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Research Article

OBSTRUCTIVE ILEUS IN PULMONARY TUBERCULOSIS PATIENT UNDERGOING ANTI-TUBERCULOSIS THERAPY: A CASE REPORT

Irisha Kirana Wiradisuria[1], Peter Ian Limas[2*]

[1] *Medical Professional Program, Faculty of Medicine, Tarumanagara University, Jakarta, Indonesia*
[2] *Division of Digestive Surgery, Department of Surgery, Faculty of Medicine, Tarumanagara University/Sumber Waras Hospital, Jakarta, Indonesia*

Corresponding Author :
Peter Ian Limas, E-mail: pi_limas@yahoo.com

ABSTRACT

Background: One of the most serious complications arising from intestinal TB is obstructive ileus. Around 15% to 54% of gastrointestinal tuberculosis patients have concurrent pulmonary TB. Awareness of this complication matters particularly in patients already receiving anti-tuberculosis therapy.
Methods: Case presentation: A 49-year-old woman with pulmonary tuberculosis, five months into treatment, presented with progressive colicky abdominal pain, distension, nausea, and obstipation. Examination showed a distended, tender abdomen with hyperactive bowel sounds. Supporting investigations revealed mild microcytic anemia, electrolyte imbalance, and radiological features of mechanical obstruction.
Results: Laparotomy demonstrated multiple adhesions involving the jejunum, ileum, omentum, and mesenteric lymph nodes, with intestinal ischemia. Histopathology confirmed chronic granulomatous inflammation consistent with tuberculosis. Adhesiolysis, supportive care, and continuation of anti-tuberculosis therapy resulted in recovery.
Conclusion: Intestinal tuberculosis should remain a differential diagnosis in pulmonary tuberculosis patients presenting with bowel obstruction, even during treatment. Timely surgical intervention combined with ongoing anti-tuberculosis therapy is essential to reduce morbidity.

Keywords: Obstructive ileus, Intestinal tuberculosis, Small bowel obstruction, Pulmonary tuberculosis, Adhesions

INTRODUCTION

One of the most serious and surgically significant complications arising from intestinal TB is obstructive ileus. It is a mechanical interruption of bowel transit caused by strictures, adhesions, or hypertrophic masses arising from chronic granulomatous inflammation and subsequent fibrosis of the intestinal wall.[1,2] Intestinal obstruction occurs in 50% to 75% of gastrointestinal tuberculosis (GITB) cases in high-burden countries, compared with only 2% to 10% in low-incidence settings. Around 15% to 54% of GITB patients have concurrent pulmonary TB[1], as ingestion of infected sputum from an active pulmonary focus represents a primary route of intestinal infection.[1,3,4]

The global burden is substantial: in 2021 alone, 5.61 million new cases of paralytic ileus and intestinal obstruction were recorded among adults aged 15 to 49 years, resulting in 32,885 deaths and 1.86 million DALYs lost.[5] Beyond India—where ileocecal involvement of TB accounted for 64% of CT-confirmed obstructions.[6] Morocco has documented a 2.3% annual rise in extrapulmonary TB, with intestinal obstruction as an increasingly recognized presentation[7], while Yemen and other conflict-affected settings report late diagnoses after months of non-specific symptoms, further compounding surgical mortality.[8] The diagnostic challenge is heightened by the clinical mimicry of TB-related obstruction with colorectal malignancy and Crohn's disease, causing treatment delays in resource-limited settings.[3]

Indonesia is one of eight countries that contributes two-thirds of the global total of TB cases.[9] Extrapulmonary TB constitutes an estimated 15% to 20% of all TB cases in Indonesia[10], with abdominal TB accounts for 11% of extrapulmonary TB cases with 38% occurring in the ileocecal.[11,12] Direct institutional evidence from Indonesia underscores the clinical reality of this complication. Guno et al. (2016)[13] at RSCM Jakarta reported a patient on active anti-TB therapy who developed obstructive ileus—initially misdiagnosed as colorectal malignancy. Nursadilah and Marliza (2024)[14] from RSUD Cut Meutia, Aceh documented a 17-year-old male with intestinal TB requiring emergency surgery, confirming that this complication is not confined to urban tertiary centers but is encountered across Indonesia's archipelago. Putranto and Muchtar (2018)[15] reported intestinal obstruction in 65.1% to 72% of intestinal TB patients, with terminal ileum and ileocecal strictures identified intraoperatively in 23.4% to 33.3% of cases and surgical mortality ranging from 2.3% to 34.4% when diagnosis was delayed.

