

Clinical Features and Outcomes of Abdominal Tuberculosis

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Abstract

Background: Abdominal tuberculosis (TB) is an uncommon but significant form of extrapulmonary TB, posing diagnostic challenges due to its nonspecific presentation. This study describes the clinical spectrum, diagnostic approaches, and treatment outcomes of abdominal TB. **Material and Methods:** An analysis of 50 patients diagnosed with and treated for abdominal TB at a tertiary care center was conducted. Data on demographics, clinical features, diagnostic methods, and outcomes were collected and analyzed. **Results:** The median age of patients was 48 years, with a male predominance (52%). The most common form was luminal TB (48%), followed by peritoneal (22%), visceral (18%), mixed (8%), and nodal TB (4%). Abdominal pain (36%) and distension (20%) were the most frequent symptoms. Diagnosis was confirmed microbiologically or histologically in 56% of patients, while 44% were diagnosed clinically based on presentation and response to therapy. The ileocecal region was the most common luminal site. Surgery was required in 16% of patients, either for diagnosis or complications. The majority of patients (86%) showed a complete response to anti-TB therapy. The mortality rate was 2%. **Conclusion:** Abdominal TB exhibits diverse clinical forms. A high index of suspicion is crucial for diagnosis, often relying on a combination of clinical, radiological, and histological findings. With prompt anti-TB treatment, most patients achieve a complete response and excellent prognosis, with surgery reserved for a minority of cases.

Keywords: Abdominal Tuberculosis, Extrapulmonary Tuberculosis, Luminal TB, Peritoneal TB, Anti-TB Therapy.

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INTRODUCTION

Abdominal Tuberculosis (TB) refers to the infection of the gastrointestinal tract, peritoneum, omentum, mesentery, abdominal lymph nodes, and solid organs by *Mycobacterium tuberculosis*. It accounts for a small but important percentage of all TB cases and is one of the most common forms of extrapulmonary TB. Diagnosis of abdominal TB is often delayed due to the lack of specificity of the symptoms, which could be a part of other inflammatory abdominal pathologies, malignancies or Crohns disease. Can be contracted through ingestion of infected sputum, hematogenous (through a lung focus) or lymphatic channels. The aim of this study is to understand the clinical features, diagnostic trails and therapeutic outcome of abdominal TB to help in its early detection and treatment.^[1-3]

Aim and Objectives

Aim: To assess the clinical presentations, diagnosis and treatment results of abdominal tuberculosis.

Objectives:

1. To describe the demography and clinical features of patients of Agrointestinal TB.
2. To classify the cases based on the anatomical site of involvement (luminal, peritoneal, nodal, visceral, mixed).
3. To analyse the different methods of diagnosis and corresponding yields.
4. To Evaluate the response to Anti-tubercular Therapy and the treatment outcome.

Review of Literature

The prevalence of abdominal TB is about 1-3% of all TB cases and up to 12% of extrapulmonary TB cases. Its incidence is higher in developing countries such as India but still it is a problem of health in the developed countries also where immunocompromised person is concerned. Physiological stasis and rich lymphoid tissue at the ileocecal region make it the most frequently involved area in intestinal TB. Ascites sometimes occurs in the presence of PTB.

Diagnosis is difficult as microbiological confirmation (AFB culture) is diagnostic but not very sensitive. A characteristic feature of the disease is the presence of caseating granulomas, which is not always a feature of the disease, and they are more often demonstrated histologically. Many are diagnosed clinically on the basis of radiological changes (CT scan) and ascitic fluid chemistry (increased adenosine deaminase), and on the basis of a good response to empirical anti-TB treatment. Standard anti-TB treatment is highly effective and people can expect to be

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cured in over 90% of cases. If the condition is not complicated or if a definitive diagnosis can be made with other methods, surgery is usually not recommended.

MATERIALS AND METHODS

Study Design and Population: A prospective observational, single-center study was conducted, reviewing the medical records of 50 adult patients (>18 years) diagnosed with abdominal TB who received anti-TB medication between January 2023 and January 2025.

Diagnostic Criteria:

- Microbiological diagnosis: Positive acid-fast bacilli (AFB) smear or culture from tissue, ascitic fluid, or other body fluids.
- Histological diagnosis: Presence of caseating granulomas on biopsy.
- Clinical diagnosis: Typical clinical and radiological features with a good response to anti-TB therapy, where microbiological/histological proof was unavailable.

