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# Abdominal Tuberculosis Revisited–A single institutional experience of 72 cases over 3 years

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***Abstract:*** *Tuberculosis caused by Mycobacterium Tuberculosis is one of the oldest diseases of mankind. Because of effective control measures abdominal tuberculosis has become rare but still prevalent. The twin disaster of dual infection with HIV resulted in the resurgence of tuberculosis. The objective of this study is to know the various modes of presentation, different modalities of diagnosis especially laparoscopy, treatment and prognosis in our set up. The study population consisted of 72 patients who were diagnosed to have abdominal tuberculosis proven by either histopathology (93%) or mycobacteriology (7%). The study included peritoneal Tuberculosis (51.4%), intestinal Tuberculosis (48.7%) and lymph nodal Tuberculosis (18.1%).Diagnostic Laparoscopy and biopsy (29.2%) was the most common mode of diagnosis. Surgery was indicated in 29.2% patients for complications of Abdominal Tuberculosis like perforation peritonitis and intestinal obstruction. All patients invariably received ATT. 43 out of 52 patients who were followed up recovered completely with treatment while the mortality rate was 8.4%. This study supports the fact that Anti Tubercular treatment is still the treatment of choice in abdominal tuberculosis and surgery is only indicated in complications of abdominal tuberculosis with a gradual decline in radical surgical procedures for the same.*

***Keywords:*** *Anti tubercular treatment,intestinal, laparoscopy,lymph nodal, peritoneal, surgery*

## I. Introduction

Tuberculosis is one of the major public health problems in the developing countries of the world today and has made its impact felt throughout the ages. No other disease has so much sociological, economic and health significance as tuberculosis. From an overview of the prevalence of the disease, it appears that it has an index of the stage of social organization and standards of living of the community.Abdominal tuberculosis is one of the commonest sites of extra pulmonary tuberculosis. Tuberculosis of the abdominal organs include the diseases of the stomach, duodenum, small bowel, large intestine, intra-abdominal lymph nodes, liver, spleen, pancreas and peritoneum.The term abdominal tuberculosis commonly used by the clinicians denotes intestinal, glandular and peritoneal tuberculosis, which are far more common than tuberculous disease of the abdominal organs.Abdominal tuberculosis has usually been classified into three types: a) Intestinalb) Peritonealc) Lymph nodal.[1]The symptoms of abdominal tuberculosis are generally vague and nonspecific. It may mimic any intra-abdominal disease and can challenge the diagnostic skills. Some patients will require immediate surgical intervention, whereas others will improve with conservative treatment. Mortality rate has come down to 6% from 20-50% after introduction of anti-tubercular chemotherapy.[2,3]Surgical management of abdominal tuberculosis (intestinal tuberculosis) has changed considerably from bypass operations and major surgical resections to conservative resection and stricturoplasty.The aim of surgery in case of intestinal tuberculosis is to overcome the deleterious effect of the disease like tissue disorganization, obstruction and perforation. This study is intended to know the various modes of presentation, different modalities of diagnosis with special reference to role of laparoscopy, treatment and prognosis in our setup which helps in better management of these cases thus helping to improve prognosis.

## II. Aims And Objectives

**1.1. Aim Of The Study:** To describe our institutional experience in the diagnosis and management of abdominal tuberculosis

**1.2. Objectives:** To study the

a. Epidemiology of the disease – how many were HIV related
b. Modes of presentation
c. Sites of involvement
d. Modes of diagnosis
e. Modalities of treatment
f. Follow up

## III. Methods And Materials

All patients admitted in surgical and medical wards in KMC Manipal with a **Study Design And Study Population:**

**1.1. Inclusion Criteria:**

**1.2.** diagnosis of abdominal tuberculosis from June 2012 to May 2015 are included in this study. It is a both retrospective and prospective study for 3yrs. Retrospective study from June 2012 to May 2013 and prospective study from June 2013 to May 2015. Sample Size-72

a. Histopathological proof: Cases with a histological diagnosis of caseating/non caseating granulomas highly suggestive of tuberculosis
b. Microbiological proof: Cases with microbiological evidence.

