

## **CLINICAL DILEMA- ABDOMINAL TUBERCULOSIS**

Dr. Leena Dabhi,<sup>1</sup>Dr. Hemang Suthar<sup>2</sup>, 1 Associate Professor of Medicine, AMC-MET Medical college, Ahmedabad, 2 Associate Professor of Medicine NHL Medical College , Ahmedabad..

E Mail- leenadabhi@gmail.com Ph-9427609717.

### **ABSTRACT:**

**BACKGROUND:** Tuberculosis has plagued mankind since Neolithic times (8000 BC). The accurate diagnosis of abdominal tuberculosis requires a high index of suspicion. It may involve the gastrointestinal tract, peritoneum, lymph nodes or solid viscera, constitutes up to 12% of extra pulmonary TB and 1-3% of the total.

**AIM:** To study the clinical profile of abdominal tuberculosis with emphasis on presentation, investigation, diagnosis, treatment and follow-up.

**METHODS:** A study of 124 patients of abdominal tuberculosis was done between January 2010 to June 2013 by reviewing their clinical information, therapeutics and outcomes. Diagnosis was based on clinical features, imaging techniques and/or histo-pathology.

**RESULTS:** 124 cases of ATB were studied. Median age was 33.1 years, with M: F ratio is 1:1.06. The common symptoms were Abdominal pain, weight loss, fever, and anorexia. Common clinical signs were pyrexia, ascites and abdominal tenderness. Sub-acute and acute intestinal obstructions were seen in 16 and 4 patients respectively. Laparoscopy and laparotomy had a high percentage of making diagnosis of Abdominal TB. In 100 patients, granulomatous lesion and/or Langhan's giant cells were found confirming diagnosis of tuberculosis, while 3 patients were diagnosed by positive acid-fast culture. In 21 patients with suggestive clinical history and negative diagnostic workup, response to therapeutic trial of anti TB drugs was the basis of diagnosis. 87 patients responded to medical treatment and 37 patients with complications required additional surgical intervention. Total 15 patients died and no case of relapse was noted.

**CONCLUSIONS:** Abdominal tuberculosis can be difficult to diagnose because of the variable presentation, the low percentage with positive microscopy for acid-fast bacilli and the time delay of up to several weeks for a positive TB culture. The thresholds for laparoscopy and/or laparotomy for the diagnosis were low but diagnosis could be made rapidly and early treatment can be instituted. Six months short-course chemotherapy is very effective in ATB.

**KEYWORDS:** Abdominal Tuberculosis, pulmonary tuberculosis, histopathology

### **MAIN ARTICLE**

#### **INTRODUCTION**

Tuberculosis is commonest communicable disease and causes some 3 million deaths per year worldwide.<sup>1</sup> TB of the gastrointestinal tract is the sixth most frequent form of extra-pulmonary site<sup>3</sup> with a variable presentation, frequently mimicking other common and rare diseases<sup>6</sup>. The

commonest site of disease is gastrointestinal tract, peritoneum and mesenteric lymph nodes. Because of nonspecific clinical and radiological findings mimicking several diseases, such as Crohn's disease, carcinoma, sarcoma<sup>8</sup>, amebiasis, gastrointestinal histoplasmosis, and periappendiceal abscess<sup>7</sup>, the diagnosis of the abdominal TB requires a high index of suspicion and it usually takes a long time to get accurate diagnosis .

Invasive procedures are required for obtaining tissue for histo-pathological examination or culture which are not easily available in developing countries<sup>9,10</sup>. Imaging techniques (ultrasound, barium X-Rays, and CT scan) and Mantoux test have only supportive value. Therefore, diagnosis of abdominal tuberculosis is an ongoing challenge to the physicians..

Most bacilli isolated in patients with abdominal tuberculosis are *Mycobacterium tuberculosis* and not *Mycobacterium bovis*<sup>12-14</sup>. 50% of AIDS patients with tuberculosis have extra-pulmonary involvement, compared to only 10-15% of non-HIV tuberculosis patients<sup>15</sup>.

