

## A PROSPECTIVE CLINICAL STUDY OF ABDOMINAL TUBERCULOSIS AT GOVERNMENT GENERAL HOSPITAL, KAKINADA

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### ABSTRACT

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#### BACKGROUND

In spite of considerable advances in recent times, tuberculosis particularly of the abdomen still continues to be a major health problem in India. Several recent developments, which have influenced the incidence as well as the clinical course of tuberculosis in general warrant a fresh look at abdominal tuberculosis. The disease is a diagnostic enigma and the management is still controversial. Surgical treatments, both radical and conservative are being advocated. Approximately, one fifth of patients require surgical intervention. Abdominal Tuberculosis (ATB) is a great mimic and an important cause of morbidity.

#### MATERIALS AND METHODS

The study was done at Rangaraya Medical College and Government General Hospital, Kakinada, from August 2014 to August 2016. 50 cases have been studied. 39 cases underwent definitive surgeries. Follow up period ranges from 1 month to 22 months.

#### RESULTS

The age range of the patients was 15 to 70 years and most commonly involved age group was 20-40 years. Male-to-female ratio was 1.5:1. Most of the patients belonged to the low socioeconomic group. 12% of the patients had a positive history of contact. 60% of the patients presented with intestinal obstruction. The most commonly involved site was the ileocaecal region (44%). Most common surgical procedure done was limited (segmental) resection (46%). All cases were discharged on 6 months ATT.

#### CONCLUSION

Clinical diagnosis of intestinal tuberculosis remains challenging and can only be made after correlating clinical presentation with biochemical and radiological investigations. Haematological investigations were supportive only in 45% of the patients and were nonspecific for making definitive diagnosis. USG was found to be the best noninvasive imaging modality for the diagnosis followed by CT scan of the abdomen. Colonoscopy, laparoscopy and laparotomy with biopsy were accurate when tissue was available for histopathology. We conclude that a good history, clinical examination supported by blood investigations, radiological investigations and where applicable invasive investigations collectively can help experienced clinician to make a diagnosis of abdominal tuberculosis.

#### KEYWORDS

Tuberculosis C01.252.410.040.552.846, Ascites C23.550.081, Laparotomy E04.406.

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#### BACKGROUND

Surgical intervention may become necessary in abdominal tuberculosis for two reasons- diagnostic and therapeutic. Diagnostic laparotomy becomes necessary for histopathological/microbiological diagnosis more often in patients with peritoneal and/or lymph node tuberculosis.

Therapeutic surgery is indicated for complications like intestinal obstruction (acute, acute-on-chronic and chronic), perforation and peritonitis. For acute perforation or obstruction that fails to resolve surgery is clearly essential. Generally, surgery is reserved for complications of the disease. The surgical treatment of intestinal tuberculosis has gone through three phases. By passing the stenosed segment by enteroenterostomy or by ileotransverse colostomy was practiced when effective antitubercular drugs were unavailable as any resectional surgery was considered hazardous in the presence of active disease. This practice, however, produced blind loop syndrome and fistulae and recurrent obstruction often occurred in the remaining segments. With the advent of antituberculous drugs, more radical procedures became

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popular in an attempt to eradicate the disease locally. These included right hemicolectomy with or without extensive removal of the draining lymph nodes and wide bowel resections. These procedures were often not tolerated well by the malnourished patient. Moreover, the lesions are often widely spaced and not suitable for resection. The recommended surgical procedures today are conservative. A period of preoperative drug therapy is controversial. Strictures, which reduce the lumen by half or more and which cause proximal hypertrophy or dilation are treated by stricture plasty. This involves a 5-6 cm long incision along the antimesenteric side, which is closed transversely in two layers. A segment of bowel bearing multiple strictures or a single long tubular stricture may merit resection. Resection is segmental with a 5 cm margin. Tubercular perforations are usually ileal and are associated with distal strictures. Resection and anastomosis is preferred as simple closure of the lesions associated with a high incidence of leak and fistula formation. Recurrent adhesive obstruction may require small bowel stenting. Surgery for bleeding usually requires resection, but occasionally embolisation is possible. The latter has been successful for controlling severe caecal bleeding. Bypass surgery for obstructing lesions such as an ileotransverse anastomosis for an ileocecal mass must be avoided as a blind loop syndrome usually results together with deterioration of the patient.

