

## Original Research Article

# Clinical profile of patients with abdominal tuberculosis in rural North India

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## ABSTRACT

**Background:** Tuberculosis is a very serious health hazard in India. The nonspecific clinical features of abdominal tuberculosis (TB) have made its diagnosis difficult, which can lead to the poor outcome in patients who are not able to receive early treatment especially from rural areas. Aim of our study was to determine the clinical profile including various clinico-pathological manifestations, demographic profile, spectrum of clinical presentation, etiology, pathological and radiological investigations of patients with abdominal TB.

**Methods:** A total of 30 patients with abdominal TB were analysed. All diagnosed patients received anti-tubercular treatment and were followed up at 1 to 3 months of ATT.

**Results:** The disease was common in both sexes. Most common symptoms were abdominal pain (93%), weight loss (83%), anorexia (68%). Most commonly observed signs were ascities (73.3%) abdominal distension and abdominal tenderness (43.3%) and lymphadenopathy (40%). Most of the patient were diagnosed via radiological and histopathological studies. Evidence of active pulmonary TB was present in nearly three fourth of patients. CB-NAAT was positive in 73% of the patients. Most common site of involvement was ileocecal region (36.9%). All patients had a good clinical response to ATT.

**Conclusions:** The diagnosis of GI tuberculosis is often delayed. The onset usually is insidious with symptoms present for many months before diagnosis. A considerable number of patients can be diagnosed from common but non-specific clinical features (like fever, weight loss, altered bowel habit, Abdominal pain and distension). Laparoscopic examination is the Gold standard for diagnosis of peritoneal tuberculosis. Although AFB detection is difficult, a representative tissue biopsy and radiological findings are good method of diagnosis of abdominal tuberculosis.

**Keywords:** Abdominal tuberculosis, Abdominal kochs

## INTRODUCTION

Abdominal tuberculosis constitutes a major public health problem in developing countries and is associated with significant morbidity and mortality.<sup>1,2</sup> According to WHO, nearly one third of the world population is infected by tuberculosis with the highest incidence observed in South-East Asia followed by Western Pacific regions, India, China, Indonesia and Pakistan.<sup>3,4</sup>

Tuberculosis can involve any part of the GI tract from oral cavity to anus, can involve the pancreato-biliary tree and peritoneum.<sup>5</sup> The peritoneum and ileocecal region are the most commonly involved areas followed by jejunum and colon.<sup>6,7</sup> There are 3 morphological forms of intestinal tuberculosis, grossly they are -ulcerative, hypertrophic and ulcerohypertrophic.<sup>8</sup> Peritoneal involvement may present as ascitis, loculated, plastic or purulent forms. Mesentric and retro- peritoneal lymph

nodes when affected may get caseated and calcify later. Focal granulomas, generally multiple, are found involving the solid intra-abdominal viscera. Involvement of the gastro-intestinal tract, peritoneum, lymph nodes and solid organs simultaneously is the disseminated abdominal form of the disease.<sup>9,10</sup>

Gastrointestinal TB is a unusual manifestation of extra-pulmonary tuberculosis and a incidence of around 3% has been noted previously in India.<sup>11</sup> The occurrence of AT is not dependent on pulmonary tuberculosis in majority of patients, and co existing disease is reported in 5-36% of cases.<sup>12,13</sup> Nearly 15%-25% of cases with gastrointestinal tuberculosis have coexisting pulmonary.<sup>14,15</sup>

Re-activation of latent tuberculous can result in abdominal tuberculosis and the foci may be present the peritoneal cavity. It can be due to ingestion of infected material like sputum or milk, or due to direct spread from abdominal organs or through lymphatic spread from a different focus and lungs is the usual focus.<sup>16,17</sup>

Abdominal tuberculosis may present in acute, chronic or acute on chronic forms and yet many times it may be an incidental finding.<sup>18</sup> The infecting bacteria may also spread from infected adjacent organs such as the fallopian tube. The bacteria may also be disseminated in the bile as they are sequestered and excreted or excreted from granuloma in the liver.<sup>19</sup> There is difficulty in the diagnosis of abdominal tuberculosis because radiological and clinical manifestations are not specific, and there are no specific biological markers to detect abdominal tuberculosis and to detect bacteria via culture would take long incubation time.

Intestinal obstruction is most common complication of abdominal tuberculosis and its presentation is in the form of strictures or by adhesions. In India nearly, 3-20 percent of all cases of bowel obstruction are meant to be caused by tuberculosis.<sup>20,21</sup> It may occur in the form of ascites or peritoneal adhesions; the mesenteric or retro- peritoneal lymph nodes are the main nodes involved in abdominal TB. Other complication of abdominal tuberculosis can be in the form of caseation, ulceration of mucosa, granuloma formation, fibrosis and scarring of the tissue.

