

# EXPERIENCE WITH ABDOMINAL TUBERCULOSIS

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## SUMMARY

Between March, 1995 and June, 1997, 40 patients of abdominal tuberculosis were treated in the Surgical A Unit of PGMI, LRH, Peshawar. Thirty (75%) patients were admitted through the casualty as acute emergency, while the remainder presented a more insidious course and were admitted as elective cases. Mean age at time of presentation was 32.3 years. Male to female ratio was 1.1:1. Most of the patients belonged to lower middle social class. Twenty two patients had intestinal tuberculosis while seventeen patients had tuberculous peritonitis. Common presenting features were pain (100%), Vomiting (72.5%), abdominal distension (50%), abdominal mass (12.5%) and 12.5 had ascites. Other common presenting symptoms included anorexia (85%), weight loss (62.5%), pyrexia (45%) and pallor (55%). As most patients had to be operated in emergency, the only preoperative investigation done were X-ray which was negative in majority of the patients and ultrasonography which too gave nonspecific findings. Moderate anaemia, a raised ESR and leucocytosis in some cases were the common haematological findings. Coexisting pulmonary tuberculosis was found in 12.5% cases. All the patients underwent surgery. Terminal ileum and ileo-caecal region were the most common areas of involvement in the GIT, while peritoneum was the primary seat of involvement in 17 (42.5%) cases. Stricture formation was the most frequent pathology encountered. Perforation was seen in 5 (12.5%) cases, while an ileo-caecal mass was present in 5 (12.5%) cases. Diagnosis of abdominal tuberculosis was established histologically in all the 40 patients showing typical tuberculous granulomas with caseation in the involved tissues. Definitive surgical procedures was the mainstay of our treatment plan. Four severely ill patients died. In rest of the patients, recovery was well and all responded excellently to a standard regimen of anti tuberculous chemotherapy prescribed for at least 09 months.

## INTRODUCTION

Tuberculosis is one of the oldest of human diseases. The fact that this is a disease of great antiquity is evident from the finding of tuberculous lesions in ancient human remains, as old as 5000 B.C.

Hippocrates identified this disease and named it "Phthisis" meaning consumption. He stated that diarrhoea attacking a phthisical person is a mortal symptom.<sup>1</sup> John Hunter for the first time described the features of

Abdominal tuberculosis in detail.<sup>2</sup> An early reference to the possibility of abdominal tuberculosis was made in 1643 when autopsy on Louis XIII showed ulcerative intestinal lesions associated with a large pulmonary cavity.<sup>3</sup>

Tuberculosis has remained with mankind throughout human history, producing great epidemics. The developed world has to a greater extent, got rid of this scourge but the disease is still rampant in most parts of the developing third world countries.

Abdominal Tuberculosis has continued to be recognized as common health problem in the Indian Subcontinent, Near East and many African countries and despite improvements in methods of hygiene and advances in prophylaxis and drug therapy, it remains a major cause of morbidity and mortality.<sup>4</sup> Even in developed countries like Britain and USA, this disease is experiencing a renaissance. The main contributing factors being migration of people from areas of high prevalence to these countries and development of AIDS as a significant disorder.<sup>6</sup> But still the incidence of Abdominal tuberculosis in these countries is considerably low due to widespread use of pasteurized milk, eradication of infected cattle and efficient use of chemotherapy<sup>7</sup>, measures which are still not widely practiced in the developing world.

## MATERIAL AND METHODS

This study was conducted from March '95 to June '97 in the Surgical 'A' Unit of PGMI, Lady Reading Hospital, Peshawar.

It includes all those patients who were operated and later confirmed to have Abdominal tuberculosis on histologic or bacteriologic examination of the specimens obtained during operation. Patients suspected of having abdominal tuberculosis at the time of surgery were prospectively followed. A proforma specifically designed, was filled for each patient and all the clinical points regarding history, physical findings, operative management and postoperative treatment and course was recorded.

For inclusion in this study, the following criteria was used.

- 1: Typical features of the tuberculous lesions as seen on gross examination.
- 2: Histological demonstration of typical granulomas with caseation necrosis in the specimens obtained during surgery.

