e-ISSN: 0975-5160, p-ISSN: 2820-2651

Available online on www.ijtpr.com

International Journal of Toxicological and Pharmacological Research 2023; 13(10); 209-213

Original Research Article

Spectrum of Clinical Presentation of Abdominal Tuberculosis and its Surgical Management

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Received: 18-08-2023 / Revised: 21-09-2023 / Accepted: 26-10-2023
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Conflict of interest: Nil

Abstract:

Background: Clinicians still face difficulties diagnosing abdominal TB. Between 5% and 10% of TB notifications in the UK are related to the abdomen, which affects 10%–30% of people with pulmonary TB. Over 75% of instances involve immigrants, the majority of whom are from the Indian subcontinent. A common and serious health issue is tuberculosis, particularly in underdeveloped nations where the disease is more common due to illiteracy, poverty, overcrowding, inadequate sanitation, and malnutrition. The World Health Organization has deemed it a global emergency and the most significant communicable illness globally. Three million people worldwide lose their lives to tuberculosis each year, afflicting nearly one-third of the world's population. Even though developed nations have higher health standards, the incidence of tuberculosis—which was previously thought to be low in these nations—is once again rising. This can be attributed to a number of factors, including the influx of immigrants from third-world nations, an aging population, alcoholism, increased use of immunosuppressive drugs, and the emergence of multi-resistant strains of Mycobacterium tuberculosis.

Aim: To assess clinical features and investigations for the diagnosis of abdominal TB and to analyze its various surgical manifestations and management.

Material and Method: This retrospective investigation was carried out in a general surgery department. All patients who received a clinical diagnosis of abdominal tuberculosis during the study period were subsequently enrolled in the study following the completion of a written informed consent form for HIV testing and study participation. M. tuberculosis infections affecting the peritoneum, intra-abdominal solid organs, or the gastrointestinal system were classified as abdominal tuberculosis. Based on their age and clinical appearance, they were admitted to the surgical, medical, pediatric, or emergency departments. A thorough medical history, physical examination, and pertinent investigations were used in each instance to make the assessment. Antituberculosis medication was used to treat each patient, either non-surgically or surgically.

Results: For the trial, 100 participants were enrolled. The male to female ratio in the sample was 1:1.2, with 30 (45%) men and 70 (55%) females. Ninety (90%) of the patients were from low-income rural families that lived a long way from the research location. Sixty percent of patients with abdominal TB were between the ages of 21 and 40. Patients aged 13 to 20 make up 15% of the patient population, and patients aged 41 to 60 make up 20%. Five percent of patients are above 60. In our study, the most prevalent symptom was abdominal pain (88%) which was reported by 70 out of 100 patients. Other common symptoms included vomiting (70%) and distention (18%), with the least common symptom being an abdominal lump (12%) reported by 12 individuals.

Conclusion: In conclusion, current statistics indicate that the frequency of abdominal tuberculosis appears to be rising despite significant advancements in medicine. Due to the disease's variable clinical presentation that mimics other abdominal illnesses, diagnosing it is challenging and delaying treatment increases morbidity and mortality. A high degree of suspicion should constantly be maintained in order to diagnose this entirely treatable illness as soon as possible. Medical therapy is the cornerstone of treatment, and for a significant portion of patients, prompt surgical intervention is necessary.

Keywords: Abdominal tuberculosis, Exploratory laparotomy and Intestinal obstruction.

Introduction

Especially in developing nations where ignorance, poverty, overcrowding, inadequate sanitation, and malnutrition are frequent, tuberculosis (TB) is a common and serious health issue. [1] It's one of the major infectious illnesses in the globe and has been deemed a global emergency by the globe Health Organization (WHO). [2,3] Among the top 10 causes of death worldwide, tuberculosis is the

disease that causes the greatest death from a single microbe. Approximately 25% of people worldwide are carriers of latent TB infection. 1.2 million of the 10 million persons who contracted tuberculosis in 2019 passed away. [4,5] Twenty percent of tuberculosis cases are extrapulmonary. [6] Ten to fifteen percent of all extrapulmonary cases of tuberculosis are of the abdominal variety, which is the second most prevalent type after pulmonary tuberculosis. [7,8]

