

Is There a Role of Lavage in Peritoneal Tuberculosis?

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Summary

Abdominal tuberculosis (TB), an extrapulmonary manifestation of TB, can present with nonspecific symptoms that may resemble an acute surgical abdomen or abdominal malignancy. Peritoneal tuberculosis/TB peritonitis, typically manifests with abdominal pain, abdominal distension (possibly due to ascites), weight loss, and night sweats. We present two cases of peritoneal TB where patients exhibited abdominal distension and weight loss with features suggestive of intestinal obstruction or an abdominal malignancy. They were initially treated with standard anti-TB medication (RHZE regimen), but showed no improvement. However, after undergoing laparotomy and lavage, resulting in reduced focus of infection, they responded well to the 6-month course of anti-TB medication. The current management approach for abdominal TB

recommends a 6-month regimen of anti-TB medication. Despite the lack of initial response to anti-TB medication, the substantial improvement observed when initiating anti-TB treatment after peritoneal lavage indicates its potential benefit in such patients. Further research is needed to explore this question.

Keywords: Drainage, Lavage, TB peritonitis

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Introduction

Tuberculosis (TB) is an infectious disease that can cause a multisystem disease, although it primarily involves the respiratory system. According to the 2022 Global Tuberculosis Report, 26.3 million people worldwide have received TB treatment between 2018 and 2021; of these 1.9 million are children (1). Extrapulmonary TB has a high burden ranging from 15% to 20% of TB cases in the human immunodeficiency virus (HIV)-negative patients and about 40–50% of TB cases in HIV-positive people. In India, a country with one of the highest TB burdens, 16% of TB cases reported were new extrapulmonary TB cases. Limited data are, however, available on the incidence and prevalence of abdominal TB (2). A study done to describe the epidemiology of extrapulmonary TB in the United States between 1993

and 2006 by the National Tuberculosis Surveillance Data showed that about 19% of the reported cases of TB were extrapulmonary, including lymphatic (40.4%), pleural (19.8%), bone and/or joint (11.3%), genitourinary (6.5%), meningeal (5.4%), peritoneal (4.9%), and unclassified at 11.8% (3). In Kenya, according to the STOP TB partnership dashboard, 139,000 people were diagnosed with TB in 2020, with 17,000 being children (1). The term abdominal TB refers to infection of the gastrointestinal tract, peritoneum, lymph nodes, and/or solid organs in the peritoneum. There have been controversies regarding management, as many believe that it can be treated medically first and surgery can be avoided unless indicated, while others argue that abdominal TB is a surgical problem as 20–

40% of patients present with an acute abdomen and may need surgical management as an emergency (4). Limited information is available regarding surgical options for patients with peritoneal TB, and the current management primarily relies on pharmacologic treatment. The response to anti-TB medication should be assessed within 3 months of initiation. However, there are cases where patients' conditions may worsen or remain unchanged, raising the question of whether drainage of the infectious focus and subsequent lavage to clear debris could be beneficial (5).

The presented cases involve two patients who experienced deterioration despite receiving treatment for suspected peritoneal TB. They underwent drainage and lavage, followed by a response to anti-TB medication.

Case presentation 1

Patient E.M., a 17-year-old male, experienced general weakness with postprandial abdominal distension and early satiety for 6 months. Magnetic resonance imaging findings showed large bowel mucosal enhancement and mural stratification with bowel wall thickening. There was inflammatory mesentery stranding and lymphadenopathy. Based on these findings he was prescribed anti-TB medication (RHZE). However, after 2 months, he developed abrupt abdominal pain with postprandial vomiting. During this time, he also had unintentional weight loss. Abdominal computed tomography (CT) scan done was suggestive of small bowel obstruction and he was initially managed conservatively before being discharged. His anti-TB medication was discontinued at this point; 11 days after his discharge, he returned to the emergency department with an enlarging swelling over his left hypochondriac region, accompanied with pain. He had also experienced a 4 kg (6% of his body weight) unintentional weight loss, night sweats, hotness of body, reduced appetite, but no vomiting. He was passing little stool. Physical examination revealed a swelling extending from his left hypochondriac region to the left lumbar region, measuring approximately 16 cm × 14 cm. Palpation above the swelling was not possible. The swelling was tympanic to percussion with reduced bowel sounds at 2