**1.3. Exclusion Criteria:**

a. Genitourinary tuberculosis
b. Paediatric cases
c. Cases diagnosed /treated for tuberculosis without histopathological or microbiological evidence

**1.4. Methodology:** All patients included in the study population were assessed by complete history and physical examination. Patients were subjected to relevant laboratory, radiological and histopathological investigations. Laboratory investigations included complete hemogram including ESR, HIV serology using HIV Rapid/ELISA tests (Consent for HIV testing were obtained), sputum for AFB, ascitic fluid biochemical analysis (Protein,Albumin, ADA levels), cellcount,microbiology. Radiological investigations included chest and abdominal X-rays, Ultrasound abdomen, CECT Abdomen, barium Studies. Patients were also subjected to endoscopy / diagnostic laparoscopy /laparotomy for biopsies. Final diagnosis was based oninvestigatory findings and histopathological/microbiological confirmation.All patients were treated surgically or by ATT alone as per RNTCP (Revised National Tuberculosis Control Programme) . Patients were followed up every month for a period of at least 6 months and 3 monthly for another 6 months.Data on each patient were entered into a proforma prepared for the study.Statistical Analysis were performed using SPSS software version.20.

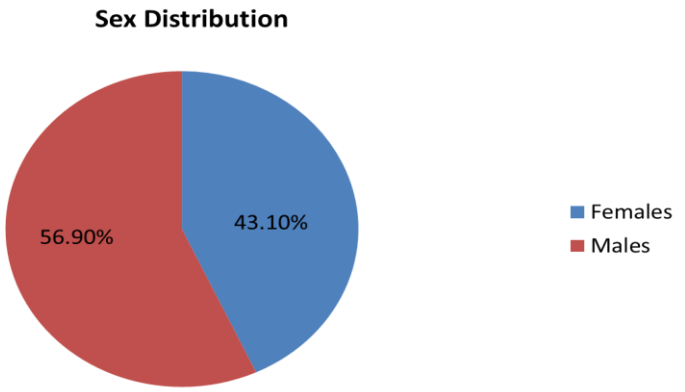
## IV. Results And Observations

In the study period of 3 years a total of 146 patients were treated for abdominal tuberculosis.Of these only 72 had a definitive diagnosis of abdominal Tuberculosis with histopathological or bacteriological evidence. Only these 72 patients were included in this study.Commonest age group was 20-30 years (27.8%).56.9% were males and 43.1% were females. Among males 26.8% were in the age group of 30-40. Among females 32.3% were in the age group of 20-30 (TABLE 1, Fig 1).

TABLE 1

| Age | Sex | | Total |
|---|---|---|---|
| | female | male | |
| <20 | 3 | 1 | 4 |
| | 9.7% | 2.4% | 5.6% |
| 21-30 | 10 | 10 | 20 |
| | 32.3% | 24.4% | 27.8% |
| 31-40 | 5 | 11 | 16 |
| | 16.1% | 26.8% | 22.2% |
| 41-50 | 4 | 8 | 12 |
| | 12.9% | 19.5% | 16.7% |
| 51-60 | 3 | 6 | 9 |
| | 9.7% | 14.6% | 12.5% |
| 61-70 | 4 | 5 | 9 |
| | 12.9% | 12.2% | 12.5% |
| >70 | 2 | 0 | 2 |
| | 6.5% | 0.0% | 2.8% |
| Total | 31 | 41 | 72 |
| | 100.0% | 100.0% | 100.0% |

Fig 1: Pie Chart showing sex distribution




Mean duration of symptoms was 77.56 days (Range 1-360). Diffuse dull aching abdominal pain was the most common presenting symptom(72.2%) , followed by fever (48.6%) with characteristic evening rise of temperature in some, loss of appetite (41.7%), loss of weight (38.9%), vomiting (31.9%) and bowel disturbances (18.1%)[7 patients presented with constipation while 5 patients presented with loose stools.1 patient presented with bleeding PR] (TABLE 2).Frequent clinical signs were that of abdominal tenderness (50%), free fluid (26.4%), palpable mass (9.7%) and signs of peritonitis like guarding, rigidity, rebound tenderness in 5.6%.(TABLE 3).Among 18 patients with pulmonary TB , 17 had active pulmonary TB and one was an old case of pulmonary TB. One patient had a relapse of pulmonary TB. Chest X-ray showed pathological findings in all patients. However sputum positivity was seen in only 4 patients with positive pleural fluid mycobacterium in 2 patients.9 patients (12.5%) were found to be seropositive for HIV.

