www.wcprj.com 2025 Page: 01-08

Case Study

World Current Pharmaceutical Research Journal

Volume: 01
Issue: 03

CASE STUDY: ABDOMINAL TUBERCULOSIS – A DIAGNOSTIC AND THERAPEUTIC CHALLENGE

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Article Received: 31 April 2025
Article Revised: 20 May 2025
Published on: 10 June 2025

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INTRODUCTION

Abdominal tuberculosis (TB) is a rare manifestation of extra-pulmonary TB involving multiple intra-abdominal structures, such as the gastrointestinal tract, peritoneum, mesenteric lymph nodes, liver, spleen, and other abdominal organs. It may have a diverse array of nonspecific symptoms including abdominal pain, weight loss, fever, diarrhoea, constipation, and ascites, sometimes simulating other conditions like Crohn's disease, malignancies, or abdominal infections. Because of this varied clinical presentation, abdominal TB is difficult to diagnose and is usually delayed. This case report intends to present a comprehensive description of a patient with abdominal TB, including the clinical features, diagnostic tests—such as imaging, histopathology, and microbiological examination—and the treatment strategy followed for effective management.

Background

Tuberculosis (TB) is still a major global public health issue, especially in developing nations where socio-economic status, malnutrition, and poor access to healthcare make it highly prevalent. Although pulmonary TB is the most prevalent type of the disease, extra-pulmonary TB, including abdominal TB, poses specific diagnostic and therapeutic challenges. Abdominal TB may involve several intra-abdominal organs and structures like the gastrointestinal tract, peritoneum, mesenteric lymph nodes, liver, and spleen. Because of its varied clinical presentations, it may readily be confused with other illnesses such as inflammatory bowel disease (IBD), gastrointestinal neoplasms, or intra-abdominal infection. Such symptomatic overlap will more likely than not cause diagnostic delays and institution of

appropriate treatment, necessitating an early detection and high degree of suspicion in order to provide optimal management.

Case Presentation

Patient Information:

- **Age/Gender:** The patient is a 32-year-old woman.
- **Medical History**: She has no prior history of tuberculosis and no known immuno-suppressive conditions, such as HIV, diabetes, or long-term corticosteroid use, which could predispose her to TB infection.

- **Symptoms**: Over the past three months, she has experienced progressively worsening abdominal pain, which is not localized but predominantly affects the lower abdomen. She has also noticed a significant, unintentional weight loss of 8 kg during this period. Additionally, she reports a persistent low-grade fever, which is more pronounced in the evenings, along with intermittent episodes of diarrhoea.

- **Physical Examination**: Upon clinical assessment, there is mild abdominal distension, suggesting possible peritoneal involvement or ascites. The patient exhibits tenderness in the right lower quadrant, which may indicate ileocaecal involvement, a common site for abdominal TB. Furthermore, mesenteric lymphadenopathy is palpable, suggesting lymph node enlargement due to TB infection or an inflammatory process.

Investigations

1. Blood Tests

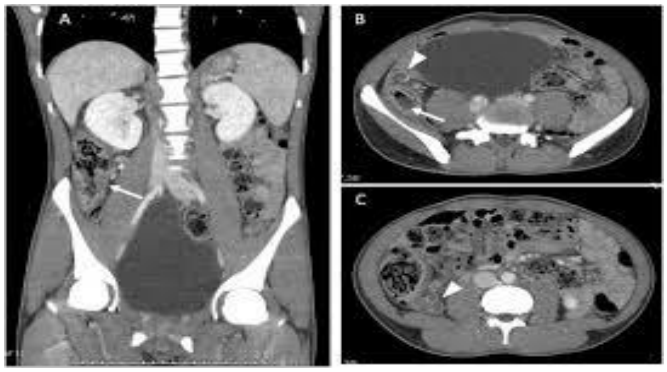
Raised ESR (erythrocyte sedimentation rate) and CRP (C-reactive protein) indicate an ongoing **inflammatory response**, which is commonly seen in tuberculosis and other chronic infections, mild anaemia (which is frequently observed in TB patients, could be due to **chronic disease-related inflammation** or **malabsorption** secondary to gastrointestinal involvement).