**Aim**

The aim of this study is to evaluate the need for surgery and to know the role of the surgical management in abdominal tuberculosis.

**Objectives**

1. To study the various clinicopathological manifestations of abdominal tuberculosis.
2. To study the various surgical treatment modalities, their complications and their outcome in the management of abdominal tuberculosis.

**MATERIALS AND METHODS**

A prospective study of 50 consecutive adult cases of abdominal tuberculosis was conducted from August 2014 to August 2016. The incidence, various clinical presentations, investigative modalities and the different treatment modalities of the patients and their morbidity, mortality and outcome were studied. Investigations were carried out in a stepwise manner until the diagnosis was reached. These included CBC, ESR, RBS, BUN, serum creatinine and sputum for AFB, ascitic fluid cytology, x-rays, barium studies, USG, CT scan, endoscopy and laparoscopy wherever necessary. Patients were evaluated haematologically and were subjected to radiological investigations like x-ray chest, x-ray erect abdomen and USG abdomen-pelvis on emergency basis. Later on, they were subjected to exploratory laparotomy. The emergency procedures performed included simple closure of perforation, resection anastomosis of small bowel or partial

hemicolectomy depending on the intraoperative findings. Patients who presented with chronic symptoms underwent BMFT, CECT and colonoscopy with biopsy or laparoscopy done for diagnosis. Few patients underwent colonoscopy, which revealed multiple ulcerative lesions. Edge biopsy was taken, which was suggestive of tubercular lesion.

**Inclusion Criteria**

All the suspected/confirmed cases of abdominal tuberculosis coming to Government General Hospital, Kakinada.

**Exclusion Criteria**

1. Cases having evidence of genitourinary tuberculosis.
2. Cases of abdominal tuberculosis with associated active pulmonary tuberculosis.
3. Patient who is not willing for the diagnostic evaluation and taking treatment.

**RESULTS**

Out of the total 50 cases studied, 34 were males (68.00%) with the maximum incidence in the 40-60 yrs. age group (Table1).

Age Group Yrs.	Males	Females	Total Number of Patients
10-20 yrs.	2	5	7 (14%)
20-40 yrs.	11	5	16 (32%)
40-60 yrs.	17	4	21 (42%)
>60 yrs.	4	2	6 (12%)
<b>Total</b>	<b>34</b>	<b>16</b>	<b>50</b>

**Table 1. Age and Sex Distribution**

In the present study, pain was the most common symptom present in all 50 (100%) patients. Abdominal mass was the least common presentation (14.70%). All 50 patients presented with abdominal pain (100%). Other symptoms included distention (52%), vomiting (82%), fever (78%), abdominal mass (14.70%), bowel disturbances (28%), constitutional symptoms (weight loss 66%) and anorexia (58%). 40% of operated patients presented acutely with signs of intestinal obstruction 26.47% with perforation peritonitis, 20.58% with diffuse or well-defined lump, 16% with ascites (Table 2).

Symptoms	Number of Patients	Percentage of Patients
Pain	50	100%
Vomiting	41	82%
Fever	39	78%
Abdominal distension	26	52%
Abdominal mass	5	14.70%
Bowel disturbance	14	28%
Weight loss	33	66%
Anorexia	29	58%
Intestinal obstruction	13	26%
Perforation peritonitis	10	20%
Ascites	8	16%

**Table 2. Symptoms and Signs of Patients**

In the present study of 50 patients, 22 (44%) presented with acute manifestations, 20 (40%) had chronic symptoms and 8 (10%) came with subacute symptoms. Laboratory studies revealed 16 pts., (32%) had raised lymphocyte counts, 10 (20%) had raised ESR, none had sputum positive tuberculosis. Four patients were (8.00%) tested positive for HIV. X-ray chest and x-ray erect abdomen were done in all patients. Plain x-ray chest revealed 6% of the patients had features suggestive of pulmonary tuberculosis. X-ray erect abdomen revealed free gas under the diaphragm and multiple air fluid levels in 16% of patients (Table 3).