A 'confirmed diagnosis' was defined as fulfilling either microbiological or histological criteria.

Classification: Patients were classified into five categories based on the primary site of involvement: Luminal,

Peritoneal, Nodal, Visceral, and Mixed TB.

Outcome Measures: Treatment outcomes were defined as Complete Response (resolution of symptoms and signs), Partial Response, No Response, Lost to Follow-up, Death, and Recurrence.

RESULTS

A total of 50 patients diagnosed with abdominal tuberculosis were analyzed. [Table 1] summarizes the baseline demographic and clinical parameters across different anatomical subtypes.

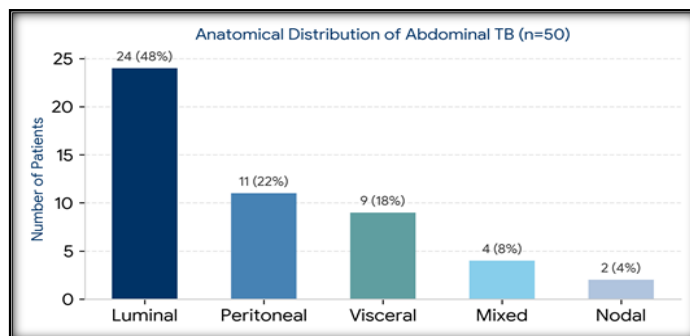


Figure 1: Anatomical distribution of cases (n=50)

Table 1: Demographic and Baseline Characteristics of the Study Population (n=50)

Characteristic	All Patients (n=50)	Luminal TB (n=24)	Peritoneal TB (n=11)	Nodal TB (n=2)	Visceral TB (n=9)	Mixed TB (n=4)
Age (years), Median (IQR)	48 (32-59)	49 (39-59)	53 (28-64)	54 (27-58)	47 (34-57)	33 (26-46)
Male Sex, n (%)	26 (52%)	12 (50%)	7 (64%)	1 (50%)	4 (44%)	2 (50%)
BMI (kg/m ²), Median (IQR)	21.8 (19.6-24.5)	21.3 (19.6-24.1)	21.6 (19.3-24.5)	23.7 (20.1-27.8)	22.1 (20.8-25.3)	20.8 (18.0-22.8)
History of TB, n (%)	5 (10%)	3 (12.5%)	0 (0%)	0 (0%)	2 (22%)	0 (0%)
HIV Positive, n (%)	1 (2%)	0 (0%)	0 (0%)	0 (0%)	1 (11%)	0 (0%)
Diabetes Mellitus, n (%)	3 (6%)	1 (4%)	1 (9%)	0 (0%)	1 (11%)	0 (0%)

From [Table 1] it is seen that the cohort had a median age of 48 years with a slight male predominance (52%). The median BMI was within the normal range (21.8 kg/m²). Notably, the

Mixed TB group was younger than the others, and a history of previous TB infection was most common in the Visceral TB group (22%).

Table 2: Anatomical Distribution and Specific Sites of Involvement

TB Type	Number of Patients (%)	Specific Sites Involved (n, %)
Luminal TB	24 (48%)	Ileocecal: 16 (66.7%), Colorectal: 4 (16.7%), Jejunal: 2 (8.3%), Other: 2 (8.3%)
Peritoneal TB	11 (22%)	Wet Ascitic Type: 8 (72.7%), Dry/Fibrotic Type: 3 (27.3%)
Nodal TB	2 (4%)	Porta Hepatis: 1 (50%), Mesenteric: 1 (50%)
Visceral TB	9 (18%)	Genitourinary: 6 (66.7%), Hepatic: 2 (22.2%), Splenic: 1 (11.1%)
Mixed TB	4 (8%)	Luminal + Peritoneal: 2 (50%), Peritoneal + Visceral: 1 (25%), Nodal + Visceral: 1 (25%)

From [Table 2 and Figure 1], it was observed that Luminal TB was the most frequent type (48%), and within this category, the ileocecal region was the predominant site (66.7%). Peritoneal TB was the second most common (22%),

with the 'wet ascitic' type being most frequent (72.7%). The genitourinary tract was the most common site for Visceral TB (66.7%).