Abdominal TB is a great mimic because of its varied clinical features and has been considered as the D/D of PUO, unexplained and chronic abdominal symptoms, unexplained weight loss, and, hepatosplenomegaly, Crohn's disease, or even GI malignancy.<sup>22</sup> Now because of more awareness of the disease and because of the use of improved diagnostic facilities, Diagnosis may also have increased.<sup>23,24</sup>

## **METHODS**

Patient data was collected from all rural patients, irrespective of their age/gender/ background /socio economic status. The patients were evaluated and

followed up according to protocol. Detailed history of patient was taken.

### ***Clinical features***

Symptoms (abdominal pain, fever, weight loss, diarrhea, constipation, anorexia, vomiting, and others). Signs (pallor, icterus, abdominal distension, tenderness lymphadenopathy, abdominal lump and others). Laboratory findings (leukocytosis, eosinophilia, raised erythrocyte sedimentation rate (ESR), Hb% (<10mg%), and hypoalbuminemia. The tubercular ascitic fluid has protein more than 3g/dL, with a total cell count of 150-4000/MI

### ***Radiology***

Chest X-ray, abdominal X-ray, ultrasound abdomen, CT abdomen, barium studies and Culture from the ascitic fluid, Sputum for AFB and Montoux test, total stay in hospital in days, follow up-on discharge each patient was followed up 1 month and then after 3 months.

### ***Follow up of patients***

Patients will be followed up for a period of 3 months:

- Once in 2 weeks for first 2 months
- Then on a monthly basis, after discharge, for recurrent attacks or development of complications and to monitor the efficacy of the treatment given.

### ***Inclusion criteria***

Patients showing histopathological, smear or microbiological or pathological proof of abdominal tuberculosis.

### ***Exclusion criteria***

- Paediatric age group
- Pregnant women

Thirty consecutive patients with either sex with abdominal tuberculosis were enrolled in the study. All patients were clinically evaluated with meticulous history and physical examination and were investigated by available tests like blood counts including TLC DLC, ESR, HB, mantoux test, chest X-ray, abdominal X-ray, abdominal ultrasonography, barium X-rays, ascitic fluid study, fine needle aspiration cytology, abdominal laparoscopic study and Histopathology and CT Scan of abdomen in selected patients.

All patients received 9 months of standard anti tubercular treatment with Rifampicin; Isoniazide and pyrazinamide and were followed up clinically during and one year after completion of treatment. All analysis was carried out by using SPSS software version 21.

**RESULTS**

A total number of 30 patients 18 male and 12 females, age ranging from 18 to 85years (mean age 38 years) were diagnosed to have abdominal tuberculosis (Table 1). Out of the 30 patients studied 18 (60%) were males and 12 (40%) were females.

**Table 1: Age groups distribution.**

Age group in years	No. of patients n=30	Percentage
18-25	8	26.7%
26-35	8	26.7%
36-45	6	20%
46-55	4	13.3%
>55	4	13.3%

Among the common presenting symptoms, abdominal pain, weight loss and anorexia were found in 28 (93%); 25 (83%) and 20 (68%) of patients respectively. Fever was found in 9 (30%), diarrhoea in 3 (10%) and constipation in 9 (30%) of cases. Whereas, nausea and or vomiting in 13 (43%) and diarrhea was present in 3 (10%) of cases (Table 2).

**Table 2: Distribution of study subject as per presenting symptoms.**

Chief complain	No. of patients n=30	Percentage
Pain in abdomen	28	93.3%
Fever	9	30.0%
Anorexia	20	66.7%
Diarrhea	3	10.0%
Constipation	9	30.0%
Nausea	8	26.7%
Vomiting	5	16.7%
Weight loss	25	83.3%

