

Prevalence of Intestinal Tuberculosis in Acute Abdominal Disease Cases**Murari Kumar¹, Kundan Kumar², Bhartendu Kumar³**¹Senior Resident, Department of General Surgery, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar²Senior Resident, Department of General Surgery, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar³Professor and Head of Department, Department of General Surgery, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar

Received: 25-02-2024 / Revised: 23-03-2024 / Accepted: 26-04-2024

Corresponding Author: Dr. Kundan Kumar

Conflict of interest: Nil

Abstract:

Background: The sixth most prevalent type of extra-pulmonary tuberculosis is abdominal tuberculosis. There are four main ways that it presents itself: visceral TB, intestinal tuberculosis, peritoneal tuberculosis, and tuberculous lymphadenopathy. A complication of intestinal tuberculosis is colon perforation, which needs to be identified as soon as possible and surgically treated. The purpose of this research is to find out how often intestinal tuberculosis is in patients of acute abdomen.

Methods: This randomized prospective study was done at Department of General Surgery, SKMCH, Muzaffarpur, Bihar from August 2023 to January 2024. 200 patients in all, who had acute abdomen and showed symptoms of peritonitis or intestinal obstruction. On a specially created proforma, all of the patient's pertinent information including presentation, surgical findings, procedure done, postoperative outcome, and histopathology—was entered, collated, and examined.

Results: Based on histopathological reports and operational findings, 32 (16%) of the 200 patients with acute abdomen developed intestinal tuberculosis. The majority of the patients (75%) were in the 20–40 age bracket, with ages ranging from 15 to 65. There were 1:0.45 male to female. On the chest X-ray, twelve (37.5%) patients also showed signs of pulmonary tuberculosis. Hyperplastic ileocaecal tuberculosis (34.3%) was the most prevalent surgical finding, followed by strictures (25%), and perforations (25%). Overall, 6% of patients with acute abdominal cases and 9.3% of patients with tuberculosis died.

Conclusion: In developing nations, intestinal tuberculosis is a frequent issue that frequently manifests in an acute form in general surgical units. For an early diagnosis and to reduce consequences, a high index of suspicion, appropriate assessment, and treatment trial in suspected patients are necessary.

Keywords: Intestinal Tuberculosis, Acute Abdomen, Intestinal Obstruction, Peritonitis, Koch's Abdomen.

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

The World Health Organization (WHO) has designated tuberculosis as a global emergency, making it the most significant communicable illness globally. Three million people die from this disease each year, and nearly one-third of the world's population is affected. [1] It is still the leading cause of death in poor nations [2], most likely as a result of deprivation, ignorance, low detection rates, a shortage of skilled personnel, and inadequate vaccine coverage of the population. HIV infection, the increased use of immunosuppressive medication, and the influx of immigrants from third world countries are all contributing factors to the rising frequency of tuberculosis in affluent nations. [3] Although the disease can affect every system in the body, the abdomen is one of the most frequently affected

areas, second only to the lungs. [4] Abdominal TB is still a leading cause of illness and mortality even though it may be treated. The peritoneum, lymph nodes, solid viscera, and the gastrointestinal system can all be impacted by tuberculosis in the abdomen. One of the three primary types of intestinal tuberculosis—ulcerative, hypertrophic or ulcerohypertrophic, and fibrous stricturing—occurs most often. [5] The illness can mimic a number of gastrointestinal conditions, especially infections, colon cancer, and inflammatory bowel disease. [6] Usually progressing slowly, it manifests itself later with complications, particularly acute or subacute intestinal blockage brought on by stricture formation in the ileocaecal region or small intestine, or by a hole in the gut that results in peritonitis. One such cause is tuberculoma. [7,8]

Despite advancements in medical imaging, patients typically only appear with complications from their tuberculosis, making early diagnosis a challenge. The purpose of this study was to determine the prevalence of intestinal tuberculosis in cases of acute abdomen that manifested as peritonitis or intestinal blockage. By diagnosing and treating patients as soon as possible, we can reduce the risk of these deadly complications.

Material and Methods

This prospective randomized trial was carried out on 200 patients with different patterns of intestinal obstruction and peritonitis at the Department of General Surgery, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar, between August 2023 and January 2024. The study excluded patients with both blunt and penetrating abdominal trauma. Most patients were admitted through the Casualty section in emergency situations. A few of the patients were transferred from other hospitals and units after being referred.