- 3: Demonstration of Acid Fast Bacilli in the specimens from abdominal lesions.
- 4: A positive response to specific anti-tubercular chemotherapy.

Patients who were considered for emergency surgery were first stabilized with I/V fluids, blood transfusion, antibiotics and nasogastric suction. Where needed such patients were operated in the casualty operation theater, while elective cases after preliminary workup were operated in the main operation theater.

Under general anaesthesia, abdomen was opened by midline or right paramedian incision. Some of the patients in whom a diagnosis of acute appendicitis was made were opened via grid iron incision. Intestinal resection was considered in cases with complete or multiple strictures and in perforations without extensive or long standing peritoneal contamination. Anastomosis was done in two layers, using 2/0 chromic catgut for inner and 2/0 silk for outer layer. In those cases with free perforation and extensive and long standing peritoneal contamination, exteriorization of the gut in the form of ileostomy or jejunostomy was preferred over primary anastomosis. In some patients where stricturoplasty was done, the stricture was incised longitudinally and sutured transversely in two layers. Ileo-caecal pathology was managed either by doing formal right hemicolectomy and ileo-transverse end to end anastomosis in two layers or ileo-transverse side to side anastomosis, bypassing the diseased segment of bowel. The former procedure was performed in young other wise fit and stable patients while the later procedure was preferred in those cases who were generally unfit for extensive procedures like right hemicolectomy. In patients with extensive intra-abdominal adhesions (frozen abdomen), surgical approach was more conservative, limited to biopsy only from the peritoneum or omentum. Less extensive adhesions causing

obstruction were carefully released, avoiding injury to the gut. Tissue for biopsy was obtained from different sites depending on the site of involvement like intestine, peritoneum, omentum, and mesenteric lymph nodes. Part of it was preserved and sent for bacteriological analysis as well. Patients who had typical tuberculous lesions on gross examination were put on streptomycin and ethambutol on the very first post-operative day and later switched to oral antitubercular drugs once they were allowed to take orally.

## RESULTS

Out of 40 patients, 21 (52.5%) were males and 19 (47.5%) females. Female to male ratio was 1:1.1

Age group most commonly affected was 20-29 years, followed by 12-19 years. Age ranged from 12 to 70. Mean age at presentation was 32.3 years.

Out of 40 patients, 37 were Pakistani nationals while 3 patients were Afghan refugees. Thirty (75%) patients were admitted as acute emergency in the casualty department, while 10 (25%) patients were admitted through the out-patient department as elective cases. On the basis of symptoms and signs, patients were divided into 2 groups-Obstructed and non obstructed. The various symptoms and signs in these two groups are given in table I. Duration of symptoms ranged from 6 hours to 3 years with mean duration of 6 months and 3 days.

TABLE - I  
CLINICAL FEATURES

Feature	Obstructed	Non obst	Total	% age
Pain abd.	33	7	40	100
Vomiting	22	9	31	77.5
Distension	19	4	23	57.5
Constipation	12	1	13	32.5
Diarrhoea	3	2	5	12.5
Alt. Constip. & diarrhoea.	1	2	3	7.5
Fever	7	11	18	45
Anorexia	20	17	37	92.5
Wt. Loss	18	10	28	70
Malaise	20	13	33	82.5
Pallor	13	9	22	55
Mens. abnor.	4	4	8	20
Distension	19	8	27	67.5
Tenderness	18	14	32	80
Gauding	14	3	17	42.5
Rigidity	10	2	12	30
Vis. loops	8	0	8	20
Vis peristal.	4	0	4	10
Mass	3	3	6	15
Ascites	1	4	5	12.5

Eight patients were received in a moribund state, 4 patients severely dehydrated and 3 patients in a state of frank shock. Pain was mostly of colicky and diffuse nature in patients who were obstructed while it was reported to be vague and dull or gripping in character in patients without obstruction. Ten patients reported pain in the right iliac fossa that led to a preliminary diagnosis of acute appendicitis.