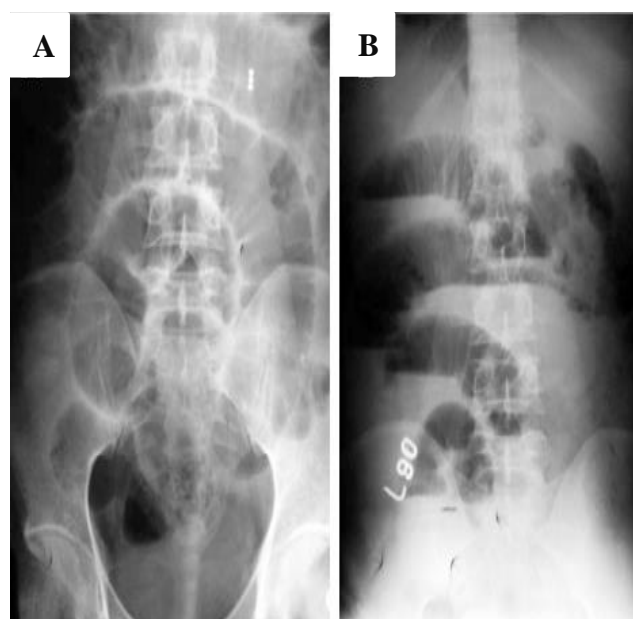
**Table 3: Distribution of study subjects as per clinical signs.**

Clinical sign	No. of patients n=30	Percentage
Pallor	17	56.7%
Icterus	0	0.0%
Lymphadenopathy	12	40.0%
Abdominal distension and tenderness	13	43.3%
Abdominal lump	11	36.7%
Fluid thrill	4	13.3%
Shifting dullness	5	16.7%

The abdominal pain was of varying quality, and frequently cramping or dull aching in nature mostly located in right side of abdomen and was correlated with the site of disease. Among the presenting signs,

abdominal tenderness and distension was found in 13 (43.3%), abdominal ascites in 22 (73.3%), patients. Abdominal lump was detected in 11 (36.7%), lymphadenopathy in 12 (40%) of cases (Table 3).

In the present study we found past history of TB in 14 patients and inadequate ATT history in 1 patient out of 30 patients. In this study, 3 patients were found to have HCV and 5 patients to have HIV, through laboratory tests. Active pulmonary tuberculosis was found in 4 (13.3%) of patients and evidence of pulmonary TB was found in 11 of patients out of 30 patients. X-ray abdomen erect revealed air fluid level in 9 patients and calcified mesenteric lymph node in 2 patients out of the 30 patients (Figure 1).



**Figure 1: Plain X ray images. Plain abdominal radiographs in supine. (A): and erect (B): position showing dilated small bowel loops with air fluid levels in a patient who presented with subacute intestinal obstruction secondary to tubercular ileal stricture.**

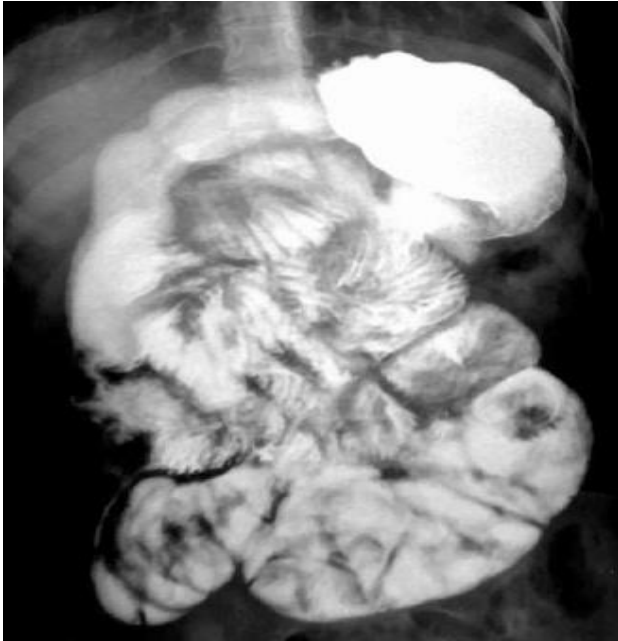
Laboratory investigations revealed anaemia in 18 (60%), increased ESR found in all patients WBC count >11000/cumm in 6 (20%) and dearranged SGOT/SGPT in 15 (50%) of patients. (Table 4).

**Table 4: Distribution of study subject as per haematological parameter.**

Haematological parameter	No. of patients n=30	Minimum	Maximum
Haemoglobin	18	7.00	10.00
TLC	6	12500.00	16000.00
ESR	30	30.00	72.00
SGOT	15	48.00	66.00
SGPT	15	39.00	62.00

Mantoux test was reactive in 7 (23.3%) and CB-NAAT was positive in 22 (73%) patient and sputum for AFB positive found in 6 (20%) patients, hypoalbuminaemia in 2 (6.6%).

Ascitic fluid study was performed in 8 (26.7%) patients who had ascites and exudative type 6 (20%) was present in the patients. 2 (6.6%) patient also was detected to have AFB positive. Barium meal follow through x-ray was done in 18 patients which revealed 3 (10%) to have lumen narrowing and 3 (10%) to have mucosal ulceration (Figure 2).