For every patient, a customized proforma was produced. Clinical examination and a thorough history were used to assess the patients. Studies were conducted on blood sugar, serum electrolytes, urea, creatinine, and the complete blood count and ESR. An ultrasound of the abdomen was also carried out, along with an X-ray of the chest and a plain X-ray of the abdomen, both erect and supine, including both diaphragmatic domes.

Following grouping, cross-matching, and screening, the blood was organized.

All patients were initially resuscitated by:

- Correction of fluid and electrolytes imbalance.
- Insertion of nasogastric tube.
- Broad spectrum antibiotics and analgesics.
- Patients presenting in a critical condition were treated with vital system support by:
 - Administration of Oxygen.
 - Inj. Dopamine and Dobutrax infusion when found hypotensive and oliguric despite adequate fluid replacement.

The patients underwent surgery following initial optimization and the advice of the anesthesiologist. The surgical results and histological confirmation determined the final diagnosis and course of treatment. Anti-tuberculosis treatment was initiated for those who were diagnosed with tuberculosis.

Results

This study comprised 200 cases in total who had acute abdomen. With a mean age of 35.6 years, their ages varied from 11 to 75 years old. The majority of the patients (Table 1) were seen by people between the ages of 11 and 30. With a male to female sex ratio of 1:0.56, there was a predominance of men. The majority of patients (89%) were admitted via the Casualty department; the remaining 11% were referred from other departments. The most of the patients were from lower middle class and impoverished backgrounds. Tables 2 and 3 display their symptoms and indicators, respectively.

Table 1: Age Distribution in Acute Abdomen

Age Group in yrs.	Number	Percentage (%)
11-20	44	22.0%
21-30	56	28.0%
31-40	39	19.5%
41-50	29	14.5%
51-60	20	10.0%
61-70	10	5.0%
>70	2	1.0%

Table 2: Symptoms in Acute Abdomen

Symptoms	Number	Percentage (%)
Abdominal pain	200	100.0%
Abdominal distension	162	81.0%
Constipation	132	66.0%
Vomiting	112	56.0%
Borborygmi	38	19.0%
Diarrhea	32	16.0%
Fever	110	55.0%
Weight Loss	42	21.0%
Cough	21	10.5%
Night sweats	18	9.0%

Table 3: Abdominal Signs in Acute Abdomen

Sign	Number	Percentage (%)
Abdominal distension	162	81%
Abdominal tenderness	182	91%
Rigidity	98	49%
Abdominal mass	8	4%
Ascites	78	39%
Visible peristalsis	8	4%
Absent bowel sounds	102	51%
Increased bowel sounds	34	17%

Based on the results of the radiological examination and clinical examination, 80 out of 200 cases had acute intestinal obstruction, and 120 developed peritonitis. Following resuscitation techniques, midline incisions were used to perform surgery on each patient. Table 4 shows the

operational findings and causes. Ileal, appendicular, duodenal, and gastric perforations were the most frequently reported causes, followed by adhesions, obstructed herniae, intestinal growths, and volvulus.

Table 4: Causes of Acute Abdomen

Causes	Number	Percentage (%)
Ileal perforation	37	18.5%
Appendicular perforation	34	17.0%
Duodenal perforation	25	12.5%
Gastric perforation	13	6.5%
Postoperative adhesions	13	6.5%
Obstructed inguinal hernia	15	7.5%
Colorectal growth	10	5.0%
Ileocaecal mass	11	5.5%
Intestinal stricture	8	4.0%
Plastic abdomen (frozen)	4	2.0%
Sigmoid volvulus	12	6.0%
Miscellaneous	18	9.0%

Based on surgical results and histological reports, 32 cases with acute abdomen developed intestinal tuberculosis out of all the cases. The majority came from a low socioeconomic background. Although their ages ranged from 16 to 65, the majority (75%) were in the 20–40 age bracket. There were 10 female patients and 22 male patients, for a male to female ratio of 1:0.45.

Of the thirty-two intestinal tuberculosis patients, twelve (37.5%) showed signs of pulmonary tuberculosis on the chest X-ray, and twenty-six (81.25%) had an elevated ESR. Six of the eight patients (or 25%) had already finished anti-tubercular therapy, while the other two had stopped

after three and five months, respectively. Two of the patients were recognized cases of pulmonary TB.