2. Imaging

- **Abdominal ultrasound**: revealed **enlarged mesenteric lymph nodes** and the presence of **ascitic fluid**, both of which are suggestive of **tuberculous peritonitis or lymphadenopathy**.

- **CT scan**: Peritoneal nodularity (indicating granulomatous inflammation.), ileocecal thickening which is characteristic of **intestinal tuberculosis** (commonly involving the

ileocecal region), and several necrotic lymph nodes – a hallmark of tuberculous lymphadenitis, further supporting the diagnosis.



3. Microbiological Tests:

- **Ascitic fluid analysis**: Lymphocytic predominance, which is a classic finding in tuberculous ascites.

- ADA (adenosine deaminase) increased - a key biochemical marker suggesting **tuberculous peritonitis**, and high protein content, consistent with exudative ascitic fluid, which is often seen in TB.

- **GeneXpert TB test**: Positive for Mycobacterium tuberculosis

- **Colonoscopy**: showed Ulcerative lesions in the terminal ileum, a common site of **intestinal tuberculosis**, further supporting the diagnosis.

Diagnosis

On the basis of clinical presentation, imaging, and microbiological evidence, a diagnosis of **abdominal tuberculosis** (intestinal and peritoneal involvement) was made.

Treatment and Management

The treatment of **abdominal tuberculosis (TB)** is a multi-faceted approach involving **anti-tubercular therapy (ATT)**, **supportive care**, and **regular follow-up**. This comprehensive treatment regimen aims to **eradicate the infection**, alleviate symptoms, and **prevent complications**. Below is an elaboration of the various components of the treatment protocol:

1. Anti-Tubercular Therapy (ATT):

The standard treatment for abdominal TB involves a **6-month regimen** consisting of a combination of **first-line anti-tubercular drugs**. The treatment is typically administered in two phases:

- **Initial Phase (2 months):**
  - The patient is given a combination of **four drugs**:
    - **Isoniazid** (INH)
    - **Rifampicin** (RIF)
    - **Pyrazinamide** (PZA)
    - **Ethambutol** (EMB)
  - These drugs are designed to target Mycobacterium tuberculosis and rapidly reduce bacterial load, especially during the first 2 months of treatment.
  - **Pyrazinamide** and **ethambutol** are included to address potentially resistant strains and reduce the risk of treatment failure during the early phase.
- **Continuation Phase (4 months):**
  - After the initial 2 months, the patient is switched to a combination of **Isoniazid** and **Rifampicin** alone.
  - This phase continues for an additional **4 months** to ensure complete eradication of the tuberculosis bacteria and prevent relapse.

2. Supportive Care:

In addition to **anti-tubercular drugs**, supportive care is crucial for patient recovery and symptom management:

- **Nutrition Support:**
  - **Abdominal TB** often causes **malnutrition**, **weight loss**, and **loss of appetite**. Nutritional support, including a **high-calorie, high-protein diet**, helps in **promoting healing**, **boosting immunity**, and supporting overall health.
  - Adequate **fluid intake** is essential to prevent dehydration, especially if the patient experiences **diarrhoea** or **vomiting** as part of the disease process.
- **Symptomatic Relief:**
  - **Pain management** is an important aspect of supportive care, especially if the patient has **abdominal discomfort** due to **intestinal inflammation** or **mesenteric lymphadenopathy**. Pain relievers such as **acetaminophen** or **NSAIDs** may be used, but with caution due to potential side effects.
- **Monitoring for Adverse Effects:**
  - **Anti-tubercular drugs** can have side effects such as **hepatotoxicity, neuropathy, and ocular toxicity**, especially with **Ethambutol**. Regular monitoring of **liver function tests**, **visual acuity**, and **kidney function** is essential during treatment.