sounds/min. His full blood count and urea, electrolytes, and creatinine were normal, and the provider-initiated HIV testing and counseling test was nonreactive. However, his erythrocyte sedimentation rate (ESR) was elevated at 53 mm/hr, and the C-reactive protein level was elevated at 32.14 mg/L. An abdominal X-ray displayed multiple air–fluid levels. The patient was admitted with a provisional diagnosis of intestinal obstruction potentially caused by malignancy. A recent abdominal CT scan performed 2 weeks prior precluded the need for a repeat scan. Hence, an exploratory laparotomy was planned to identify the underlying cause of the obstruction. During the surgery, a cold abscess with a frozen abdomen was discovered. Approximately 1 L of foul-smelling pus was drained, and whitish deposits were observed on the bowel, omentum, and peritoneum. Multiple peritoneal biopsies were obtained for histology, acid-fast bacilli staining, and TB culture. Thorough lavage with warm saline was performed until the fluid became clear. The abdomen was then closed enmass, leaving the skin open. The patient received intravenous piperacillin and tazobactam, post-operatively. Following the operation, there was ongoing discharge of pus from the incision site. Daily dressings were administered, and a repeat washout was performed 6 days later. Anti-TB medication was recommenced after a positive urine lipoarabinomannan test. Although the histology results from the biopsy showed necrotizing granulomatous inflammation, the special staining for acid-fast bacilli yielded negative results. However, this was insufficient to rule out TB in the patient. Due to severe malnutrition, the patient initially received parenteral nutrition and later transitioned to a high protein diet enterally. His condition gradually improved, leading to his discharge. He continued his RHZE regimen for 2 months, followed by 4 months of RH. Presently, he has completed the 6-month anti-TB treatment, and significant improvement is noted, including weight gain and healing of the incision site, which closed by secondary intention.

Case presentation 2

Patient D.M., a 12-year-old male, presented with a history of progressive abdominal distension, rapid

weight loss, and loss of appetite over a period of 1½ months. He experienced postprandial vomiting of solid food. There were no symptoms of hotness of body, night sweats, or contact with individuals diagnosed with pulmonary TB. Upon examination, the patient appeared markedly wasted, weighing 17 kg, and displayed signs of pallor and dehydration. His abdomen was distended, and he had ascites along with a palpable mass in the periumbilical region. However, no hepatomegaly or splenomegaly was observed. Initial investigations included a negative Gene Xpert test on a sputum sample for TB, an elevated ESR of 150 mm/hr, normal liver function tests, and slightly elevated lactate dehydrogenase levels at 310 IU/L. Results for cytology and biochemistry from the ascitic fluid sample were not traceable. An abdominal CT scan revealed a large cystic lesion, measuring 11.9 cm × 10.4 cm × 15.1 cm, located in the gastric bed. The lesion displayed the posterior gastric wall anteriorly and the spleen posteriorly.



Figure 1. Matted loops of bowel noted intraoperatively.

The conclusion from the CT scan report suggested a peritoneal cyst, most likely a pancreatic pseudocyst. However, image-guided drainage was not available at

the hospital. The patient was admitted with a provisional diagnosis of abdominal TB, with a differential diagnosis including leishmaniasis and gastrointestinal malignancy. Anti-TB medication was initiated on the second day of admission, but despite being on this treatment for 14 days, his condition deteriorated, and the abdominal swelling continued to increase in size. At this point, an abdominal malignancy was suspected, leading to the decision to perform an exploratory laparotomy. During the surgery, the patient exhibited coca-colored ascites with a frozen abdomen, and the bowel was adhered together. Shiny deposits were observed on the bowel, and samples were taken for histology (Figure 1). Approximately 4 L of ascitic fluid were drained, and thorough lavage with warm saline was performed. The abdomen was then closed with loop PDS and skin with interrupted nylon 2/0. Biopsy results did not reveal any malignant changes but did indicate serosal fibrosis of the small bowel. Based on the clinical diagnosis, the patient was then started on anti-TB medication. Following the surgery, the patient was closely monitored in the ward and was discharged on the 6th day post-operatively. He completed a 6-month anti-TB regimen, and after 2 years, his weight had increased to 35 kg.