TABLE 2

| Symptoms | Number | Percentage |
|---|---|---|
| Abdominal pain | 52 | 72.2 |
| Fever | 35 | 48.6 |
| Loss of weight | 28 | 38.9 |
| Loss of appetite | 30 | 41.7 |
| bowel disturbances | 13 | 18.1 |
| Vomiting | 23 | 31.9 |
| Mass abdomen | 1 | 1.4 |
| Abdominal distension | 1 | 38.9 |

TABLE 3

| Signs | Frequency | Percentage |
|---|---|---|
| Abdominal Tenderness | 36 | 50 |
| Free Fluid | 19 | 26.4 |
| Mass Abdomen | 7 | 9.7 |
| Signs of peritonitis | 4 | 5.6 |

65.3 % patients had a raised ESR while 23.6% patients had a low hemoglobin which are characteristic of tuberculosis.Ascitic fluid analysis was done in 24 patients. In all 24 cases it was exudative (protein>3g/dl) with total WBC count>1000/ml andlymphocyte predominant. ADA levels were >36 IU/L in all cases. However fluid bacteriology was positive in only 7 cases.USG abdomen was done in 50 patients in which 20 had findings suggestive of tuberculosis such as loculated ascites,enlarged lymph nodes, omental thickening, bowel wall thickening and abdominal masses. CT abdomen was done in 56 patients in which 44 patients had characteristic findings like loculated ascites, pelvic mass, retroperitoneal lymphadenopathy, mesentericstranding, omental stranding, bowel wall thickening, and mesenteric lymphadenopathy. Barium studies were done in 4 patients in which only one had features of intestinal TB.Endoscopy was done in 24 patients in which 18 patients (25%) had positive findings. Diagnostic laparoscopy and biopsy was done in 28 patients (38.9%).Diagnosis was established by either histopathology or microbiology. 13 cases (18.1%) were diagnosed by endoscopic biopsy, 21 (29.2%) by laparoscopic biopsy, 10 (13.8%) by laparotomy and biopsy, 5 (7%) by image guided FNAC and 18(25%) by the histopathology of surgical specimen.5 cases were diagnosed by microbiological analysis of ascitic fluid (TABLE 4)

TABLE 4

| Diagnosis by | Frequency | Percentage |
|---|---|---|
| Endoscopic Biopsy | 13 | 18.1 |
| Laparoscopic biopsy | 21 | 29.2 |
| Laparotomy and biopsy | 10 | 13.8 |
| Microbiological(Ascitic fluid) | 5 | 7 |
| Image Guided Biopsy | 5 | 7 |
| HPE of Surgical specimen | 18 | 25 |

Majority of patients (70.8%) presented with chronic pain abdomen, while 16.7% with sub-acute intestinal obstruction, 8.3% with acute intestinal obstruction and 4.2% with perforation peritonitis. 51.4% patients had peritoneal TB, while 48.7% had intestinal TB and 18.1% had lymph nodal TB. (TABLE 5).Among patients with Intestinal TB, Ileocaecal TB was the most common presentation (26), followed by colon (5), duodenum (2), jejunum. (TABLE 6).

TABLE 5

| Type of tuberculosis | Frequency(percentage) |
|---|---|
| Intestinal | 35(48.7%) |
| Peritoneal | 37(51.4%) |
| Nodal | 13(18.1%) |

TABLE 6

| Type of tuberculosis | Frequency(percentage) |
|---|---|
| Intestinal | 35(48.7%) |
| Peritoneal | 37(51.4%) |
| Nodal | 13(18.1%) |

47 (65.3%) patients were managed with ATT alone while 25 (34.7%) patients underwent surgery followed by ATT.25 patients underwent surgery. Most patients underwent right hemicolectomy (13) [Right hemicolectomy was performed when preoperative diagnosis was not available and malignancy could not be ruled out], followed byresection and anastomosis (7), limited resection (2). 1 patient with duodenal tuberculosis underwent duodeno-jejunostomy. 1 retro positive patient with ileocaecal mass underwent ileotransverse bypass. 1 patient who presented with pelvic abscess underwent abscess drainage. (TABLE 7)