Underreporting, inconsistent diagnostic criteria, and limited rural healthcare access suggest the true extrapulmonary burden is higher than officially recorded.[8,10] When intestinal TB presents as obstructive ileus in patients with concurrent pulmonary TB, overlapping systemic symptoms and non-specific abdominal complaints routinely delay recognition of this potentially fatal complication. This study aims to report a comprehensive management of obstructive ileus in pulmonary TB patient.

METHODS

A 49-year-old woman presented to the emergency department with a one-week history of abdominal pain, which had acutely worsened over the preceding two days. The pain was initially intermittent, colicky, and

localized to the periumbilical region, with VAS 4/10. It was not associated with identifiable precipitating or relieving factors and was accompanied by decreased appetite and reduced bowel frequency. Over the following days, the pain increased in intensity and frequency, becoming continuous and severe (VAS 7/10) within 24 hours prior to presentation. This progression was associated with nausea, generalized weakness, and obstipation, with no passage of stool or flatus during that period. The patient had been treated at the Internal Medicine Clinic 2 days ago but there was no significant improvement.

The patient denied fever, cough, chest pain, dyspnea, or urinary symptoms. She was in the fifth month of treatment for microbiologically-confirmed pulmonary tuberculosis and reported adherence to fixed-dose combination anti-tuberculosis therapy. There was no history of prior abdominal surgery, hernia, malignancy, or similar episodes.

On examination, the patient was alert and hemodynamically stable, with a blood pressure of 130/80 mmHg, pulse rate of 90 beats per minute, respiratory rate of 20 breaths per minute, temperature of 36.7°C, and oxygen saturation of 99% on room air. Her body mass index was 19.1 kg/m². Chest examination revealed bilateral rhonchi. Abdominal examination demonstrated marked distension with high-pitched, "metallic" bowel sounds most prominent in the hypogastric region, while bowel sounds were diminished to absent in other quadrants. The abdomen was firm and diffusely tender, particularly over the left upper and lower quadrants, without signs of peritonitis. Digital rectal examination revealed normal mucosa, no palpable mass, and an empty rectal ampulla.

RESULTS

Laboratory investigations showed mild hypochromic microcytic anemia (hemoglobin 11.8 g/dL, mean corpuscular volume 76.7 fL) and electrolyte abnormalities, including hyponatremia (133 mmol/L) and hypokalemia (3.2 mmol/L). Chest radiography demonstrated features consistent with active pulmonary tuberculosis, including a peripheral nodule in the left lung field and bilateral pleural effusions, more pronounced on the right. Abdominal radiography (left lateral decubitus view) revealed multiple air–fluid levels in a stepladder configuration, with dilated bowel loops and increased intraluminal gas, without evidence of pneumoperitoneum (Figure 1).

A working diagnosis of mechanical small bowel obstruction was made, with intestinal tuberculosis considered the leading etiology in the context of ongoing pulmonary tuberculosis. Differential diagnoses included adhesive small bowel obstruction of non-tuberculous origin and intra-abdominal malignancy. The patient was admitted and managed with bowel rest, nasogastric decompression, urinary catheterization, intravenous fluid resuscitation, electrolyte correction, analgesia, antiemetics, proton pump inhibitor therapy, and empirical intravenous antibiotics (ceftriaxone IV 1x2 gram). A multidisciplinary approach involving surgical, internal medicine, and pulmonology teams was undertaken. In view of persistent obstructive symptoms, the patient proceeded to exploratory laparotomy.