An adolescent female patient who was a case of tuberculosis with sclerosing encapsulating peritonitis (abdominal cocoon) showing clustering of small bowel loops in the centre of the abdomen which are constant in location.

**Figure 2: Barium meal follow through image.**

Tissue biopsy was done in selected 14 patients, out of them, granuloma without central necrosis was seen in 6 (20%) samples and granuloma with necrosis (caseating) in 8 (26.7%) samples.

FNAC samples from lymphnodes and lumps was done in 12 patients, out of them, granuloma with central necrosis and was seen in 5 patients, caseating necrosis in 3 patients, caseating necrosis with granuloma in 3 patients and caseating necrosis without granuloma in 1 patient was found (Table 5).

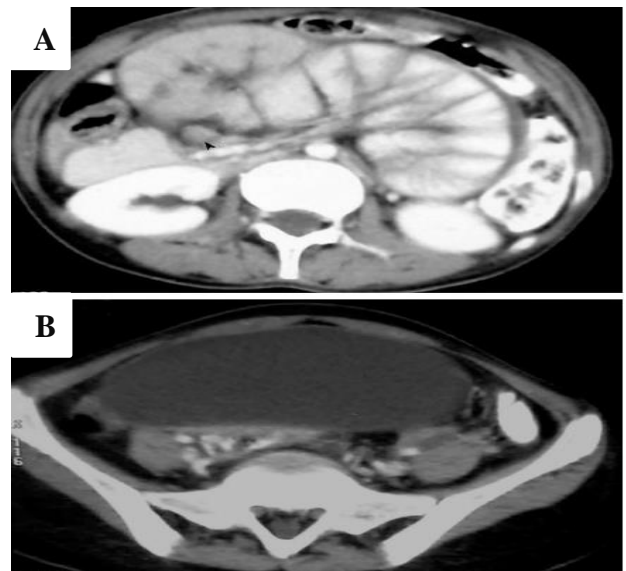
CT Scan of Abdomen (Figure 3 and 4) was done in selected 19 (63.33%) patients, out of them 9, (50%) patients revealed ileocaecal thickening with enlarged lymphnodes, 1 conglomerate bowel loops, 3 matted bowel loops, 3 omental thickening with enlarged lymphnodes, 3 multiple enlarged lymphadenopathy (Table 6).

**Table 5: Distribution of study subject as per FNAC from nodules or lumps.**

	Cytology findings	No. of patients n=30	Percentage
FNAC from lump or nodule	Caseating necrosis	3	10.0%
	Caseating necrosis with granuloma	3	10.0%
	Caseating necrosis without granuloma	1	3.3%
	Granuloma with central necrosis	5	16.7%

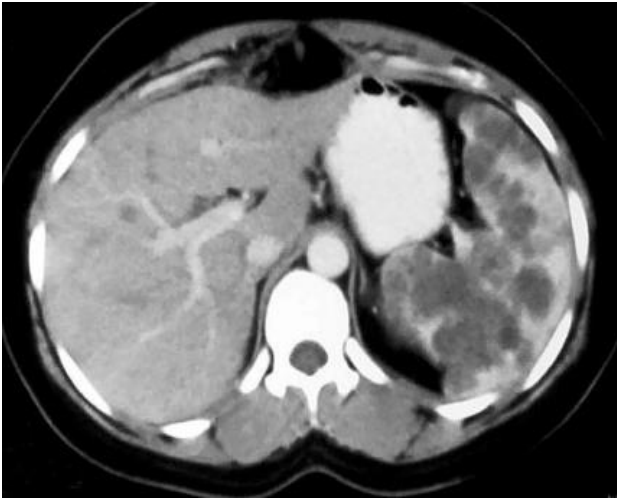
**Table 6: Distribution of study subject as per CT findings.**

CT findings	No. of patients	Percentage
Ileocaecal thickening with enlarged lymphnodes	9	30%
Conglomerate bowel loops	1	3.30%
Matted bowel loops	3	10%
Multiple enlarged lymphadenopathy	3	10%
Omental thickening with enlarged lymphnodes	3	10%



**Figure 3: Computed tomography images. (A): Axial images of the same patient showing small bowel loops congregated in the centre of the abdomen encased by a soft tissue density membrane. Enlarged discrete lymph nodes are also seen in the mesentery (arrow head), (B): Loculated ascites is seen just below the level of conglomerate bowel loops.**





Axial image of a young female, a case of tuberculosis showing few small ill-defined hypodense lesions in liver and multiple small hypodense lesions studded in the parenchyma of the spleen.