Presence of a distinct abdominal mass was observed in 6 (15%) patients, 5 in the right iliac fossa and 1 in the hypogastrium leading to a clinical diagnosis of an ovarian mass. Three patients had past history of tuberculosis (2 Pulmonary, 1 Abdominal) for which antitubercular treatment had been given. Four patients had a positive family history of tuberculosis. Thirty four (85%) patients belonged to lower middle social class. Results of investigations are given in table-II.

TABLE - II  
INVESTIGATIONS

Investigation	No. of patients	% age
Hb% <9gm%	2/40	5
9-11gm%	22/40	55
>11gm%	16/40	40
TIC>10,000	16/40	15
ESR 20-40	19/40	47.5
>40	5/40	12.5
Abdominal X-ray		
Air fluid levels	13/20	65
Gas under diaphragm	1/20	5
++ve Mantoux	14/3	38.8
+ve CXR	5/38	13.1
+ve Sputum AFB	1/15	6.6
+ve U/S	11/12	91.6
Exudative Ascites	18/21	85.7
+ve Barium study	7/7	100
Tissue biopsy	40/40	100
(T.B granulomas)		
Tissue AFB	1/40	2

The positive findings on chest x-ray included Lung opacities in 2 patients, Pleural effusion in 2 patients and frank cavitations in 1 patient. AFB in the sputum was seen in one patient who had an active pulmonary tuberculosis with widespread pulmonary cavitations.

Ultrasonic findings which were positive included free fluid in peritoneal cavity 6 patients, distended loops of gut in 3 patients, pleural effusion in 1 patient and hepatomegaly in 1 patient.

Barium meal and follow through which was done in 7 patients, showed adhesions in 2 patients, distended ileal loops in 2 patients, stricture terminal ileum in 1 patient, thickened mucosal folds with nodularity in duodenum and proximal jejunum in 1 patient and findings of duodenal ulcer in 1 patient.

AFB was seen in only one specimen which was a caseating mesenteric lymph node in a case with plastic type of tuberculous peritonitis.

The various operative findings are summarized in table-III. Intestine was the primary seat of involvement in 22 (55%) cases, while peritoneal involvement was observed in 17 (42.5%) cases. The most common intestinal lesion was stricture of the Ileum (12 cases). In 3 cases, stricture was associated with perforation while in one case stricture and an ileo-caecal mass were both present. Plastic variety of tuberculous peritonitis was another common finding, present in 13 cases, while the ascitic type of tuberculous peritonitis was seen in only 4 patients. Ileo-caecal mass was the finding in 5 patients. Mesenteric lymph adenopathy as an isolated lesion was seen in only 1 case while in majority of cases, it was associated with either intestinal or peritoneal pathology. The various surgical procedures performed are given in table-IV. An ileostomy and colostomy were done simultaneously in two cases. In one case, a stricture in the

TABLE – III  
OPERATIVE FINDINGS

Areas of involvement and sites of pathology	
G	Terminal ileum, I/C region (18) Ileal strictures -9, I/C mass-5,
I	Caecal perforation -1 Ileal stricture + perforation -3
T	Jejunum (2) stricture-1, perforation-1
	Colon (2) stricture-1, ulcers-1
Peritoneum	Tuberculous peritonitis (17) Ascitic-4, Plastic-13
Mes. L.N.	Isolated adenopathy -1 In combination-18

transverse colon was resected and the ileum was brought out as end ileostomy and colon as mucous fistula. In the other case, terminal ileal stricture was associated with extensively diseased colon and a loop ileostomy was combined with a colonic mucus fistula. Streptomycin and Ethambutol was administered in the immediate postoperative period to 20 patients. A combination therapy, consisting of Rifampicin, INH, Ethambutol and Pyrazinamide in standard doses, was given to all but 2 patients who died before they could be allowed to take these drugs orally.