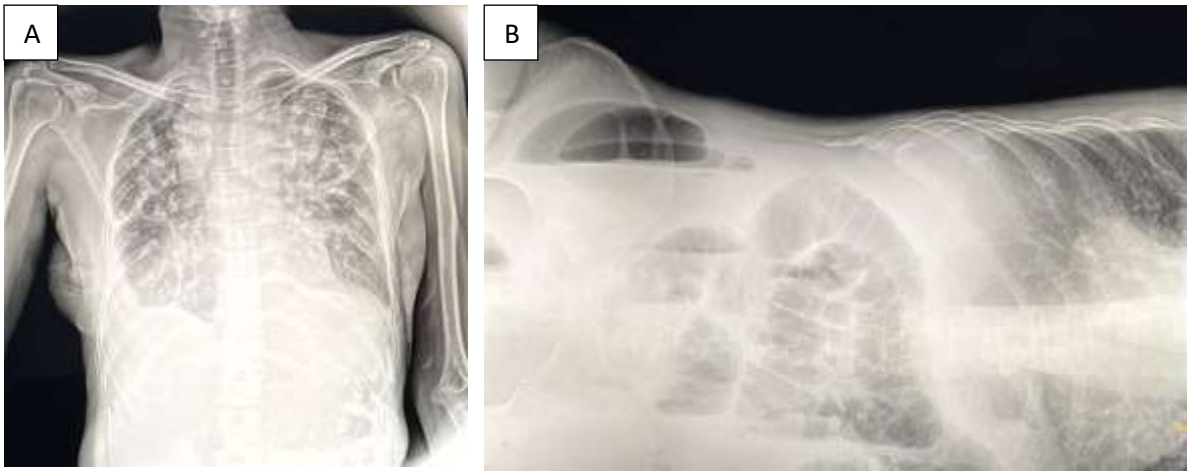

Figure 1. Radiological Examinations (a) Thorax X-ray; (b) BNO LLD Position

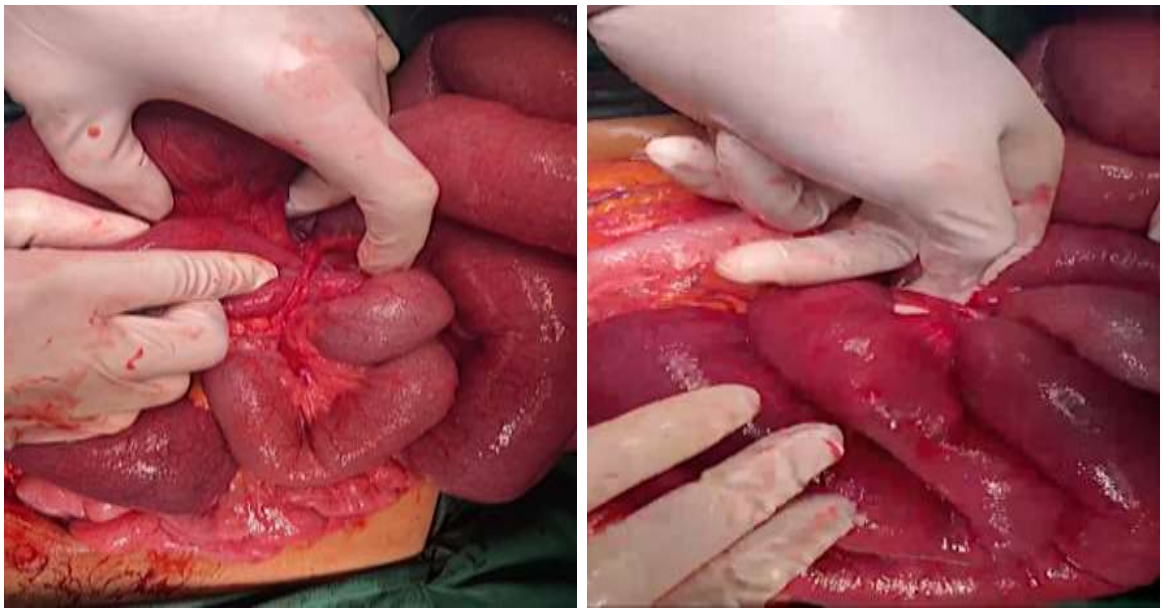

Figure 2. Exploratory Laparatomy and Adhesiolysis

Intraoperatively, dense adhesions were identified involving the jejunum, ileum, omentum, and mesenteric lymph nodes, with associated areas of intestinal ischemia (Figure 2). Adhesiolysis was performed, and biopsy specimens were obtained from mesenteric and omental lymph nodes. Histopathological examination demonstrated chronic granulomatous inflammation with features consistent with *Mycobacterium tuberculosis* infection.

Postoperatively, the patient was managed with continued nasogastric decompression, intravenous fluids, analgesia, and antibiotics (metronidazole). Gradual reintroduction of oral intake was achieved following the return of bowel function. Anti-tuberculosis therapy was resumed once oral

intake was tolerated. The patient showed progressive clinical improvement, with resolution of obstructive symptoms during hospitalization.

DISCUSSION

Obstructive ileus, also referred to as mechanical intestinal obstruction, is a critical surgical emergency defined as a physical blockage within the intestinal lumen that prevents the normal passage of intestinal contents, gas, and fluids through the gastrointestinal tract.[5] Obstruction represents the most common complication, reported in up to 50–75% of cases in high-burden GITB settings[1], with the age of 45-59 years reported as the highest age group.[16] Gastrointestinal involvement typically occurs secondary to pulmonary tuberculosis through several mechanisms, including hematogenous dissemination, ingestion of infected sputum, or lymphatic spread.[1,3,4] The patient in our case was 49 years old and the pathophysiological link is particularly relevant in the present case, where intestinal involvement developed in a patient undergoing treatment for pulmonary tuberculosis.