Table 5 displays the operational results and intestinal TB involvement sites. The most often performed surgical procedure was right hemicolectomy, which was followed by strictureplasty, ileostomy, segmental resection and anastomosis, primary repair, and ileostomosis, in that order. Only after receiving histological results and antituberculosis therapy began postoperatively for a year was a final diagnosis of intestinal tuberculosis made.

Table 5: Operative findings in cases of Intestinal Tuberculosis (n=32)

Findings	Number	Percentage (%)
Ileocaecal hyperplastic Tuberculosis	10	31.25%
Ileocaecal hyperplastic Tuberculosis with perforation	1	3.12%
Single ileal perforation	6	18.75%
Multiple ileal perforations	2	6.25%
Single stricture	2	6.25%
Multiple strictures	6	18.75%
Frozen (Plastic abdomen) i.e. Multiple adhesions between bowel loops and abdominal wal	4	12.50%
Acute Tuberculous peritonitis	1	3.12%
Total	32	100.00

All patients stayed an average of 7.76 days in the hospital; the minimum stay was two days, and the maximum stay was 32 days (because of problems). In total, 122 patients (61%) recovered without any difficulties, 64 (32%) experienced complications (Table 6), and 2 (1%) left the hospital despite being advised not to (LAMA).

In this series, twelve patients (6%) passed away. Of these, two patients passed away within 48 hours

after surgery due to fecal contamination and late presentation, two patients died from cardiac problems, and one patient died from a severe chest complication due to septicemia. Three of these twelve fatal cases had tuberculosis discovered on histology.

These patients showed in with peritonitis, were malnourished and septicaemic, and two of them also had pulmonary tuberculosis.

Table 6: Postoperative complications (n=200)

Complications	Number	Percentage (%)
Wound Infection	26	13.0%
Burst abdomen	4	2.0%
Anastomotic leakage	3	1.5%
Intraabdominal collection	3	1.5%
Chest complication	12	6.0%
Cardiac complication	3	1.5%
Septicaemia	7	3.5%
Malnutrition	4	2.0%
Renal failure (uraemia)	2	1.0%
Total	64	32.0%

Discussion

In recent years, tuberculosis has become more prevalent and deadly, making it a severe disease. The illness is thought to be the second most common cause of intestinal obstruction⁷ and the fourth leading cause of all fatalities in India. [9]

While it can afflict people of any age, adolescents are more likely to contract abdominal tuberculosis. The bulk of the patients in this study were between the ages of 20 and 40, which is similar with prior studies. The patients' ages ranged from very young to very old. [7,10,14] In this study male to female ratio is 1:0.45, but other series indicate a small female predominance. [7,14–16]

Twelve (37.5%) of the 32 individuals had pulmonary tuberculosis visible on their chest X-ray. In this context, statistics cited by other authors range from 7% to 40%.^{17, 18} The elevated ESR in 26 (81.25%) of the patients is in line with the findings of other investigations. [11,19,20]

Of the 32 cases of intestinal tuberculosis examined in this study, 10 (31.25%) had peritonitis, and 22 (68.75%) had acute intestinal obstruction. In 11 cases (34.3%), the most prevalent surgical finding was hyperplastic ileocaecal TB. This was followed by intestinal strictures (single or multiple) in 8 cases (25%), intestinal perforation in 8 cases (25%), and frozen abdomen (plastic abdomen) in 4 patients (12.5%). The most frequent results in other investigations were strictures and frozen abdomen. [17,21,22]

Ten patients (31.25%) underwent right hemicolectomy, with subsequent surgeries including segmental resection and anastomosis,

strictureplasty, ileostomy, and adhesiolysis. Other authors also reported similar findings. [17,22,23] Following surgery, anti-tuberculous medication was provided for each tubercular patient.

Out of 32 patients with intestinal tuberculosis in this study, three of them passed away, representing a 9.38% mortality rate. Two of them had concomitant pulmonary tuberculosis, and all of them arrived late with intestinal perforations and peritonitis. According to several researches, the death rate from intestinal perforation can range from 11% to 45%. [24, 25]

Compared to previous trials, this one had a lower overall mortality rate of 6% among 200 patients who had intestinal obstruction/peritonitis. [17,22,26] This is most likely the result of comprehensive peritoneal toilet using regular saline and pyodine, together with aggressive resuscitation.

Conclusion

One of the main causes of morbidity and death in underdeveloped nations is intestinal TB. The most common presentation is an acute abdomen accompanied by intestinal blockage or perforation signs and symptoms.

In order to reduce the frequency of problems, an early diagnosis and prompt treatment are crucial, and this can only be achieved with a high index of suspicion, appropriate evaluation, and therapeutic trial in suspected patients.