Plain X-Rays	Number of Patients	Percentage of Cases having Findings
Chest x-ray with findings suggestive of pulmonary TB	3	6%
Abdomen x-ray free gas under the diaphragm multiple air fluid levels	8	16%

**Table 3. Radiological Findings**

USG abdomen and pelvis was done in all patients. The most common finding was abdominal lymphadenopathy 34%. Free fluid in the abdomen was found in 32% of patients. Dilated bowel loops and right iliac fossa mass were found in 16% of patients each (Table 4).

Findings	Number of Patients	Percentage of Cases
Free fluid	16	32%
Abdominal lymphadenopathy	17	34%
Pseudokidney sign	1	2%
Dilated bowel loops	8	16%
RIF mass	8	16%

**Table 4. Ultrasonography Findings of Abdomen**

Barium studies were performed in 10 patients of whom 4 (40%) showed ileal strictures. Barium study was conducted only in patients suspected to have luminal disease. CECT was done in 19 patients who demonstrated abdominal lymphadenopathy in 5 patients, ascites in 8 patients and bowel wall thickening in 6 patients. Two patients did not show any characteristic feature in CECT. BMFT was done in 10 cases where disease was predominantly intestinal and where thickening of ileum was suspected on USG. USG was done in all 50 patients. Sensitivity of USG in diagnosing tuberculosis was 88%. CECT (A+P) was done in 19 patients. CECT was not done in emergency patient. Colonoscopy was done in 5 patients. Findings were multiple ulcers in the caecum. Edge biopsy of ulcer was taken in all patients. Diagnostic laparoscopy was done in 7 patients all of whom had thickened peritoneum while only 3 had tubercles on the peritoneum. On laparotomy, most common site of involvement was small bowel. Among the 22 patients who had an acute presentation of the disease at the time of admission, 8

(16%) had acute intestinal obstruction and 13 (26%) had perforation peritonitis (Table 5).

Presentation	Number of Cases
Intestinal obstruction	8 (16%)
Perforation peritonitis	13 (26%)

**Table 5. Laparotomy Findings in Emergency Cases**

36 patients underwent surgical procedure, 27 patients on an emergency basis and 9 patients as elective. Procedures done were adhesiolysis 12, resection anastomosis 10, diagnostic laparoscopy 7, right hemicolectomy 4 and ileostomy 3 (Table 6).

Type of Surgery	Emergency	Elective	Total
Resection anastomosis	9	1	10
Right hemicolectomy/partial colectomy	3	1	4
Ileostomy	3	0	3
Adhesiolysis	12	0	12
Diagnostic laparoscopy	0	7	7

**Table 6. Surgical Management**

Tissue for histopathology was obtained either by colonoscopy or diagnostic laparoscopy or intraoperatively at laparotomy. Study of the material showed evidence of TB enteritis in 20 pts. (40%), peritoneal TB in 14 pts. (28%) and TB mesenteric lymphadenitis in 10 pts. (20%). Tuberculous ascites was found in 6 (12%) patients. Out of all the operated 36 cases, 16 patients developed postoperative complications such as wound infection (7 cases), burst abdomen (2 cases), septicaemia (1 cases), anastomotic leak (4 cases) and faecal fistula (2 cases).

**DISCUSSION**

In the present study, abdominal tuberculosis was more common in males than females. The male-to-female ratio was 2:1. This was comparable to the study conducted by Vij et al and D. R. Thapa et al.<sup>1,2</sup> But, in the study of Bhansali et al and Chuttani et al, the incidence in females was more, i.e. 1.5 times and 3 times of the total incidence.<sup>3,4</sup> 40% of the study patients presented in routine outpatient department and 60% patients presented in emergency or semi-emergency manner. Bhansali et al reported 56% patients presented with acute and subacute manifestations and 43% presented with chronic symptoms of the disease.<sup>3</sup> In the present study, (n=50) 50% of patients were in age group of third and fourth decade of life. In a study of 135 cases of abdominal tuberculosis by Bhansali and Desai, two-thirds of patients were in third and fourth decade of life.<sup>3</sup> Similar observation was made by Kapoor who found that two thirds of patients with abdominal tuberculosis were in this age group.<sup>5</sup> In a study of 52 cases of abdominal tuberculosis carried out by Dandapt and Rao, patients presented with abdominal pain (57.7%), vomiting (61.5%), bowel disturbances (67.3%), abdominal distension (23%), lump (56%) with fever, (79%) with weight loss and 50% with anorexia.<sup>6</sup> The results were compared with the present study (Table 7).

