to under- or over-diagnosis [5,6]. Although the course of treatment is similar to that for pulmonary tuberculosis, death rates might vary, ranging from 1.4% to 20%, depending on various clinical risk factors [5,6]. Poor prognosis is associated with intestinal TB, mainly if there are potentially fatal complications such as intestinal stricture, blockage, perforation, and bleeding [7]. In this paper, we present a case report of a female patient of reproductive age who suffered from a protracted period of abdominal pain and diarrhea, with nearly all investigations pointing to the possibility of inflammatory bowel disease (IBD) and who was ultimately diagnosed with intestinal tuberculosis.

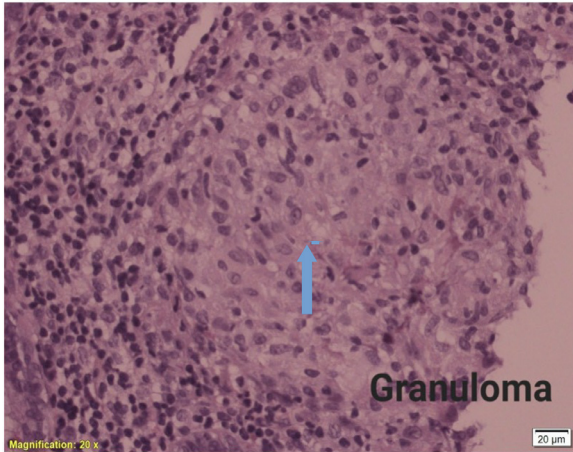
## Case presentation

A 37-year-old female housekeeper from Bangladesh presented to us in September 2022 suffering from 2 months of abdominal pain, which was located mainly in the right mid and lower sides of the abdomen. She indicated that its abdominal pain worsens after meals and is accompanied by diarrhea, bloating, and fatigue. Her height is 1.55 m, her weight is 69 kg, her BMI is 25.97, her blood pressure was 111/81 mm Hg, and her pulse rate was 74/min and regular. After more discussion, the patient stated the pain became more frequent and associated with nausea, vomiting, and resulted in a weight loss of 5 kg. Also, she rated the degree of pain at 6 out of 10. Her family history is unremarkable, and there was no history of smoking or drinking alcohol. The abdominal examination

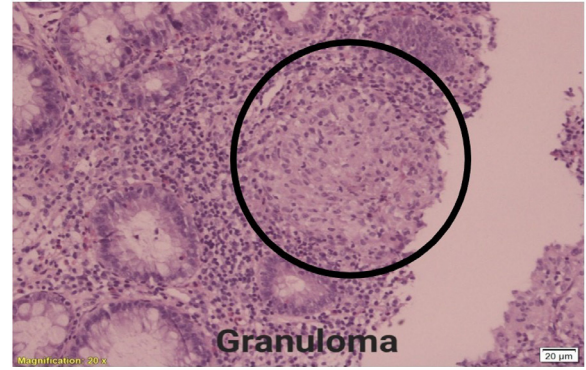


**Fig. 1 – Findings of CT Abdomen in our patient: • The yellow arrow in the above picture indicate reduced caliber of caecum, • The red arrow above picture indicate mucosal enhancement, • The blue arrow above picture indicates dilated loops of small intestine.**