## **Materials and Methods**

A historically prospective study of 124 patients of ATB was done between Jan 2010 to June 2013 in L.G. hospital .A detailed history of patients suspected to have abdominal tuberculosis was obtained and / or operative findings were evaluated. In addition to physical examination, basic laboratory studies and HIV serology were done. Chest and abdominal X-ray, tuberculin skin test and abdominal ultrasound were done. If Chest X-ray was suggestive of pulmonary tuberculosis two sputum examination for acid fast bacilli were done. In patients presented with nonspecific abdominal pain abdominal CT , fine needle aspiration (FNA) biopsy ,laparoscopy, upper and lower GI system endoscopy, and endoscopic biopsy were done accordingly. In patients presented with ascites, ascites fluid biochemical, cytological and bacteriological examination was done. Stool examination, colonoscopy, barium meal follow up,

endoscopic biopsy for histopathologic examination and abdominal CT were done based on symptoms. Laprotomy was performed in patients presented with intestinal obstruction or perforation. All biopsy specimens were studied for bacteriological and histopathological examination for confirmation of tuberculosis.

For our study, abdominal tuberculosis was defined as TB affecting the peritoneum, abdominal lymph nodes, omentum, liver, spleen, and/or gastrointestinal tract. Diagnosis of abdominal TB was based upon a positive AcidFast Bacilli (AFB) smear or culture, histopathology showing tubercular granuloma (with or without caseation), radiological features compatible with tuberculosis on barium x-rays of the abdomen, ultrasound or CT scan of the abdomen, and patients with a high index of clinical suspicion and negative diagnostic workup but showed a good response to therapeutic trial of anti-tuberculous drugs<sup>16</sup>. Laparoscopic features felt to be consistent with TB for the purpose of making a presumptive diagnosis were the presence of tubercles, fibroadhesive peritonitis, or caseating lymphadenopathy. Empiric therapeutic trial was conducted for at least for 3 months with standard four drugs regimen.

## RESULTS

**Table 1**

### Presenting symptoms and signs

No	Symptoms	No of Patients (%)	Signs	No. of patients
1	Abdominal pain	92 (74.19%)	Fever	75 (60.48%)
2	Weight loss	91 (73.38%)	Ascites	39 (31.45 %)
3	Fever	68 (54.83%)	Abdominal Tenderness	32 (25.80 %)
4	Anorexia	56 (45.16%)	Hepatomegaly	30 (24.19%)
5	Abdominal distention	33 (26.31%)	Splenomegaly	23 (18.54%)
6	Diarrhea	24 (19.35 %)	Subacute intestinal obstruction	16 (12.90%)
7	Night sweating	23 (18.54%)	Lymphadenopathy	15 (12.09%)
8	Vomiting	12 (9.67%)	Abdominal mass	14 (11.29%)

9	Cough	9 (7.25%)	Acute Peritonitis	9(7.25%)
10	others	8 (6.45%)	Acute intestinal obstruction	4 (3.22%)
11	Bleeding Per rectum	1 (0.81%)	Bleeding PR and anal mass	1(0.81%)

The overall median age of the patients was 33.1 years (range 15–63). In our study 30 patients were male and 34 patients were female with M: F ratio is 1:1.06. In our study 24 patients had a past history of tuberculosis, while 13 patients had family history of tuberculosis. The Montoux test was positive in all patients. The most common presentation was Abdominal pain (74.19%), weight loss (73 %), low grade fever (55%) and anorexia (45%). 26% and 19% of patients had abdominal distention and diarrhea respectively. The most common clinical signs were pyrexia 75(60.48%), ascites 39(31.45%) and abdominal tenderness 32 (25.80%). Abdominal mass was found in 14 patients, while 9 patients presented with frank peritonitis. 4 patients presented with acute intestinal obstruction and 16 patients presented with subacute intestinal obstruction. Anemia was found in 101 (81.45%) patients and ESR was increased in 120(96.77%) patients. Albumin was reduced in 69(55.64%) of patients. On X-ray chest active tuberculous lesion or lesion consistent with previous TB were detected in 33(26.31%) and 24(19.35%) percent of the patients, respectively. In 15(12.09%) of patients Sputum for AFB was positive. Abnormality in abdominal sonography was found in 53(42.74 %) of patients. Ascites was found in 39(31.45 %) patients and on ascites fluid examination; in all of them it was exudative (protein 4.2 gr. /dl) with ADA increased and in all patients lymphocytes(70%) were predominant on cytology.