Discussion

Abdominal TB presents with nonspecific signs and symptoms and could therefore often be misdiagnosed as an acute surgical abdomen or even an abdominal malignancy. Among 170 patients referred to the National Institute of Neoplastic Diseases in Peru for a possible malignancy, the diagnosis of extrapulmonary TB was made in 77.7% of the cases and pulmonary TB in the remaining 22.3%. Extrapulmonary TB is commonly mistaken for a malignancy, especially due to its nonspecific presentation or due to the fact that more often the patients are not severely immunocompromised. A high index of suspicion is therefore key in early diagnosis and management (6, 7). Abdominal TB is generally used to refer to infection of the gastrointestinal tract, peritoneum, lymph nodes, and/or solid organs in the peritoneum. Abdominal TB transmission can be via ingestion of infected food or milk (primary intestinal TB), infected sputum

(secondary intestinal TB), and hematogenous spread of distant foci, contagious spread from infected adjacent foci, or through the lymphatic channel. There are no definite gold standard findings in the diagnosis of abdominal TB; however, biopsies taken showing caseation necrosis in granulomas is the hallmark of TB. The focus of our discussion is TB peritonitis. TB peritonitis has been generally divided into three types: (i) the wet ascitic type with associated free or loculated fluid in the abdomen with high protein containing ascitic fluid. This type usually has associated peritoneal enhancement, (ii) the fixed fibrotic type with involvement of the omentum and mesentery and is characterized by matted loops of bowel on imaging, and (iii) the dry plastic type characterized by fibrous peritoneal reaction, peritoneal nodules, and presence of adhesions (8). This classification is not exclusive as a patient could have a combination of the above features. Ideally, the treatment of TB peritonitis is solely pharmacological. As a general rule, the principles used for the treatment of pulmonary TB disease also apply to extrapulmonary forms of the disease. A 6-month treatment regimen is recommended for patients with extrapulmonary TB disease. Surgical intervention in the form of either sonography, CT-guided aspiration, or open drainage is usually reserved for patients in whom medical treatment fails (9). There is, however, question on the role of intraoperative peritoneal lavage for patients with a failure of response to medication. Although surgery and by extension lavage in a TB patient poses the risk of having post-operative burst abdomen as a complication contributed in part by the intra-abdominal infection and malnutrition (10), it has been shown to be useful as it acts as a cleaner that washes away the bacteria debris, and it has the dilution effect that reduces the bacteria burden and hence the possibility of better outcome. Lavage has been used in cancer patients as it has tumor lysis effects. Routine lavage is usually performed when pus is encountered in the abdomen; however, its role in a clean or clean/contaminated abdomen is not clearly defined (11). For both of our patients, anti-TB drugs had been initiated; however, there was much improvement following open drainage and washout, which alludes to

the possibility of early drainage of the focus of infection as a means of better prognosis of patients. It is important to note that the diagnosis of TB was not definite as there was no culture or histological diagnosis until biopsy samples were taken following exploratory laparotomy.

Conclusion

Our experience with these two cases indicates a potential role for peritoneal lavage in reducing the focus of infection in peritoneal TB and potentially improving the response to oral anti-TB medication. Further research is recommended to investigate the benefits of peritoneal lavage, specifically in cases of resistant wet-type peritoneal TB.

Ethical consideration

Informed consent was obtained from both patients before sharing their information.

Author contributions

TPP led in the formal analysis and in writing of the original draft. SMA and PBK led in Supervision. All authors equally contributed to conceptualization and validation.

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