Symptoms and Signs	Dandapat and Rao	Present Series
Abdominal pain	57.7%	100%
Abdominal distension	23%	52%
Bowel disturbances	67.3%	28%
Vomiting	61.5%	82%
Fever	79%	78%
Abdominal mass	56%	14.70%
Weight loss	50%	66%
Anorexia	50%	58%

**Table 7. Comparison of Symptoms and Signs**

40% patients had anaemia and 32% had lymphocytosis and raised ESR was seen in 20%. In a series studied by Chuttani et al, 60.26% patients had anaemia, 28% had raised ESR and lymphocytosis was seen in 32.35% patients.<sup>2</sup> Prem Mukerjee and Ravi et al reported in their study that more than 75% of the patients had raised erythrocyte sedimentation rate.<sup>7</sup> Similar observations were made by Agarwal 88% and Bolukbas 95.5%.<sup>8,9</sup> We report that haematological investigations were positive in only about 35% of patients collectively in our study. In the present study, HIV ELISA test was done in 25 patients and was reported positive in three patients (8.8%). In a series of Rathi et al, HIV infection was detected in 16.6% of abdominal tuberculosis and 6.9% of pulmonary tuberculosis patients.<sup>10</sup> This shows that significant number of patients with abdominal tuberculosis did not have HIV seropositivity in the present study. Remaining patients in our study could not undergo HIV testing due to patient non-willingness. Chest x-ray was done in all patients. Three patients were found to have healed pulmonary tuberculosis and no patient had active pulmonary tuberculosis detected on chest x-ray and AFB. This was comparable to the study of Kapoor et al who found that 2% of the patients of abdominal tuberculosis had evidence of healed or active pulmonary Koch's.<sup>5</sup> But in the study of Prakash et al, they found 39% of patients of abdominal tuberculosis with healed pulmonary Koch's.<sup>11</sup> Similar observations were made by Abraham et al in their series and they found 32% patients with healed Koch's on x-ray chest who were suffering from abdominal tuberculosis.<sup>12</sup> In the present study, 28% patients had multiple air fluid level findings on plain x-ray, erect abdomen and 14% patients who presented with perforative peritonitis had free gas under the diaphragm on plain x-ray abdomen. These patients underwent emergency surgical procedures. The incidence of intestinal obstruction and perforation peritonitis in patients with intestinal tuberculosis has been reported as 12% to 60% by Chuttani et al.<sup>4</sup> Amongst USG findings of 50 patients, most common findings were abdominal lymphadenopathy in 34% and free fluid in 32%, dilated bowel loops in 16% and mass in RIF in 16%. Other USG finding was pseudokidney sign in 1 patient (2%). This was comparable to the study of Balkan M. et al in which the findings were dilated bowel loops 32%, lymphadenopathy 42% and mass in RIF 12.60%.<sup>13</sup> Deepti Agrawal et al in her study found few characteristic features suggestive of