References

1. World Health Organization Bulletin in Epidemiology of Tuberculosis, 2022.

2. Suri S, Gupta S. CT scan in Abdominal Tuberculosis. *Br J Radiol* 2019; 72: 92-98.
3. Sharp JF, Goldman M. Abdominal Tuberculosis in East Birmingham, a 16 years study. *Postgrad Med J* 2012; 63: 539-42.
4. Khan MR, Khan IR, Pal KNM. Diagnostic issues in Abdominal Tuberculosis. *J Pak Med Assoc* 2011; 51(4): 138-140.
5. Engin G, Balk E. Imaging findings of Intestinal Tuberculosis. *J Comput Assist Tomogr* 2015 Jan-Feb; 29(1): 37-41.
6. Rita S. Diagnosis of Abdominal Tuberculosis. Role of imaging. *J Ind Acad Clin Med* 2011 July-Sept; 2(3): 103-04.
7. Mahadevan Z, Mitra MA. Pattern of mechanical Intestinal Obstruction in adults. *J Coll Physicians Surg Ind.* 2009; 9: 441-3.
8. Gondal KM, Khan AFA. Changing pattern of Abdominal Tuberculosis. *Pak J Surg* 1995; 11: 109-13.
9. Ministry of Health & Family Welfare seeks inputs on National Strategic Plan to End Tuberculosis in India 2020.
10. Kawaba FN. Abdominal tuberculosis: A study of 881 cases. *J R Coll Surg Edin* 2013; 38(5): 293.
11. Mehta A, Gupta M, Mitra S. Ileocecal Tuberculosis: A study of 59 cases. *Indian J Gastroenterol* 2008; 12: 45-50.
12. Mishra MT, Tripathi RG. Abdominal Tuberculosis: A 20 years' experience. *Ind. J Surg* 2003; 9: 13-19.
13. Madhav MA, Manish Z, et al. Tuberculosis in the belly, a review of 46 cases. *Scand J Gastroenterol* 2011; 36: 528-32.
14. Wadhwa N, Agarwal S, Mishra K. Reappraisal of Abdominal Tuberculosis. *J Ind Med Assoc* 2014 Jan; 102(1): 31-2.
15. Moattar T, Mirza S, et al: Detection of Mycobacterium tuberculosis in paraffin embedded intestinal tissue specimens by polymerase chain reaction: Characterization of IS 6110 element negative strains. *J Pak Med Assoc* 2008; 48: 174-8.
16. Sinha F, Chaudhry Z A, et al. Abdominal Tuberculosis: A review of 25 cases. *Ann King Edward Med Coll* 1999; 5: 180-3.
17. Mishra B K. Incidence of Intestinal Tuberculosis in patients presenting as acute emergency with signs of obstructions/peritonitis. 2021.
18. Boukthir S, Murad SM, et al. Abdominal Tuberculosis in children. *Acta Gastroenterol Belg* 2004 Jul-Sept; 67(3): 245-9.
19. Agarwal P, Malpure S, Raja Shankar S, et al. Surgical treatment of Abdominal Tuberculosis: A review of 50 cases. *Bombay Hosp J* 1999: 41.
20. Robert Z, D'costa MQ, Comparison between strictureplasty and resection anastomosis in Tuberculous Intestinal strictures. *J Coll Physicians Surg Eng.* 2013; 13(5): 227-279.
21. Bhisma M, Tati M, Devi K, et al. Abdominal Tuberculosis; a varied presentation. *Ind J Surg* 2013; 9(1): 8-12.
22. Kumar K, Verma Q. Presentation and surgical management of Abdominal Tuberculosis. *Med Channel* 2014 Oct-Dec; 10(4): 20-22.
23. Tariq N. Abdominal Tuberculosis. The surgical audit of its presentation. *Pak J Surg* 2013; 13: 82-86.
24. Sircar S, Taneja VA, Kausra V. Epidemiology and clinical presentation of Abdominal Tuberculosis, a retrospective study. *J Indian Med Assoc* 2016; 94(9): 342-4.
25. Kakar K, Aranya RC, Nasir SK. Acute perforation of small intestine due to Tuberculosis. *Aust NZ J Surg* 1993; 53: 381.
26. Griver MW, Skrynnik NA. Intestinal perforation in the Tuberculosis. *Vesten Khrilm Grek* 2017; 156: 46-9.