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Original Research Article

A retrospective observational study of clinical profile, diagnosis, management and outcome of abdominal tuberculosis in 30 patients

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ABSTRACT

Background: Abdominal tuberculosis is found worldwide although prevalence rates are still highest in the developing countries. The sites of involvement of abdominal tuberculosis are peritoneum, lymph nodes, intestine and solid viscera. The objectives of this study were to describe the clinical profile of patients with abdominal tuberculosis, to review the use of diagnostic modalities, both non-invasive and invasive and to study the outcome of management of abdominal tuberculosis.
Methods: This is an observational retrospective study of 30 patients with diagnosis of abdominal tuberculosis treated at university linked teaching hospital of South Gujarat from August 2015 to November 2017.
Results: In our study, disease was found almost equally prevalent in both rural and urban areas affecting mostly lower socio-economical class. The mean age was 34 years (range from 13 to 62); male and female ratio was 2.33:1; the mean hospital stay was 09 days (range from 5 to 48 days). Abdominal pain was present in almost all cases, having chronic pain in 21 patients and acute in 9 patients. There were 05 (16.7%) patients found to be HIV positive in this study. There was mortality of 02 patients post operatively due to sepsis in those patients operated in emergency with peritonitis.
Conclusions: Abdominal tuberculosis is prevalent in lower socioeconomic class patients and affects younger male patients more commonly. Most commonly intestinal and mesenteric disease presented with chronic abdominal pain and constitutional symptoms of tuberculosis.

Keywords: Abdominal tuberculosis, Anti Koch's therapy, Intestinal stricture

INTRODUCTION

Abdominal tuberculosis (Abd.Tb) is found worldwide, although prevalence rates are still highest in the developing countries. Due to immigration, however, abdominal tuberculosis is increasing in some developed countries. It is established now that immigrants from developing countries are commonly infected with *Mycobacterium tuberculosis* (M.Tb) and less commonly with *Mycobacterium bovis*. In the past *M. bovis* has generally been associated with abdominal tuberculosis infection being transmitted in the milk of infected cows. However, in many parts of the world this infections has been controlled both by ensuring that dairy herds are tuberculosis free and by pasteurization of milk. In the Blackburn study 109 patients only 3% were infected with *M. bovis*, the remaining have M.Tb. Any organ of the body can be affected with tuberculosis and abdomen is the sixth most common site. The sites of involvement of Abd.Tb are peritoneum; lymph nodes, intestine and solid viscera.[1] In India, young adults between ages 10 to 39 years are mainly affected and sex ratio is almost equal.

The emergence of AIDS epidemic, emigration and ageing population are the causes of rise in tuberculosis cases in developed countries; where it was on the verge of extinction once.[2] A high index of suspicion is very important while dealing with a case of abdominal tuberculosis. Many a time a therapeutic trial of anti Koch's therapy (AKT) based on clinical suspicion can work wonders in these patients.[1] There are significant clinical implications of incorrectly diagnosing tuberculosis (TB) and committing patients to a prolonged course of toxic chemotherapy; or missing TB with public health implications and causing life threatening disseminated TB if immunosuppressant therapy is erroneously initiated.[3] The objectives of this study were to describe the clinical profile of patients with Abd.Tb, to review the use of diagnostic modalities, both non-invasive and invasive and to study the outcome of management of abdominal tuberculosis.

METHODS

This is an observational retrospective study of 30 patients with diagnosis of abdominal tuberculosis treated at university linked teaching hospital of South Gujarat from August 2015 to November 2017. The data related to patients' bio data, presentations, clinical findings, investigations and treatment was collected from indoor case sheets from record section of the institute retrospectively. In which inclusion criteria are age >12 years, abdomen tuberculosis may associate with pulmonary tuberculosis and male and female both patients and exclusion criteria are age less or 12 years and genito-urinary tuberculosis