TABLE 7

| Surgery | Frequency |
|---|---|
| Resection and anastomosis | 7 |
| Right hemicolectomy | 13 |
| Limited resection | 2 |
| Duodenojejunostomy | 1 |
| Ileotransverse anastomosis | 1 |
| Abscess Drainage | 1 |

Surgical site infection was seen in 10 patients, while 3 patients developed intra-abdominal abscess. 1 patient developed an enterocutaneous fistula, 1 patient had an anastomotic leak, 1 patient developed wound dehiscence.1 patient had an iatrogenic perforation during diagnostic laparoscopy which was closed primarily.Mortality rate was 8.4% (6 patients).(TABLE 8)

TABLE 8

| Complications | Frequency(Percentage) |
|---|---|
| SSI | 10(14) |
| Intraabdominal abscess | 3(4.2) |
| EC fistula | 1(1.4) |
| Burst abdomen | 1(1.4) |
| Anastomotic leak | 1(1.4) |
| Iatrogenic Perforation | 1(1.4) |
| Mortality | 6(8.4) |

All patients receivedATT (Anti Tubercular Treatment). 2 patients had MDR TB and were put on 2nd line ATT to which they responded. 14 patients developed drug toxicity (19.6%).Patients were followed up for a mean duration of 10.3months (Range 0-39months). A total of 52 patients were followed up after discharge from hospital. In that 42 patients completed ATT. 1 patient (with retroviral disease) had expired 3 months after completion of treatment. Rest of them were relieved of their symptoms. 1 patient who defaulted (took only 4 months) was also symptom free.8 patients had not yet completed the course and were on regular follow up. (TABLE 9)

TABLE 9

| Follow up data | Frequency | Percentage |
|---|---|---|
| Completed ATT | 42 | 58.3% |
| Defaulted | 1 | 1.4% |
| Expired(before initiation of therapy or during therapy) | 5 | 6.9% |
| Lost for follow up | 16 | 22.2% |
| Course not completed | 8 | 11.1% |

## V. Discussion

Abdominal Tuberculosis can affect any age group but is more common in young people and in the reproductive age group.In this study majority of patients were in the second and third decades of life (50%), which is consistent with other studies.According to Ramesh C. Bharati et al[3] majority of patients were in the age group of 21-30years (38.6%) and 11-20years (21.2%). The presentation of abdominal tuberculosis in this age group has great economic impact since these are people in their most productive years

Sex incidence is equal though some studies have shown a female preponderance. In our study males were more commonly affected (56.9%) As compared with other studies, J.D. Wig et al., (1979) showed that 32% - 87% were males and 67.12% were females.[4] In this study 70.8% patients presented with a chronic pain abdomen while the remaining presented with acute and sub-acute symptoms which were comparable with that of a study by Bhansali (1978). Bhansali et al[5]reported 56% patients presented with acute and sub-acute manifestations and 43% presented with chronic ailment only. Abdominal tenderness was a common finding (50%).Clinically detectable free fluid was found in 26.4%. Only 9.7% presented with a palpable mass while 5.6% presented with signs of peritonitis.Around 0-20% of abdominal tuberculosis cases are associated with active pulmonary tuberculosis and 5% to 35% are associated with inactive pulmonary tuberculosis as reported by Abraham et al[6]. In the present study 25% patients had a coexistent pulmonary tuberculosis.This explains the fact that abdominal TB need not necessarily be secondary to pulmonary TB. 12.5% patients were found to be seropositive for HIV.

On routine investigations 23.6% patients had anaemia (Hb<10g %) and 69.3 % had a raised ESR.Chuttani and Sarin[7] 1985reported in their study more than three fourth of the patients had raised erythrocyte sedimentation rate, anaemia and hypoalbuminemia.Ascitic fluid was exudative [ascitic fluid protein level greater than 2.5 g/dl] and the serum-asciticfluid albumin gradient was less than 1.1 in more than 90 per cent of the patients.Ascitic fluid white blood cell count is usually 150 to 4OOO cells/mm3 and consists of lymphocytes predominantly.[8]In our study 33.3% patient's ascitic fluid analysis showed characteristic findings of

lymphocytosis, exudative nature and raised ADA levels. But in only 7% of patients AFB/MTB could be isolated from ascitic fluid.Radiological investigation is the mainstay in making a presumptive diagnosis of abdominal TB .This include chest x-rays, ultrasound or CT scan of the abdomen and barium studies. Diagnosis made on the basis of radiology is rapid,easy and less expensive but it is presumptive. It cannot exclude completely other diseases like Crohn's disease and malignancies of solid abdominal viscera. In our study Ultrasound showed positive findings in 20 patients among 50, while CT showed characteristic findings in 44 among 56 patients.