The various post operative complications encountered are given in table-V. Wound infection occurred in all those cases who had perforated gut with contaminated peritoneal cavity. Culture from these wounds showed mixed infection in all 4 cases. All responded well to simple drainage and antibiotic cover. One patient with florid wound infection developed wound dehiscence and eventually tension free sutures had to be applied. Paralytic ileus lasting for 3-4 days was observed in 4 patients. All responded well to 'drip and suck' regimen

and electrolytes adjustments where they were found deficient. Two of our patients developed anastomotic leak on the third post-operative day. Both these patients had perforated gut with peritonitis to start with. Eventually ileostomy in one and jejunostomy in the other, had to be performed. Chest problems were seen in 5 patients, ranging from mild bronchitis to severe respiratory distress. However, all responded to chest physiotherapy, bronchodilator, expectorants and appropriate antibiotics. Four patients died during their stay in the hospital. Two patients died because of septicaemia and severe electrolyte imbalance. One patient died due to severe cardiac failure while in one patient, severe dehydration and malnutrition was responsible for mortality.

Duration of stay ranged from 1 day-15 days (average 6.3 days). All patients were followed up in the out patient department and so far 30 patients have completed their antitubercular treatment. Two patients experienced anorexia and jaundice which was attributed to anti-tubercular drugs. Investigations like ultrasound and liver function tests showed hepatocellular pattern. Their drugs were stopped. Both recovered from jaundice following which antitubercular drugs were recommenced. Further followup was advised in the out patient department.

TABLE – IV  
OPERATIVE PROCEDURES

Procedures	No. of pts	%age
Resection and end to end anastomosis	6	15
Rt. hemicolectomy	5	12.5
Stricturoplasty	4	10
Ileo-transverse bypass	4	10
Ileostomy	3	7.5
Jejunostomy	1	2.5
Colostomy	2	5
Release of adhesions only	6	15
Biopsy only	9	22.5

TABLE – V  
COMPLICATIONS

Complication	No. of pts	% age
Wound infection	4	10
Wound dehiscence	1	2.5
Paralytic ileus	4	10
Anastomotic leak	2	5
Intestinal fistula	1	2.5
Chest infection	5	12.5
Cardiac failure	2	5
Haematemesis	1	2.5
Severe malnutrition	1	2.5

## DISCUSSION

Abdominal tuberculosis is said to be a disease of young adults.<sup>7</sup> Most studies indicate that this disease most commonly occurs in the 3rd decade<sup>14,15,22,24</sup> and certainly this was the finding in our study as the most common age group affected was 20-29 years. After 4th decade of life, the incidence decreases as the age advances and it touches the lowest at the highest age. Males slightly predominated the females in this study. It has been reported from many studies that the disease is more common in males in the western countries while in the developing countries, females dominate.<sup>4</sup> This may be due to the fact that in many third world countries, the women assume a nursing role among infected family members.<sup>8</sup> In our study, most patients belonged to a lower class. In fact tuberculosis is widely regarded to be a disease prevalent in regions lacking basic living facilities, proper nutrition and having neglected hygiene.

Most of the patients presented as acute emergency (75%). Studies from third world indicate that the proportion of patient presenting acutely with complications is fairly high. The situation is different in some of western countries like UK, where Abdominal tuberculosis rarely cause acute emergency.<sup>10,12</sup>

Most investigators have found symptoms and signs of abdominal tuberculosis as non specific, vague and variable<sup>3,5,11</sup> which do not appear in a pathognomonic syndrome.<sup>1</sup> In fact abdominal tuberculosis has been called a great mimic<sup>5</sup> as it can be so easily confused with many other abdominal diseases. As this disease has the potential to affect so many different anatomical sites, giving rise to different clinical patterns, it is prudent to consider the possibility of tuberculosis as a cause of any abdominal complaint in patients especially of Asian community.<sup>3</sup> Abdominal pain is the commonest first observed symptom which occurs either due to mechanical obstruction, perforation, inflammatory mass or early tuberculous enteritis.<sup>10</sup> This was the predominant and most common symptom occurring in all patients. Large series have shown this to be the common first observed symptom, occurring in 34%, 35.9%, 74%, to 96% of patients.<sup>5,14,16</sup>