An estimated 1.2 million TB deaths among HIV-negative individuals occurred in 2018, out of an estimated 10 million cases of tuberculosis (TB) worldwide. [9] Eight nations made up two thirds of the global total: China (9%), followed by India (27%), has the world's greatest TB burden. TB can impact any section of the digestive system. Reactivation of latent tuberculosis or ingestion of Mycobacterium tuberculosis is two possible causes of intestinal tuberculosis. The development of miliary or active pulmonary tuberculosis (TB) can occur through hematogenous spread, contiguous transmission of TB from nearby organs, or lymphatic dissemination. [10]

Three million people worldwide lose their lives to tuberculosis each year, afflicting nearly one-third of the world's population. Even though developed nations have higher health standards, the incidence of tuberculosis—which was previously thought to be low in these nations—is once again rising. This can be attributed to a number of factors, including the influx of immigrants from third-world nations, an aging population, alcoholism, increased use of immunosuppressive drugs, and the emergence of multi-resistant strains of Mycobacterium tuberculosis. [11] The peritoneum, lymph nodes, gastrointestinal system, and solid viscera (liver, spleen, and pancreas) are all affected by abdominal tuberculosis. [12,13,14] There are several types of intestinal TB, including ulcerative, hypertrophic, ulcers-hypertrophic, and fibrous (stricture) types. On the other hand, there are several types of peritoneal tuberculosis, including ascitic, loculated, plastic, and purulent forms. Later on, caseation and calcification of the mesenteric and retroperitoneal lymph nodes may occur. [15] Solid intra-abdominal viscera may be involved in focal granulomas. It can manifest clinically as acute, chronic, or acute-chronic. The condition typically has a chronic course and presents with nonspecific symptoms such as fever (40–70%), pain (80–95%), diarrhea (11–20%), constipation (40–90%), alternating diarrhea and constipation, anorexia, and malaise. [16]

Because there are few precise diagnostic tests available and the symptoms are ambiguous and varied, diagnosing abdominal tuberculosis is thought to be challenging. Intestinal lymphomas, cancer, and inflammatory bowel disorders are among the gastrointestinal conditions that abdominal symptoms can resemble. [15] The surgical approaches for treating intestinal tuberculosis in the abdomen have evolved significantly from hemicolectomy and bypass procedures to rigorous uroplasty and conservative resection. In cases of intestinal tuberculosis, the goal of surgery is to reverse the disease's harmful effects, such as tissue disruption, blockage, and perforation. All persistent infectious processes must be regarded as potential tuberculosis cases, and relevant cultures and biopsies must be carried out. Any organ in the body could be affected by the systemic TB bacterium. Without further testing, it is very difficult to diagnose or confirm the condition. The different ways that pulmonary tuberculosis presents itself make care challenging in the absence of a single type of lesion or targeted therapy.

Material and Methods

This retrospective investigation was carried out in a general surgery department. All patients who received a clinical diagnosis of abdominal tuberculosis during the study period were subsequently enrolled in the study following the completion of a written informed consent form for HIV testing and study participation. M. tuberculosis infections affecting the peritoneum, intra-abdominal solid organs, or the gastrointestinal system were classified as abdominal tuberculosis. Based on their age and clinical appearance, they were admitted to the surgical, medical, pediatric, or emergency departments. A thorough medical history, physical examination, and pertinent investigations were used in each instance to make the assessment. Antituberculosis medication was used to treat each patient, either non-surgically or surgically. Primary abdominal tuberculosis was diagnosed in patients who had normal chest X-rays but showed symptoms and indicators of abdomen tuberculosis. Some patients who were suspected of having related abdominal collections or tumors additionally underwent CT scans and abdominal ultrasonography. A consultant surgeon or a senior resident working directly under the guidance of a consultant surgeon conducted the surgeries.

Inclusion criteria

The patients included in the study were all cases admitted to the hospital with acute /subacute/chronic intestinal obstruction with an old history and risk factors for tuberculosis compared to the study.

- Incidence of abdominal tuberculosis in reference to acute and chronic abdomen.
- Various modes of presentation of acute and chronic cases.
- Degree of involvement of abdominal organ by Mycobacterium Tubercular bacteria.

- Outcome on the basis of treatment by operative procedure and medical treatment.