Barium studies are not a part of routine work upof intestinal TB these days. In our study out of 4 patients who underwent barium meal follow through only one had characteristic findings.Demonstrating tuberculous granuloma is the most important investigation for a definitive diagnosis of abdominal TB. In our study, histopathology was the basis of diagnosis in 93% of patientswhile the remaining 7% were based on microbiological evidence. Crohns disease is a great mimicker of colonic tuberculosis. Diagnostic dilemma occurs when biopsy from lesions show non caseating granulomas as even tuberculosis can present with non caseating granulomas

In our study most patients presented with peritoneal Tuberculosis (51.4%) closely followed by Intestinal Tuberculosis (48.7%). Whereas other studies[9] have reported intestinal TB as the commonest presentation (TABLE 10) All patients should receive conventional ATT therapy for at least six months Balasubramanium et al[10] reported that a six-month four drugs short course chemotherapy is as efficacious as twelve month course of ethambutol and isoniazid (supplemented by streptomycin for first two months).However many physicians extend the course to 12-18 months. In our study 65.3% patients underwent medical management alone and most of them responded well to a 6 months course of ATT. The remaining who underwent surgery also were given ATT postoperatively. Drug toxicity was very common (20%) in our study which included hepatotoxicity, ototoxicity, psychosis(INH induced) and such patients required alternate regimens.

TABLE 10

| Site | Bhansali et all (1977) | Prakash et all (1975) | Tandon et all (1986) | Singh et all (1995) | Vij et all (2003) | Present study (2015) |
|---|---|---|---|---|---|---|
| No of Patients | 300 | 300 | 186 | 145 | 99 | 72 |
| Esophagus | | | | 1 | 1 | 0 |
| Stomach | 1 | | | 2 | 2 | 0 |
| Duodenum | | 7 | | 5 | 4 | 2 |
| Jejunum and Ileum | 87 | 93 | 29 | 82 | 42 | 19 |
| Ileocaecal | 110 | 162 | 77 | 58 | 17 | 9 |
| Appendix | 1 | | | | | |
| Colon | 7 | 8 | 24 | 8 | 10 | 5 |
| Anorectum | | | | 1 | 1 | |
| Peritoneum | | | | 29 | 12 | 37 |
| Nodal | | | | | 10 | 13 |

Surgery is indicated for acute presentations like intestinal obstruction or perforation peritonitis. Right hemicolectomy was the commonest surgery which was performed in our study(13 patients) similar to a study by Darbari et al[11].This is attributed to thefact that most of these patients did not have a preoperative diagnosis and in view of suspicion of malignancy right hemicolectomy was done. Stricturoplasty has been described as the standard of care for isolated TB strictures in most studies. However it was not a common procedure in our setting probably due to the lack of such presentations and most of our surgeons had good results with resection and anastomosis.Most common complication overall was ATT toxicity (19.6%). Most common surgical complication was Surgical Site Infection (14%). Complications had a correlation to age of presentation, HIV positivity, delayed onset of presentation(especially in acute cases).Mortality rate in our study was 8.4% which was considered significant because most of the deaths were in the post-operative period as only one fourth of the patients underwent surgical management . HIV positivity with a low CD4 count was noted as an important factor in those who died.Bhansali et al[5] reported a mortality rate of 7% of which 25% were following emergency surgery which was quite similar to the present study.

## VI. Conclusion

This study supports the fact that anti tuberculosis therapy is still the treatment of choice in abdominal tuberculosis and surgery is only indicated in various complications of abdominal tuberculosis. It stresses on the role of laparoscopy as the most important tool in diagnosis and utilisation of the same aids in early diagnosis and prevents misdiagnosis of mimickers like malignancy or other granulomatous conditions. Also there has been a gradual decline in performing radical surgeries while there has been an increase in trend in performing conservative surgeries.

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