Obstructive ileus in intestinal tuberculosis may arise through multiple mechanisms, including inflammatory strictures, formation of dense adhesions, extrinsic compression from lymphadenopathy, or hypertrophic masses arising from chronic granulomatous inflammation and subsequent fibrosis of the intestinal wall.[1,2,17,18] In the present case, intraoperative findings demonstrated extensive adhesions involving the small bowel, omentum, and mesenteric lymph nodes, suggesting a chronic inflammatory process consistent with tuberculous involvement.

Shinga et al. (2019)[19] reported obstruction developing one month into anti-tuberculosis therapy in an immunocompetent patient, with laparotomy revealing an intra-abdominal mass and multiple adhesions confirmed histologically as intestinal tuberculosis. Rebbani et al. (2024)[20] likewise documented adhesive small bowel obstruction with dense fibrotic bands and granulomatous lymph node involvement, findings closely paralleling the present case. These cases closely parallel the present findings, particularly the presence of extensive adhesions and nodal involvement, supporting the concept that chronic tuberculous inflammation promotes progressive fibrosis and mechanical obstruction.

A particularly important feature of this case is that obstruction developed during the fifth month of treatment for concurrent pulmonary tuberculosis, suggesting a paradoxical reaction. Paradoxical reactions in tuberculosis are characterized by clinical or radiological worsening of existing lesions, or the emergence of new lesions, despite appropriate treatment and initial improvement.[21] Although more commonly described in pulmonary or central nervous system tuberculosis, such reactions have also been reported in gastrointestinal disease, including intestinal perforation and obstruction occurring after initiation of therapy.[21,22]

The mechanism is thought to involve an exaggerated immune response to mycobacterial antigens released during effective treatment.[23] This immune reconstitution-like phenomenon can result in increased inflammation, fibrosis, and adhesion formation within the abdominal

cavity.[21] Notably, previous reports have suggested that anti-tuberculosis therapy itself may accelerate fibrotic healing and adhesion formation, thereby precipitating obstructive complications.[24] This mechanism plausibly explains the progression observed in our patient, where ongoing treatment may have contributed to adhesive band formation and subsequent bowel obstruction.

Clinically, intestinal tuberculosis is often referred to as a "great mimicker" because of its nonspecific symptoms, including abdominal pain, weight loss, fever, and altered bowel habits. Physical findings are similarly variable and may include abdominal distension, tenderness, or a palpable mass.[3] In our patient, the progression from intermittent colicky pain to persistent abdominal pain with obstipation, accompanied by distension and high-pitched bowel sounds, is consistent with evolving mechanical obstruction. Notably, delayed or incorrect diagnosis is common, with studies reporting that only a minority of cases are correctly identified at initial presentation, contributing to increased morbidity and inappropriate management.[25]

Radiological and laboratory findings further support the diagnosis but are rarely pathognomonic. Imaging in intestinal tuberculosis-related obstruction typically demonstrates dilated bowel loops with multiple air-fluid levels, reflecting mechanical obstruction, as observed in this case. Laboratory abnormalities such as anemia are frequently reported and are thought to result from chronic inflammation, malnutrition, and impaired absorption.[1] Electrolyte imbalances, including hyponatremia and hypokalemia as seen in our patient, are likely secondary to vomiting, reduced oral intake, and intestinal stasis associated with obstruction. These findings, while nonspecific, are consistent with the systemic and gastrointestinal effects of chronic tuberculous disease.

Management of intestinal tuberculosis complicated by obstruction requires a multidisciplinary approach. Uncomplicated disease responds to medical therapy alone, but complete obstruction, obstruction not responding to medical management, perforation, bowel ischemia or diagnostic uncertainty warrants surgery.[26] In this case, exploratory laparotomy with adhesiolysis was both diagnostic and therapeutic, yielding histopathological confirmation alongside relief of obstruction, consistent with current reporting on complicated abdominal tuberculosis.[27] Mortality rates vary depending on disease severity and healthcare setting with overall mortality in intestinal tuberculosis has been reported to range from 14% to 50% in resource-limited settings, reflecting delays in diagnosis and treatment.[8]

CONCLUSION

Intestinal tuberculosis remains a diagnostically challenging entity due to its nonspecific clinical presentation and its ability to mimic a wide range of intra-abdominal pathologies. Intestinal tuberculosis should be considered in any patient with pulmonary tuberculosis presenting with obstructive symptoms, including those already receiving treatment. Paradoxical worsening during therapy remains underappreciated as a surgical risk. When intervention is required, continuation of anti-tuberculosis therapy alongside surgical management remains critical. Early recognition is essential, as delayed diagnosis may increase the risk of bowel ischemia, perforation, and mortality.

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