Exclusion criteria

- The patients of pathology other than abdominal tuberculosis like inflammatory bowel diseases, other bacterial enteritis, pseudo-obstruction, or malignancy.
- Patients who are treated on an OPD basis.
- Infants with intestinal obstruction due to congenital causes.
- Patients who refused admission.

Statistical Analysis

All results were subjected to statistical analysis. Demographic and clinical data from the two groups were compared and intergroup differences among the parameters were recorded and were analyzed by paired t-tests, the student t-test, and chi-squared tests. Student's t-test was used for intergroup analyses and the chi-square test was used to analyze the level of significance or differences in the incidence of complications.

Result

For the trial, 100 participants were enrolled. The male to female ratio in the sample was 1:1.2, with 30 (45%) men and 70 (55%) females. According to the study, the incidence was higher in women. Ninety (90%) of the patients were from low-income rural families that lived a long way from the research location. Over 95% of the participants in our study did not have a record of health insurance.

Table 1: Age-wise distribution

Age group (years)	No. of patients	Percentage
13-20	15	15
21-40	60	60
41-60	20	20
>60	5	5

Sixty percent of patients with abdominal TB were between the ages of 21 and 40. Patients aged 13 to 20 make up 15% of the patient population, and patients aged 41 to 60 make up 20%. Five percent of patients are above 60. In our study, the most prevalent symptom was abdominal pain (88%) which was reported by 70 out of 100 patients. Other common symptoms included vomiting (70%) and distention (18%), with the least common symptom being an abdominal lump (12%) reported by 12 individuals. Along with fever, other main concerns included weight loss and changes in bowel habits.

Table 2: Distribution of patients by intraoperative finding

Finding	No.	Percentage
Ileal strictures	40	40 %
Ileocecal mass	24	24 %
Stercoral perforations	10	10 %
Adhesions	8	8 %
Plastered abdomen	7	7 %
Bands	5	5 %
Primary perforations	3	3 %
Colonic strictures	2	2 %
Jejunal stricture	1	1 %
Splenic abscess	1	1 %

Ileal stricture, which was found in 40% of patients, was the most frequent intraoperative finding. Ileocecal tumor was found in 24% of patients, and splenic abscess was found in only 1% of patients. Additionally, 8 and 3 patients, respectively, had adhesions and perforations, of which 10 had stercoral perforations.

Table 3: Groups of patients according to management

Outcome	Number	Percentage
Operated	80	80 %
Conservative	20	20 %

The majority of patients had surgical care; of the 100 patients, 80 underwent surgery, 20 underwent conservative management, and the most common procedure performed on 45 patients (45%) was resection and anastomosis; the least common procedure, performed on only one patient, was splenectomy.

Discussion

One of the most common types of extra-pulmonary tuberculosis is abdominal tuberculosis. Different

degrees of tuberculosis involvement can affect the GI tract, peritoneum, lymphatic system, and solid viscera. These involvements can occur separately or in combination. Numerous diseases fall under the broad category of tuberculosis, which can impact every organ system. Fifty percent of cases involving the gastrointestinal tract are caused by tuberculosis. The distal ileum and caecum are most frequently affected. Although it is likely underappreciated, abdominal TB is a significant clinical issue. Abdominal tuberculosis frequently goes undiagnosed, which raises the morbidity rate for this curable illness. The clinical appearance of abdominal tuberculosis varies widely. It can manifest as acute, chronic, acute-on-chronic, or even inadvertently, mimicking a variety of clinical gastrointestinal diseases. Nevertheless, we only included acute or acute-on-chronic issues in our study, and there were only three instances of chronic intestinal blockage. Abdominal discomfort is the most frequent symptom, which is followed by vomiting, nausea, constipation, fever, and distention of the abdomen.

According to Wig JD et al., 1988 [16] females comprised 67.12% which is app twice as high as males (32.87%). The study by Das P and Shukla HS et al.1976 [17] also showed higher incidence in females as they comprised 72% of the total patients. The diagnosis of intestinal tuberculosis can be quite ambiguous based just on the clinical presentation, which varies widely. The most often reported presenting symptom in the current investigation was abdominal colicky pain. Additional symptoms that may manifest include nausea, distension in the abdomen, changes in bowel movements, loss of weight, fever, and swelling of the abdomen. Data of the present study mostly coincides with previous studies by Das P, Shukla HS et al.1976 [17], and Bhansali SK et al.1970 [18] which also state most common symptoms as pain in the abdomen followed by vomiting, bowel disturbances, fever, abdominal distension, weight loss and the lump in abdomen.