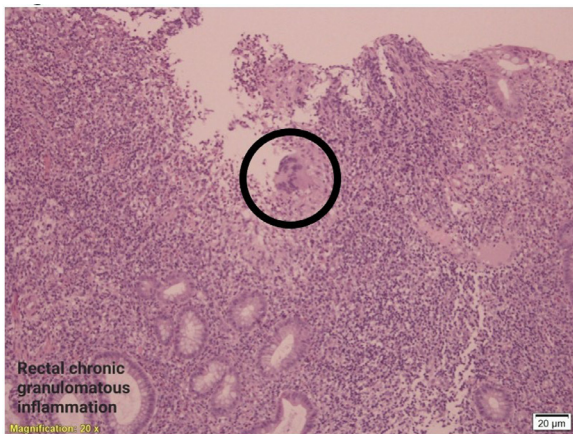
was distended with palpable bowel loops and increased bowel sounds, suggesting acute intestinal obstruction. However, the rectal examination was normal. Because TB presented with abdominal pain that might be linked to genitourinary tract affection, this patient was examined and evaluated by a urologist and a gynecologist, and any probable diagnosis of TB affection to the genitourinary tract was ruled out. The laboratory tests of blood and stools confirmed positive *Helicobacter pylori* [*H pylori*] infection and anemia with leukocytosis [WBC:14.35×10<sup>9</sup>/L; reference range 4.0-11.0×10<sup>9</sup>/L], mean corpuscular hemoglobin concentration (MCHC):30.8 g/dL; reference range 32.0-36.0 g/dL, Hemoglobin: 10.30 g/dL; reference range 12.0-16.0 g/dL], as well erythrocyte-sedimentation-rate (ESR) was elevated. Chest X-ray and upper ultrasound abdomen were normal; contrast-enhanced computed tomography (CT) showed distended ileum with fecal matter and dilated jejunal and ileal loops. Minimal free fluid was adjacent to the terminal ileum. The reduced caliber of caecum with prominent submucosal fat and diffuse postcontrast mucosal enhancement in the caecum and ascending colon increases suspicion of inflammatory bowel disease (Fig. 1). In addition, the result of endoscopic biopsy for the ileum and cecum showed granulomatous with focal chronic active disease (Figs. 2–7). A colonoscopy was performed, which revealed a patulous ileocecal valve with terminal ileum ulcerations and ileal stenosis, and the cecum and ileocecal valves were deformed (Figs. 8–12). Despite the gross appearance was consistent with conditions such as tuberculosis, Crohn's disease, or malignancy. *M tuberculosis* was identified by PCR in lymph node biopsies from the mesentery sent for microbiological analysis, indicating TB. The woman was given antituberculous medicine and was followed in an outpatient clinic. Her symptoms and indications improved noticeably over time. Her symptoms began to improve significantly; she began to gain weight and feel stronger. She contracted SARS-COV2 infection (COVID-19) while on anti-TB treatment, and her symptoms were modest, including fever, body aches, myalgia, and cough.



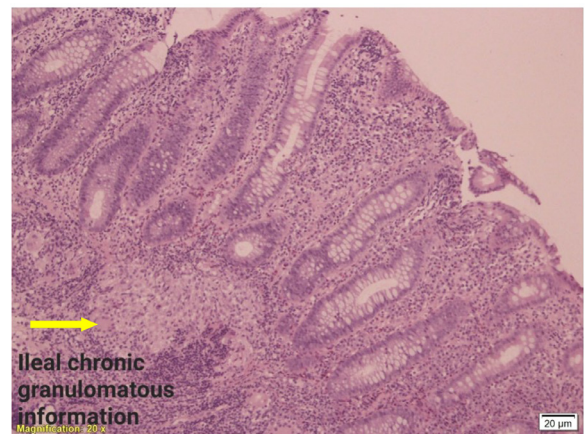
**Fig. 2 - Histopathology findings showing granulomatous ileitis cecities with focal active cecities and ileitis; the blue arrow indicates granuloma.**



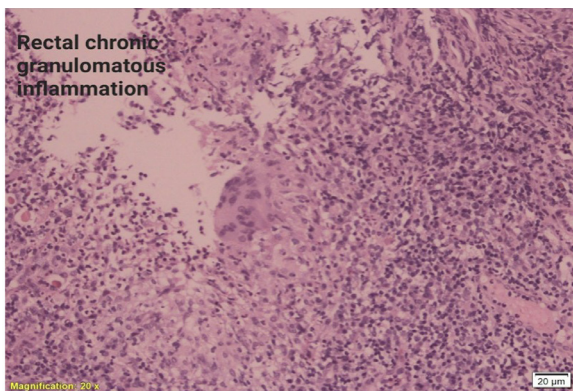
**Fig. 5 - Histopathology findings show chronic granulomatous inflammation; the black circle indicates chronic granulomatous inflammation.**



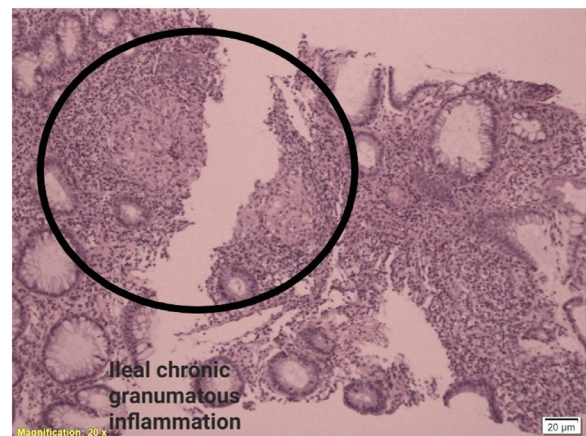
**Fig. 3 - Histopathology findings show rectal chronic granulomatous inflammation; the black circle indicates rectal chronic granulomatous inflammation.**