A change in bowel habits like diarrhoea or alternating diarrhoea and constipation was reported far less frequently. Some studies state this feature to occur rather more frequently.<sup>4</sup> Other symptoms like anorexia, malaise and weight loss was pronounced in molarity of patients, a finding similar to many previous studies.<sup>4,5,7,15,17</sup> Fever was reported in 45% patients. Other studies report incidence of 42.2% and 52%.<sup>4,16</sup>

Among females, menstrual abnormalities was observed in 26.3% cases. Other authors report an incidence from 15%-91.5%.<sup>16,19,25</sup> Among abdominal signs, tenderness was the leading sign present in 80% of patients. Right iliac fossa was the site of pain in 10 patients prompting the examiner to consider the diagnosis of acute appendicitis. In patients with tuberculous peritonitis, tenderness with guarding and rigidity was not usually present, a finding similar to other series.<sup>11</sup>

A distinct abdominal mass was observed in 6 (15%) patients, out of which 5

(83.3%) were located in the right iliac fossa. One patient who presented to a gynaecologist with a mass in the lower abdomen, was considered a case of ovarian cyst. The presence of mass has been reported with varying frequencies in different studies (13%<sup>5</sup>, 28.6%<sup>16</sup>, 45%<sup>10</sup>,) while some authors state that a mass occurs far less frequently.<sup>7</sup> All those cases with mass in the right iliac fossa were having an ileo-caecal pathology, while one case with a hypogastric mass turned out to be suffering from plastic type of tuberculous peritonitis. Indeed, a palpable mass may either be due to hypertrophic ileo-caecal lesion, mass of matted lymph nodes, rolled up omentum or loculated ascites. Most authors feel that there are no specific tests which could be regarded pathognomic of abdominal tuberculosis. Thus routine laboratory investigations provide little guidance in diagnostic process<sup>5,7,12,15,17</sup> and the clinical picture must bring the suspicion of tuberculosis to the investigator's mind before specific investigations may be advised.<sup>3</sup> Significant anaemia (Hb%<11) was seen in 60% patients, while most other studies have also found this observation in around 60% of their cases.<sup>7,11,15,16</sup> A raised TLC (>10,000) was seen in 15% patients. Others have found this finding in 23-46% cases.<sup>4,11,16</sup> A positive evidence of tuberculosis on chest x-ray was found in 5 (12.5%) cases. Two cases had healed pulmonary lesions, two cases had pleural effusion while one patient showed cavitations. Sputum for AFB was positive in only one case with widespread pulmonary cavitations. Thus out of 40 patients, 5(12.5%) cases were considered to have abdominal tuberculosis secondary to pulmonary tuberculosis, while the rest were most likely to be suffering from primary form of abdominal tuberculosis. This is in agreement with the result of other studies which state that in the developing countries, the primary form of abdominal tuberculosis is much more common while in the western countries, abdominal tuberculosis is almost always secondary. In USA,

considerable importance is given to chest x-ray where a negative x-ray is regarded sufficient evidence that the intestinal disease is not tuberculous.<sup>4</sup> A co-existent pulmonary tuberculosis has been observed with varying frequencies of 15%<sup>16</sup> 32%<sup>7</sup> 40.8%<sup>15</sup> 90%.<sup>4</sup> Abdominal tuberculosis occurs in 6-38% case of pulmonary tuberculosis, while tuberculous peritonitis occurs in less than 4% of patients with pulmonary tuberculosis.<sup>24</sup> A strongly positive mantoux's test was seen in 38.8% patients. Most authors do not give particular importance to this test and regard it nonspecific and unhelpful in diagnosis<sup>3,10,12</sup> as it is not always positive in patients with active tuberculosis.<sup>17</sup> However, on the basis of results of epidemiological studies, some authorities have found a strongly positive reaction to be highly suggestive of active tuberculosis especially in children.<sup>22,28</sup>