Fillion et al.2016 [19] studies in a low-prevalence country reported that out of 86% presenting with abdominal symptoms, 76% underwent surgery, with 10% in an emergency setting. Eighty-one percent of the patients had anti-TB treatment for at least six months. Sixty-six percent got a successful result. Wani et al.2015 [20] reported a study on surgical emergencies of the tubercular abdomen in developing countries. Constipation, vomiting, and abdominal pain were the most typical initial symptoms. Wig JD et al.1988 [16] in their study state the most common type of lesion is ileal perforations as much as 46.57% while the present study finds the incidence of primary perforation to be 3.05%. In another large series of studies by Mukherjee and Singhal et al.1979 [21], the overall incidence of free intestinal perforation in patients with abdominal tuberculosis is close to that of 2% recorded which is close to the incidence in the present study. Ahmed et al.2011 [22] recommended histopathology for diagnosing TB, and, in a high TB prevalent area, it is a reliable gold standard. They also recommended more specific tests such TB polymerase chain reaction or immunohistochemistry for diagnosis in industrialized nations, and stated that most granulomatous lesions without necrosis in endemic places should be deemed TB. [22]

The lack of precise laboratory testing and nonspecific symptomatology of abdominal tuberculosis make diagnosis extremely difficult. Strong clinical suspicion and vigorous investigation are the mainstays of diagnosis, and a high index of suspicion is necessary. The majority of the time, it affects young adults. The most common presentation was intestinal blockage. X-rays and USGs were crucial to the diagnosis. CT scans are rarely necessary. Even though they are both generic characteristics, anemia and ESR could contribute to the validation of the pathological and clinical findings. The ileum was the most often involved location in this investigation. Resection and end-to-end anastomosis were the most frequently performed operations, while the most common rationale for surgery was intestinal obstruction. One can treat tuberculosis (TB) in places with an endemic or high prevalence if there is a strong clinical suspicion backed up by laboratory, radiological, and histopathological investigation. Medical therapy is the cornerstone of treatment, while a significant number of patients also require prompt surgical surgery. In low-income nations, abdominal TB is a serious public health hazard. Healthcare professionals continue to face a diagnostic conundrum due to the variety of presentations and clear-cut indications and symptoms. Undernourished individuals in comparatively younger age groups exhibit it. In our context, delayed presentation is still the hallmark of this illness. Therefore, in order to ensure early diagnosis and timely treatment, disease surveillance systems must be put into place. To develop evidence-based guidelines for the surgical care of acute abdomen caused by abdominal TB, further randomized controlled trials must be carried out.

In our setting, abdominal TB is a serious public health concern that requires a high index of clinical suspicion for diagnosis. The disease's hallmarks in this region include high morbidity and death, poverty, delayed presentation, and young age at presentation. Providing these patients with the best treatment possible requires addressing these issues. Survival depends on early diagnosis, early Antituberculosis therapy, and surgical treatment of related problems.

Conclusion

The majority of the time, medicinal treatment for abdominal tuberculosis is effective, and prompt diagnosis and care can avoid needless surgery. In the case of an acute or chronic abdomen, abdominal tuberculosis should be regarded as a surgical issue. Since conditions including Crohn's disease, lymphoma, and cancer can mimic tuberculosis, laparoscopy is becoming the gold standard for diagnosis. Patients should be managed in conjunction with a physician who is knowledgeable on anti-tuberculous therapy due to the difficulties associated with an early diagnosis. A global expert consensus ought to suggest a strategy for the interdisciplinary care and diagnosis of abdominal tuberculosis.

There is a tiny margin of safety because tuberculosis can present itself in a variety of ways. It is challenging to identify in the early stages and challenging to manage in the absence of a particular type of lesion and a targeted treatment due to the broad range of presentation. According to recent data, the frequency of abdominal tuberculosis appears to be rising despite significant medical advancements. Due to the disease's variable clinical presentation that mimics other abdominal illnesses, diagnosing it is challenging and delaying treatment increases morbidity and mortality. When identifying this fully curable illness, a strong index of suspicion should be maintained.

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