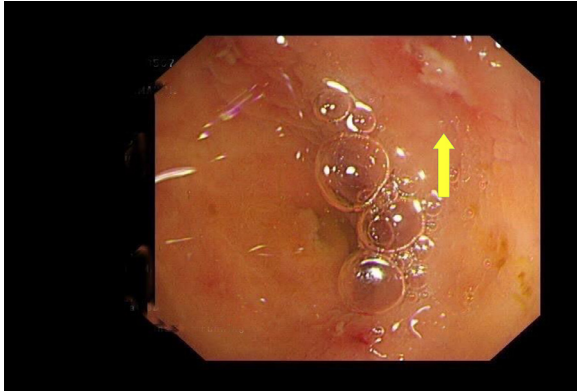
**Fig. 6 - Histopathology findings showing ileal chronic granulomatous inflammation, the yellow arrow indicates ileal chronic granulomatous inflammation.**



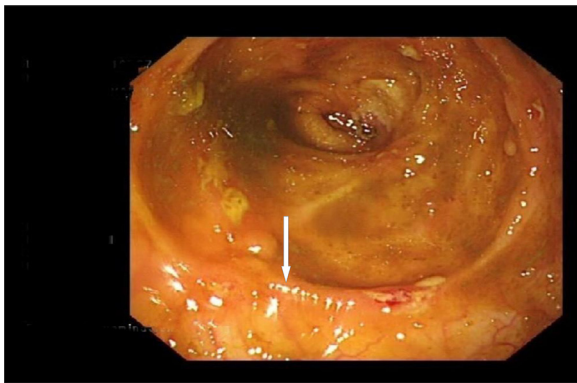
**Fig. 4 - Histopathology findings showing rectal chronic granulomatous inflammation.**



**Fig. 7 - Histopathology findings showing ileal chronic granulomatous inflammation, the yellow arrow indicates ileal chronic granulomatous inflammation; the black circle indicates ileal chronic granulomatous inflammation.**



**Fig. 8 – Colonoscopy findings in intestinal TB; yellow arrow indicates intestinal ulcer.**

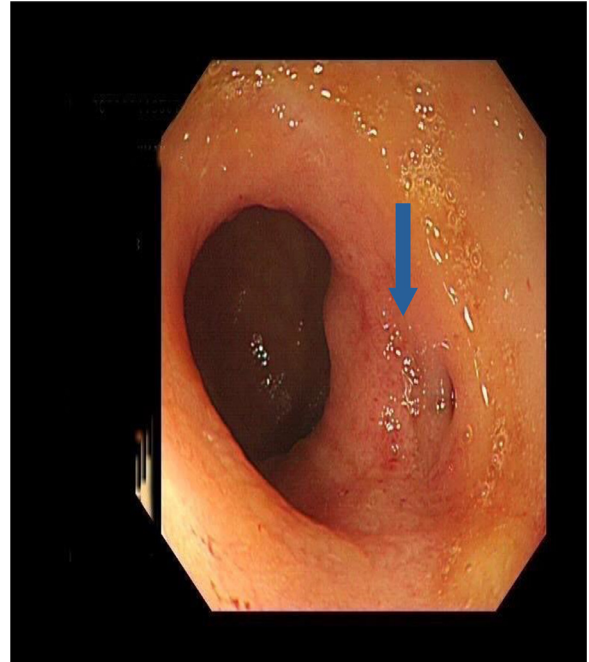


**Fig. 9 – Colonoscopy finding related to intestinal TB; white arrow in the left side picture indicates a patulous ileocecal valve.**

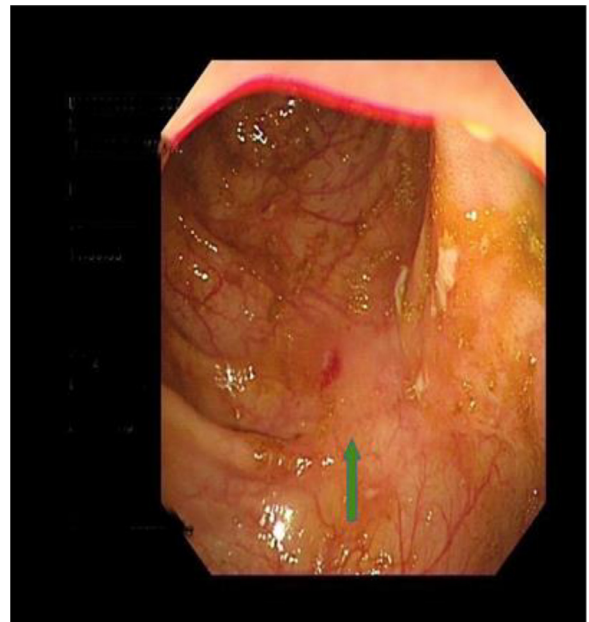
All COVID-19-related symptoms were moderate and resolved within 72 hours. The patient's clinical condition has improved significantly, and she is still being in follow up in the outpatient clinic.