**Figure 4: Computed tomography images.**

In the present study, sites of involvement of abdominal tuberculosis were peritoneum in 5 (16.66%), and ileocaecal region in 11(36.7%), jejunum or ileum in 5 (16.6%), colorectum in 3 (10%) and mesentery in 3 (10%) of cases. Multiple intestinal sites were involved in 3 (10%) (Table 7).

**Table 7: Distribution of study subject as per abdominal sites of involvement.**

Site of involvement	No of patient N=30 (%)
Peritoneum	5 (16.66%)
Upper GI (Oesophagus, stomach, duodenum)	0
Jejunum / ileum	5 (16.66%)
Ileocaecal	11 (36.7%)
Colon and rectum	3 (10%)
Multiple intestinal sites	3 (10%)
Mesentery and lymph node	3 (10%)

## DISCUSSION

In this study abdominal pain in 28 (93%), weight loss in 25 (83%) and Anorexia in 20 (66.7%) patients. Similarly, Bernhard JS et al, has also mentioned for these features as most common symptoms in his series of 18 patients.<sup>25</sup> Fever was present only in 9 (30%) of patients; which was not a common feature in abdominal tuberculosis. Diarrhoea was present in 3 (30%) of patient and nausea/vomiting in 13 (43.4%) patients. These features were consistent with other studies. Present study revealed abdominal tenderness in 13 (46.6%), ascites in 8 (26.6%), abdominal distention 13 (46.6%) abdominal mass or doughy abdomen in 11 (36.6%) of patients. These signs were closely related to findings of Bernhard JS et al.<sup>25</sup>

**Table 8: Comparison of symptoms of abdominal TB in the studies with other different studies.**

Symptoms	Current study	Mukewar et al <sup>26</sup>	Makharria et al <sup>27</sup>	Khan et al <sup>28</sup>	Umid et al <sup>29</sup>
Abdominal pain	93%	80.6%	90.5%	93%	84.5%
Weight loss	83%	74.6%	83%	47%	75.7%
Anorexia	66.7%	62.7%	69.8%	52%	63.1%
Fever	30%	40.3%	41.5%	64%	52.4%
Diarrhea	30%	16.4%	37.7%	12%	56.3%

Sites of involvement of Abdominal tuberculosis were peritoneum in 5 (16.6%), ilececal region in 11 (36.6%), jejunum/Ileum in 5 (16.6%) and colorectum in 3 (10%) of patient, whereas involvement of mesentric was present in 3 (10%) of patient. 3 (10%) of patient had multiple intestinal involvement as well as other organs. Active pulmonary tuberculosis was noticed in 8 (26.6%) of patients. These features were closely related to findings of other works. A series of 99 patients carried out by Paustian FF et al, has also noticed common involvement of ilaoaecal region followed by colorectum and jejunum.<sup>30</sup> Rare sites are, stomach, oesophagus and anal regions. Present study revealed, anaemia in 18 (60%), increase ESR in all patient, leucocytosis in 6 (20%) and monocytosis in 8 (27%) patients. Mantoux test (MT) was positive in 8 (23.3%) of the patients. Therefore, this study

revealed that in most of the patients with abdominal tuberculosis, MT may be negative which could be due to GI loss of protein and anorexia, due to which they may have hypo albuminemia. In this series, 2 (6.6%) patients were detected to have hypo albuminaemia and 14 (46.66) deranged SGOT/SGPT. CB-NAAT was positive in 22 (73.3%) patient.

Ascites was present in 8 (27%) patients and in ascitic fluid study all had straw coloured exudative fluid. 2 patients were detected to have AFB positive while all drained fluid (about 2 litres) was submitted to the laboratory. 18 patients were selected for barium contrast X ray of GIT, among them 6 patients had radiological features suggestive of Intestinal Tuberculosis, (such as ulceration, narrowing or deformity).

## CONCLUSION

Abdominal tuberculosis is one of the common extrapulmonary tubercular infections. The diagnosis of GI tuberculosis is often delayed. The onset usually is insidious with symptoms present for many months before diagnosis. A considerable number of patients can be diagnosed from common but non specific clinical features (like fever, weight loss, altered bowel habit, Abdominal pain and distension) and from response by anti tubercular therapy. Laparoscopic examination is the Gold standard for diagnosis of peritoneal tuberculosis. Although AFB detection is difficult, a representative tissue biopsy (when approachable) and radiological findings are good method of diagnosis of abdominal tuberculosis. Strongly suggestive clinical features with positive non specific investigation findings are also an indication for anti tubercular treatment in all endemic countries. Treatment of abdominal tuberculosis is no way different from that of other conventional anti tubercular therapy.

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