3. Follow-up:

Monitoring the patient's response to treatment is critical to ensure the effectiveness of therapy and detect any potential complications:

- **Monthly Clinical Evaluations:**
  - Regular **clinical assessments** every month help track the patient's symptoms, weight, general condition, and potential adverse effects from the medications.
  - **Progression or regression** of abdominal symptoms, such as **pain**, **ascites**, and **diarrhoea**, will be assessed to determine how well the treatment is working.

- **Repeat Imaging after 3 Months:**
  - Imaging, such as **abdominal ultrasound or CT scans**, is typically repeated after **3 months** to assess **radiological improvement**, such as **resolution of peritoneal nodularity**, **reduction in lymphadenopathy**, and **regression of intestinal thickening**.
  - **Weight gain**, **reduction in abdominal distension**, and **normalization of laboratory markers** (such as **ESR** and **CRP**) will indicate a favourable response to treatment.

- **Gradual Improvement:**
  - Most patients experience **gradual improvement** over the course of treatment. They may **gain weight**, see a **reduction in fever**, and report **decreased abdominal pain**.
  - These improvements signal that the tuberculosis infection is being controlled and that the body is recovering from the disease.

Outcome and Prognosis

After six months of anti-tubercular therapy (ATT), the patient demonstrated significant clinical and radiological improvement. Her abdominal pain resolved, and she reported an overall improvement in well-being. Additionally, her body weight increased by 6 kg, indicating a reversal of the weight loss previously associated with the disease.

From a radiological perspective, follow-up imaging showed no remaining evidence of peritoneal nodularity, which suggests a positive response to treatment. Moreover, mesenteric lymphadenopathy had completely regressed, confirming that the abdominal TB-related lymph node enlargement had resolved.

The patient’s subjective improvement was evident as she reported no recurrence of abdominal symptoms, such as pain, fever, or diarrhoea. These findings collectively indicate a

successful therapeutic outcome, with both clinical and imaging parameters supporting disease resolution.

Key Takeaways

- **High Index of Suspicion**: Abdominal tuberculosis (TB) should be strongly suspected in patients presenting with unexplained weight loss, chronic abdominal pain, and persistent fever, particularly in regions where TB is endemic. Given its nonspecific symptoms, abdominal TB can often be misdiagnosed as inflammatory bowel disease, malignancy, or other intra-abdominal infections. Therefore, a thorough clinical evaluation is essential for early recognition.

- **Comprehensive Diagnostic Approach**: The diagnosis of abdominal TB is challenging and requires a multimodal approach, combining clinical suspicion, imaging studies, and microbiological investigations. Imaging techniques such as ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI) can help identify characteristic features like lymphadenopathy, ascites, peritoneal thickening, and bowel involvement. In addition, microbiological confirmation through tests like acid-fast bacilli (AFB) staining, GeneXpert MTB/RIF, culture, and histopathology from biopsy specimens can aid in definitive diagnosis.

- **Importance of Early Treatment**: Initiating anti-tubercular therapy (ATT) as early as possible significantly improves clinical outcomes. Standard ATT regimens, typically consisting of isoniazid, rifampicin, pyrazinamide, and ethambutol, help eradicate Mycobacterium tuberculosis and prevent disease progression. Delayed treatment may lead to complications such as intestinal obstruction, perforation, and abscess formation, which could require surgical intervention.

- **Need for Close Monitoring and Follow-up**: Regular follow-up is crucial to assess treatment response and detect potential complications. This includes clinical evaluation, repeat imaging, and laboratory investigations to ensure disease resolution. Monitoring helps in preventing relapse and identifying patients who may require prolonged therapy or modifications in treatment due to drug resistance or poor response.

CONCLUSION

Abdominal tuberculosis (TB) continues to pose a significant diagnostic challenge due to its nonspecific and varied clinical presentation. Symptoms such as chronic abdominal pain, weight loss, fever, diarrhoea, and ascites often overlap with other gastrointestinal conditions like Crohn's disease, malignancies, and bacterial peritonitis, making timely diagnosis difficult. The absence of pathognomonic symptoms and the limitations of diagnostic tests further contribute to delays in detection and treatment. Despite these challenges, early intervention and appropriate anti-tubercular therapy (ATT) can lead to a complete cure.

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