**Table No 2**  
**Diagnostic Positivity of Various Investigations in Patients with Abdominal Tuberculosis**

No.	Investigation	Performed in No. of Patients	Positive In No Of patients
1	Barium meal and follow through	25	20(80%)

2	Barium enema	10	1(10%)
3	Ultra sound	124	53(42.74%)
4	CT Scan Abdomen	74	63(85.14%)
5	Histopathology of surgical specimen	44	40(90.90%)
	Histopathology of laproscopic biopsy	27	27(100%)
6	Histopathology of Colonoscopic biopsy	14	10(71.42%)
7	Histopathology of CT guided biopsy	30	22(73.33%)
8	Histopathology of upper GI endoscopic biopsy	12	1(8.33%)
9	AFB culture	34	3(8.82%)

On abdominal CT, ascites, gut wall thickness (frequently ileocecal region), omental thickening, Lymphadenopathy, abscess, and organomegaly etc. were detected in 63(50.80%) patients. Upper gastrointestinal endoscopy was done in 12 patients amongst which one patient was confirmed on histology. Colonoscopy was done in 14 (11.29%) patients and in 10 patients ulceration, nodule and inflammation was found, tuberculosis was confirmed by histological examination. In Barium meal and follow-through abnormal findings (luminal narrowing with proximal dilatation of loops) were found in 16.12% patients. Diagnosis of Abdominal TB was done in 40(90.90%) out of 44 by laproscopy and in case of laprotomy it was 27 (100%). So these procedure had a high percentage of confirming and/or making diagnosis of Abdominal TB. Laparotomy was done in patients with abdominal masses 14 (11.29%) (ileocaecal, peritoneal), acute intestinal obstruction 4(3.22%), and acute peritonitis 9(7.25%). Samples (ascitic fluid, omental or intestinal biopsy tissues) were sent for acid-fast bacilli culture. The positive yield for acid-fast culture was only in 3 (2.41%) patients, all were on ascitic fluid. In 21(16.93%) patients with suggestive clinical history and negative diagnostic workup, response to therapeutic trial of anti TB drugs was the basis of diagnosis.

Out of the total 124 patients in our study, total 15 (12.09%) patients expired, in which 8 were due to tuberculosis. Out of these eight patients four had extensive pulmonary tuberculosis. Three patients expired due to AKT induced hepatitis and hepatic encephalopathy. One patient expired due to associated IHD and congestive cardiac failure. Two patients expired perioperatively due to septicemia and septicemic shock and one patient expired due to renal failure. Treatment was given according to RNTCP guideline. Treatment was completed by 105 patients and 15 patients expired before the treatment was completed. Four patients lost follow up before treatment was completed.

## **Discussion**

Patients with abdominal TB may have many symptoms and mimic many diseases, therefore if it is not clinically suspected, it may result in important morbidity and mortality. The methods of dissemination of tuberculosis include the ingestion of infected sputum, haematogenous spread from active pulmonary or miliary TB; the ingestion of contaminated milk or food and contiguous spread from adjacent organs.