Table 3: Clinical Presentation and Symptoms at Diagnosis

Symptom	All Patients (n=50)	Luminal TB (n=24)	Peritoneal TB (n=11)	Nodal TB (n=2)	Visceral TB (n=9)	Mixed TB (n=4)
Abdominal Pain	18 (36%)	9 (37.5%)	3 (27.3%)	1 (50%)	3 (33.3%)	2 (50%)
Abdominal Distension	10 (20%)	1 (4.2%)	7 (63.6%)	0 (0%)	0 (0%)	2 (50%)
Fever	6 (12%)	2 (8.3%)	2 (18.2%)	0 (0%)	1 (11.1%)	1 (25%)
Weight Loss	2 (4%)	1 (4.2%)	1 (9.1%)	0 (0%)	0 (0%)	0 (0%)
Asymptomatic	10 (20%)	7 (29.2%)	0 (0%)	1 (50%)	2 (22.2%)	0 (0%)
Bloody Stool	4 (8%)	4 (16.7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)

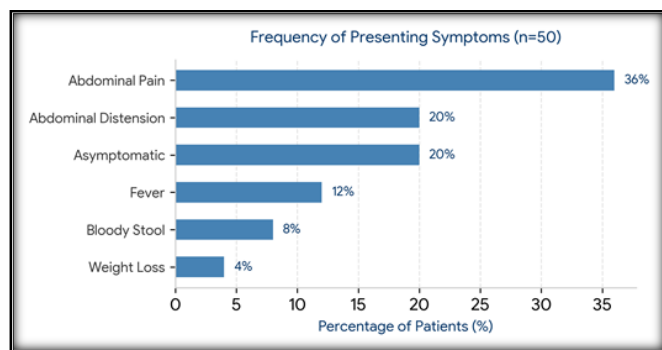


Figure 2: Clinical presentation and symptom frequency

In [Table 3 and Figure 2], it is seen that Abdominal pain was the most common overall symptom (36%). Abdominal distension was a hallmark feature of Peritoneal TB (63.6%)

and was also frequent in Mixed TB. A significant proportion of patients (20%) were asymptomatic, with this being most common in Luminal and Visceral TB. Bloody stool was exclusively seen in Luminal TB.

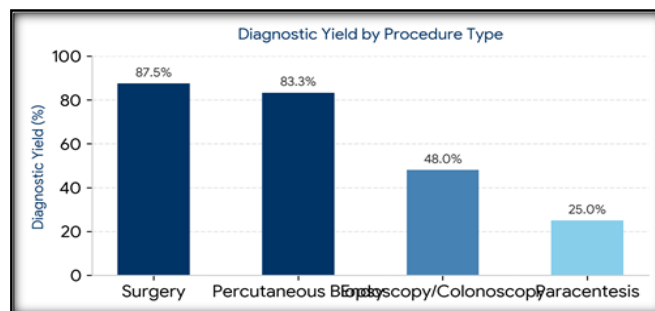


Figure 3: Diagnostic yield across various procedures

Table 4: Diagnostic Methods and Confirmation Rates

Diagnostic Method	All Patients (n=50)	Luminal TB (n=24)	Peritoneal TB (n=11)	Nodal TB (n=2)	Visceral TB (n=9)	Mixed TB (n=4)
Confirmed (Micro/Histo)	28 (56%)	11 (45.8%)	4 (36.4%)	2 (100%)	8 (88.9%)	3 (75%)
Clinical Diagnosis	22 (44%)	13 (54.2%)	7 (63.6%)	0 (0%)	1 (11.1%)	1 (25%)

Procedure-Based Diagnostic Yields:

Procedure	Performed (n)	Confirmed Dx (n)	Yield (%)
Surgery	8	7	87.5%
Percutaneous Biopsy	6	5	83.3%
Endoscopy / Colonoscopy	25	12	48.0%
Paracentesis	12	3	25.0%

Overall, 56% of cases were confirmed microbiologically or histologically [Table 4]. Clinical diagnosis was most common in Luminal and Peritoneal TB. Surgical biopsy had the highest diagnostic yield (87.5%), followed by

percutaneous biopsy (83.3%). Ascitic fluid analysis (paracentesis) had a very low confirmation rate (25%), highlighting its limitation as a standalone test.