Ascitic fluid analysis revealed an exudative type of ascites with lymphocytic predominance in 18(85.7%) cases. None of the specimen showed AFB on staining and smear. Taylor (1945) and Burak and Hollister (1960) considered a case tuberculous, if ascitic fluid contained > 250 cells/cu mm and protein level > 2.5 gm/dl. Most authors are of the opinion that ascitic fluid analysis is generally unreliable with a little diagnostic yield in abdominal tuberculosis.<sup>5,15,17</sup> Anyhow, exudative ascites may suggestive of tuberculous peritonitis in endemic areas and provide sufficient ground for treatment.<sup>15</sup>

Barium contrast studies, U.S and C.T. scan are other investigations which may sometimes be done, but these are not very helpful in the diagnosis of abdominal tuberculosis.<sup>10,12,17,23,24</sup>

Biopsy and histopathology of specimens obtained at the time of surgery provided absolute diagnosis in all of our cases. All the specimens showed characteristic granuloma tous inflammation and caseation necrosis which were compatible

with tuberculosis. Laparotomy as a means of both diagnosis and treatment has been found most satisfactory in our study. We found it to give us quick and efficient diagnosis without too much complications even in those cases who had to be operated in emergency. In fact most of our patients were diagnosed at the time of surgery. This has been experience of surgeon in USA, where most cases of abdominal tuberculosis are discovered during laparotomy for mistaken diagnosis of malignancy or Crohn's disease.<sup>5</sup>

Management of Abdominal tuberculosis is very similar to that of tuberculosis in other areas of the body. In most instances, bed rest, correction of nutritional deficiencies and appropriate chemotherapy represent an adequate treatment regimen.<sup>1</sup> As regards chemotherapy, most series recommend 12 month treatment. A recent Indian study has showed a short term therapy for 6 months to be equally effective.<sup>26</sup> We however prescribed treatment for 9 months and found this period to be adequate to control the disease. In abdominal tuberculosis, surgery is reserved for complications. Complications of enterictuberculosis that may require surgical intervention include obstruction, haemorrhage, perforation with abscess formation, free perforation with peritonitis and fistula formation.<sup>13</sup>

In our study, majority of the patients presented with acute complication which demanded immediate surgical exploration. Indeed, the rate of laparotomy is fairly high in our part of the world as most of the patients present at a fairly late stage of complications. Even in developed countries like UK, the rate of surgical exploration is stated to be high.<sup>12</sup> Colon was involved in only 2 cases. Indeed tuberculosis of colon in the absence of pulmonary tuberculosis is regarded a rare entity. The clinical manifestations of colonic tuberculosis are often vague which may mimic other conditions like adenocarcinoma, Crohn's disease,

amoebiasis, ischemia and schistosomiasis.<sup>29</sup> There have been reports of colonic tuberculosis and adenocarcinoma co-existing in the same patient.<sup>30</sup> Therefore, one has to be careful during colonoscopy or biopsy of 'typical' looking colonic lesions to rule out a co-existing carcinoma. Resection was considered in cases of multiple strictures or when stricture was associated with perforation, excising the stricture and perforation together. In fact, the procedure of choice in case of any type of lesion of gut (stricture, perforation or mass) is one stage resection of involved bowel and anastomosis.<sup>13</sup> Excision of perforated segment is always regarded necessary. In the results of 10 patients with tuberculous enteritis with perforation, a 50% rate of mortality was noted among those who were explored but not resected.<sup>1</sup> Right hemicolectomy was performed in one case with caecal perforation, while in 2 cases with ileal perforation, ileostomy was chosen instead of primary anastomosis. Strictureplasty, which is recommended in case of single partially obstructing strictures, was performed in 4 cases and in all, the result was excellent. In 4 patients with extensive adhesions, but without obstruction and in 4 patients with ascitic type of tuberculous peritonitis, biopsy turned out to be the only procedure performed in these cases. In all these cases no further surgery was needed and most responded to antituberculous drugs in a satisfactory manner.

In our study, mortality rate was 10%, which we consider satisfactory, considering the fact that most of the patients were received in extremely serious and unstable state and had to be vigorously resuscitated before surgery. In previous studies, the rate of mortality had been variable, from 0%,<sup>4,12,27</sup> 6%,<sup>17</sup> 20%.<sup>19</sup> to 50%.<sup>24</sup>

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