Mean age of the patients was 33.1 (15-63) years, which is comparable with other studies in Bolukbas C. et al<sup>17</sup> it was 31.4 years, Balasubramanian Ret al<sup>18</sup> it was 30 years and in Ramesh J et al<sup>19</sup> it was 32.8 years. Abdominal tuberculosis is a disease of predominantly young adults with two third of patients of 20-40 years of age group. In our study male to female ratio is 1:1.06. Slight female predominance found in studies done in India<sup>20</sup>. Possible reasons for female predominance are malnutrition, illiteracy, poor access to health care facility and contiguous spread from tuberculous salpingitis<sup>9,17,20</sup>. In our study past H/O tuberculosis was found in 12 (19.35%) of patients which was comparable with Bolukbas C. et al<sup>17</sup> in which it was found 17%.

Gastroenterological symptoms of abdominal TB depend on the organ or tissue involved. Abdominal pain (74%) is the most common symptom found in our patients. Mid abdominal colicky pain represents intermittent small bowel obstruction and was seen in 90-100% of patients in other studies as well [15,6731]. This emphasizes the non-specific nature of abdominal pain and common feature that is present in abdominal malignancy and Cohn's disease<sup>9, 20</sup>. Abdominal distention (31%), and diarrhea (19%) are other frequent symptoms which is comparable with other studies<sup>17</sup>. Constitutional symptoms of tuberculosis like fever (55%) and weight loss (74%) and anorexia (45%) are also common. In a study done by Sharp et al<sup>13</sup> abdominal pain, night sweats and weight loss are found in more than 50% of the patients. But in a study done by Hamdani et al<sup>24</sup> most common finding was painful febrile ascites found in 70% of patients. In our study ascites (31%) was the most common physical finding followed by abdominal tenderness (26%). In a study done by Ramesh J. et al<sup>19</sup> ascites and abdominal tenderness was found in 27% of patients each. Thus the symptoms and signs of abdominal tuberculosis may vary according to the site of involvement and no single sign and symptom was the pathognomonic of ATB<sup>25</sup>. Active tuberculous lesion or lesion consistent with previous tuberculosis in the lungs are detected in 26 and 17 percent of the whole group of patients, respectively; which is comparable with other studies<sup>7,26</sup>. In the absence of pulmonary involvement diagnosis is difficult. So, clinical and radiological signs of pulmonary TB must be searched for in every patient even in the absence of pulmonary symptoms. The ascites in tuberculosis has high protein concentration and serum to ascites albumin gradient  $<1.1$  gr/dl distinguish it from transudative causes. Ascitic fluid has predominant lymphocyte count, but AFB are rarely detected in ascitic fluid. The detection of adenosine deaminase (ADA) in ascitic fluid has been used as a useful non-culture method for detecting tuberculous peritonitis, with a high sensitivity and

specificity<sup>34</sup>. In different studies, laparoscopy was found helpful in the diagnosis up to 87%-92% of peritoneal tuberculosis<sup>35</sup>. Our diagnosis rate based on response to therapy was similar to the rates reported before<sup>26</sup>. Empiric therapeutic trial appears to be a useful method for rapid presumptive diagnosis and treatment of tuberculosis.

## **Conclusion**

Abdominal TB is a complex disease and has diverse symptomatology that is non-specific. Tissue diagnosis is mandatory for appropriate management but it is invasive, expensive and unfortunately not always conclusive either.

Different clinical presentation of patients with abdominal TB involving GI system may determine the necessity of diagnostic or therapeutic surgical interventions. The diagnosis can be difficult because of the varied presentation, the low percentage with positive microscopy for acid-fast bacilli and the time delay of up to several weeks for a positive TB culture. A high incidence of suspicion for ATB, and a low threshold for laparoscopy are needed to make the diagnosis. Well-monitored, 6-month anti-TB treatment gives excellent outcomes with minimal relapse and late morbidity. The thresholds for laparoscopy and/or laparotomy for the diagnosis were therefore very low. The diagnosis could be made rapidly by these methods, and early treatment instituted. Six months short-course chemotherapy is very effective in ATB.

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