tuberculosis on USG - node size more than 15 mm with central hypoechoogenicity suggesting caseation as specific features of tuberculous involvement of abdominal lymph nodes. This was important to differentiate nonspecific enlargement of lymph nodes, which is common in immunocompromised patients.<sup>4</sup> In the present study, out of the 10 patients who underwent barium studies 4 (40%) were reported to have ileal stricture, but the other 6 showed no evidence of any bowel pathology and were reported normal, so they were managed conservatively. Bhargava et al in their study of abdominal tuberculosis found 32% patients who revealed lesions suggestive of tuberculosis such as ulceration, narrowing or deformity in intestine. SN Chugh et al found barium studies useful for the diagnosis of intestinal tuberculosis in 75% of the patients.<sup>15,16</sup> CT scan of the abdomen was done in 19 (38%) of the 50 patients. The findings were ascites in 8 (42.1%), abdominal lymphadenopathy in 5 (26.31%) and bowel wall thickening in 4 (21.05%). We did not consider CT scan in emergency patients. In the CT scan, similar findings were observed by Balkan M et al, i.e. ascites in 10.20% and lymphadenopathy in 23.16% and bowel wall thickening in 5%.<sup>14</sup> Suri et al (1999) felt that abdominal CT scan was better than ultrasound for detecting high-density ascites, lymphadenopathy with caseation, bowel wall thickening and irregular soft tissue densities in omental areas.<sup>17</sup> Sensitivity of USG in diagnosing tuberculosis in our study was 88.23%. We did CECT in 19 patients though we could not get definitive diagnosis, but could pick up ascites, lymphadenopathy and bowel wall thickening on CECT. One case of suspected tuberculosis on CECT later on was diagnosed to have malignancy of colon. Barium follow through was done in 10 patients. We could pick up ileocecal tuberculosis in the form of pulled up cecum, ileal thickening/stricture. In the colonoscopic study by Muhammad Radzi et al, most of the colonoscopic findings were ulcers, which are typically oriented in a direction perpendicular to the longitudinal axis of the colon and tend to be segmental.<sup>18</sup> Shantanu Shah found colonoscopy as an excellent tool to diagnose abdominal tuberculosis. He also stated that lesions may mimic ulcerative colitis and carcinoma.<sup>17</sup> In the present study, diagnostic laparoscopy was done in 4 patients, all of whom had thickened peritoneum while only three had tubercles on the peritoneum. This was similar to the study by S Rai and W M Thomas et al who found multiple tubercles in 11 patients and bowel thickening in 7 patients and rest were normal. According to him, laparoscopy facilitates an accurate diagnosis in 80-90% of patients. He also described open technique for laparoscopy in such patients to minimise the chances of bowel injury.<sup>19</sup> Similar experiences were shown by Bhargav et al and Houssen et al.<sup>14</sup> Stricturoplasty is one of the standard procedure used in patients with multiple strictures. Pujari et al stated that strictures, which reduce the lumen by half or more or cause proximal dilatation or hypertrophy need to undergo stricturoplasty. The indicators of need for resection were long strictures (>12 cm in length) and multiple areas of involvement. This was also

cited by Balasubramaniam et al.<sup>20,21</sup> Out of 27 emergency cases, 9 patients underwent resection anastomosis of small bowel, 3 patients underwent RT hemicolectomy for ileocaecal tuberculosis. Three patients had ileostomy for plastered abdomen. In these 3 patients, loop ileostomy was done as a salvage procedure as patients were terminally ill and resection was not possible. Role of ileostomy has been emphasised by Ambreen Muneer et al in intestinal tuberculosis. They emphasised its significance as a salvage procedure in critically ill patients.<sup>17</sup> The remaining patients underwent adhesiolysis. In the present study, pathology was localised at small bowel (46%) in the peritoneum 32% and ileocecal region (16%). Gulzar Ahmed et al (Bahawalpur, India) found maximum incidence of tuberculosis in ileum 30% followed by ileocecal region 14%. Peritoneal involvement in his study was only 10%. This was also endorsed by study conducted by Tandon.<sup>14,22</sup> This could be because of the physiological stasis and abundance of lymphoid tissue in this region.

### Complications

In the present study of the 36 operated patients, 16 patients developed postoperative complications. There was wound infection in 7 patients, burst abdomen in 2 patients, anastomotic leak in 4 patients, faecal fistula in 2 patients and septicaemia in one patient. Similar complications were found in the study of Azizollah Abbasi. Out of all complications, he found faecal fistula to be the common long-term complication.<sup>23</sup>

**Mortality-** Three patients expired during the study period, one due to septicaemia, another 2 due to faecal fistula.

### CONCLUSION

Clinical diagnosis of intestinal tuberculosis remains challenging and can only be made after correlating clinical presentation with biochemical and radiological investigations. Haematological investigations were supportive only in 45% of the patients and were nonspecific for making definitive diagnosis. USG was found to be the best noninvasive imaging modality for the diagnosis followed by CT scan of the abdomen. Colonoscopy, laparoscopy and laparotomy with biopsy were accurate when tissue was available for histopathology. We conclude that a good history, clinical examination, supported by blood investigations, radiological investigations and where applicable invasive investigations collectively can help experienced clinician to diagnose abdominal tuberculosis.

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