Table 5: Treatment Outcomes and Adverse Events

Outcome	All Patients (n=50)	Luminal TB (n=24)	Peritoneal TB (n=11)	Nodal TB (n=2)	Visceral TB (n=9)	Mixed TB (n=4)
Complete Response	43 (86%)	22 (91.7%)	9 (81.8%)	1 (50%)	8 (88.9%)	3 (75%)
Partial Response	1 (2%)	0 (0%)	0 (0%)	1 (50%)	0 (0%)	0 (0%)
Lost to Follow-up	2 (4%)	1 (4.2%)	1 (9.1%)	0 (0%)	0 (0%)	0 (0%)
Recurrence	1 (2%)	1 (4.2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Death	1 (2%)	0 (0%)	0 (0%)	0 (0%)	1 (11.1%)	0 (0%)
Drug-Induced Liver Injury	3 (6%)	2 (8.3%)	1 (9.1%)	0 (0%)	0 (0%)	0 (0%)
Required Surgery	8 (16%)	1 (4.2%)	2 (18.2%)	1 (50%)	3 (33.3%)	1 (25%)

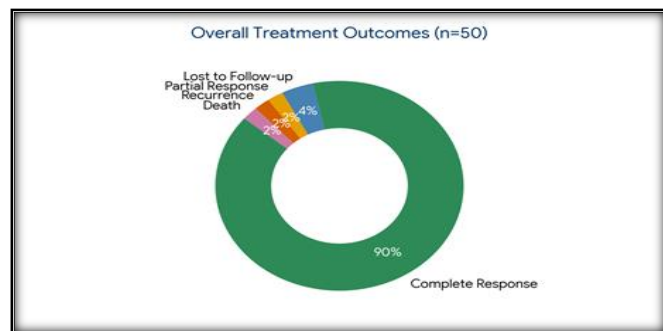


Figure 4: Treatment outcome distribution

As shown in [Table 5 and Figure 4], the vast majority of patients (86%) achieved a complete response, indicating

excellent treatment efficacy. The mortality rate was low (2%). The Nodal TB group had the poorest complete response rate (50%). Drug-induced liver injury occurred in 6% of patients. Surgery was required in 16% of cases, most frequently for Visceral and Nodal TB.

DISCUSSION

This study, involving 50 patients, confirms the fact that TB of abdomen is a disease of great malle. The predominance of luminal TB (48%), mainly ileocecal TB (66.7%) is similar to documents from other literature around the world and is thought to be due to the physiology and immunity of this region. These clinical diagnosis rates were high, particularly for the peritoneal type of leukemia (63.6%) and the luminal (54.2%) type, which

reflects the difficulty of diagnosis and the need for a high clinical suspicion combined with the use of radiology and response to treatment for diagnosis.^[4]

The sensitivity of ascitic fluid culture was low (25%) emphasizing the necessity of improved diagnostic tests in peritoneal TB, which may be useful in the diagnosis with the use of markers such as adenosine deaminase.^[5]

The good treatment outcomes (86% complete response rate and very low mortality 2%) indicate the high effectiveness of the standard anti-TB drugs in the treatment of abdominal TB. This is in agreement with previous studies that report the success rate of more than 90%. Surgical intervention was only required in a small percentage of our cases (16%), mainly for cases which had diagnostic uncertainty or complications, indicating that the majority of cases could be managed medically. The incomplete response rate of nodal TB (50%) was lower than the rest, but the figures were small and it may indicate that this type of TB is more difficult to treat or may take a longer course to cure. Some adverse effects were remarkable, such as the occurrence of drug-induced liver injury (6%) with the need of careful monitoring during therapy.^[6,7]

CONCLUSION

1. The diagnosis of abdominal tuberculosis (ABTB) is a very difficult one because of the nonspecific and variable nature of the symptoms.
2. The most common subtypes are luminal 48% and peritoneal 22%.
3. Most common symptoms are abdominal pain (36%) and distended abdomen (20%).
4. Diagnosis is critical, and usually depends on a combination of clinical, radiological and histological methods (56% confirmed rate), a high index of suspicion.

5. Surgical and percutaneous biopsies have high diagnostic yields (more than 80%) whereas confirmation yield of paracentesis is only 25%.
6. The key principle of any management is early commencement of anti-tubercular therapy with overall mortality of only 2% and only 86% complete response.
7. Only a few (16%) require surgical intervention, either for diagnosis or management of complications.
8. Early diagnosis and awareness is the key to prevent abdominal TB related morbidity and mortality.

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Conflicts of interest

There are no conflicts of interest.

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