## Discussion

Intestinal tuberculosis accounts for 1%-3% of all TB cases globally [8]. It can happen with a persistent lung disease or as a primary disease that doesn't affect the lungs [9]. Although intestine involvement is less prevalent among extra-pulmonary types than involvement of the genito-urinary tract, bone, and meninges, it may cause severe morbidity and mortality. The pathogen *M tuberculosis* causes most instances of ITB. Whereas *M bovis* is in charge of cases involving consuming contaminated dairy products. Bacilli-producing epithelioid tubercles in the submucosa lymphoid tissue can infect the mucosal layer of the gastrointestinal (GI) tract. After 2-4 weeks, caseous necrosis of the tubercles causes ulceration of the mucosa that lies on top. It may then extend to the deeper layers, nearby lymph nodes, and the peritoneum [10]. According to de Jesus et al., 10-year-old children with persistent abdominal pain

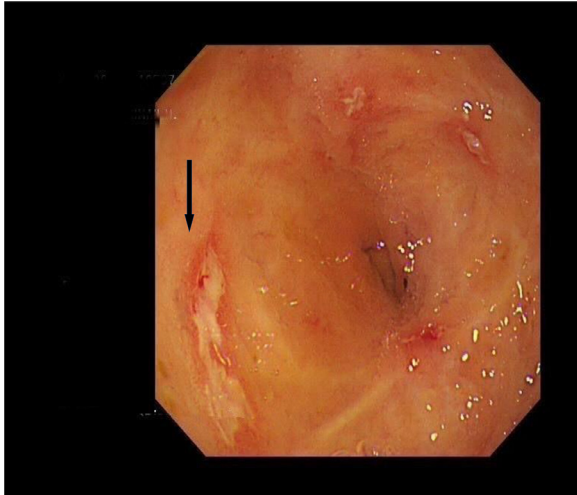


**Fig. 10 – Colonoscopy findings in intestinal TB; the blue arrow in the above-left side picture indicates TB ileitis.**



**Fig. 11 – Colonoscopy findings in intestinal TB; the green arrow in the right-side picture indicates shows inflammation.**

and malnutrition had stenosing left-sided TB colitis. He was first treated medically but eventually needed surgery to remove a perforated lesion [11]. Dalugama et al., described a 37-year-old man with diarrhea and high temperature. CT's abdomen showed a thickened, elongated appendix. Diagnostic paracentesis showed lymphocytic transudative ascites. A



**Fig. 12 – Colonoscopy findings in intestinal TB; the black arrow in the picture indicates an ulcer.**

laparotomy-removed appendix showed tuberculous granulomata with caseation [12]. Although the ileum and cecum are the most often infected areas of the GI tract, mycobacteria may affect any part of the tract. Several variables, including intestinal fluid stasis, extensive lymphoid tissue, an enhanced absorption rate at this region, and intimate contact of the bacilli with the mucosa, all play a role in terminal ileum infection [13]. Since ITB's clinical symptoms are nonspecific and the most frequent patient complaint is persistent abdominal pain, it might resemble other disorders, including CD. Diarrhea, hematochezia, and extraintestinal symptoms are clinical signs supporting CD diagnosis, while fever, night sweats, pulmonary involvement, and ascites support the diagnosis of ITB. However, ITB was more commonly linked to giant cells, caseation necrosis, confluent granulomas, and granulomas with lymphoid cuff. Rectal bleeding and abdominal lump awareness are possible in 10%-15% of patients; therefore, it is frequently misdiagnosed as cancer or chronic inflammatory bowel disease [14,15]. Our patient had no prior history of TB. His chest X-ray revealed nothing unusual, and he denied having a persistent cough or hemoptysis. Like all extrapulmonary TB, conventional therapy for intestinal tuberculosis includes taking isoniazid, ethambutol, rifampicin, and pyrazinamide for 6-9 months.

## Conclusion

The diagnosis of intestinal TB is considered complex, and several tests are necessary to rule out other medical conditions that are similar to it. As a result, misdiagnosis can result in maltreatment and life-threatening complications, such as in Crohn's disease patients using immunosuppressive medications. Physicians should keep in mind that nonspecific clinical signs of intestinal tuberculosis may develop, especially in patients arriving from TB-endemic regions, since treatment

is available and accessible, with a favorable prognosis, if the proper diagnosis is not overlooked from the beginning.

## Patient consent

The patient had signed a consent form confirming that he is fully aware of the publishing of his case, and all aspects of the uploaded information's, radiology, pathology, and colonoscopy photos, and the informations that may identify the patient had been eliminated.

## IRB Approval

Approval for publication was offered through our NMC Central and ethics Scientific Committees (NMCHC/CR/AUH/APP).

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