In defining the accuracy of diagnosis of Abd.Tb, we sub grouped into confirmed Abd.Tb if *M. tuberculosis* (M.Tb) was cultured from an abdominal site; and (2) presumed Abd.Tb if there was suggestive histology, history and imaging of M.Tb was isolated from an extra-abdominal site, or if there was high clinical suspicion. Tb peritonitis was defined as ascites, peritoneal thickening or intra-abdominal lymph nodes; luminal Tb was defined as Tb from the esophagus to the anus including perianal disease; solid organ Tb was hepatic or biliary involvement; combination of sites was when Tb was isolated from one site, but imaging suggested concurrent involvement at other sites. The diagnosis was made on the basis of imaging studies like abdominal ultrasonography (USG) or computerized tomography scan (CT scan) of abdomen and pelvis; ascitic fluid analysis (Adenosine deaminase (ADA); cytology; Ziehl Neelsen (ZN stain) for acid fast bacilli); tubercular polymerase chain reaction (Tb PCR) in selected cases and omental cake biopsies wherever feasible.

Diagnosis was confirmed using fine needle aspiration (FNA) and/or biopsies from the lymph nodes. The modalities used to take FNA or biopsy sample was USG or CT guided. Diagnostic laparoscopy was largely avoided in cases of intestinal obstruction or acute abdomen, but in cases of chronic abdominal pain with in conclusive findings of radiological investigations is useful. Diagnosis of tuberculosis affecting the solid organs like liver, spleen and gall bladder, is done by imaging studies and biopsy from the affected organ. Routine investigations like complete blood counts, liver function tests; renal function tests; erythrocyte sedimentation rate (ESR) was done in all patients. Chest radiograph (X-ray chest) and sputum analysis was done in to evaluate pulmonary involvement.

All these patients were followed up at least for 6 months. During follow up repeat USG was done at 4 weeks, 8 weeks and 6 months. The clinical outcomes such as complete cure; serious adverse events to anti tubercular drugs such as hepatitis; requirement for surgery; development of drug resistant tuberculosis (MDR) and death was observed in each patient. It is retrospective observational study and ethically approved on 5th may 2017.

RESULTS

In our study, Abd.Tb was found almost equally prevalent in both rural and urban areas affecting mostly lower socio-economical class. The mean age 34 years (range from 13 to 62); male and female ratio was 2.33: 1 and the mean hospital stay was 09 days (range from 5 to 48 days).

Clinical presentation

Abdominal pain was present in almost all cases, having chronic pain in 21 patients and acute in 9 patients. Constitutional symptoms like low grade fever, anorexia and weight loss were present in 60% (n=18) and other symptoms like vomiting (50%), diarrhea (13.3%) and constipation (53%) were also present. Abdominal lump was present in 06 (20%) cases in our study. Abdominal distention was present in total 07 (23.33%) cases out of which 03 (10%) chronic cases- 01 patient of sub-acute intestinal obstruction and 02 patients (6.66%) with ascitis; in rest 04 (13.33%) cases due to acute obstruction. There were 05 (16.7%) patients found to be HIV positive in this study.

All patients were preoperatively investigated with ultrasonography in which 21 patients had positive findings of abdominal tuberculosis, and CT scan of abdomen was done in 09 patients with equivocal findings in USG abdomen. By our case definition, 24 (80%) were confirmed Abd.Tb, and 06 (18%) were presumed Abd.Tb.

Types of abdominal tuberculosis

Intestinal: On exploration of abdomen there were total 07 (23.3%) patients have intestinal tuberculosis out of which 05 patients had ileo-caecal stricture and 01 patient was with terminal ileal stricture; the diagnosis was confirmed

by histopathological examination of resected specimens. In 01 patient colonic stricture was tuberculous in origin diagnosed by colonoscopy and confirmed by histopathological examination of biopsy.

Peritoneal: Out of total 09 patients of peritoneal tuberculosis, gross findings during laparotomy of intestinal cocoon in 01 patient confirmed by histopathological examination, ascitis in 02 patients confirmed by positive ADA (>32 U/L) values in ascitic fluid examination, 01 patient with rolled up omentum presented with chronic abdominal lump and 05 patients with adhesions in abdomen representing peritoneal variety involving mesenteric lymph nodes and peritoneal tubercles. In our study there was no visceral tuberculosis.

Table 1: Sites of involvement in abdomen.

Site of involvement	No. of patients
Peritoneum	09
Ascitis (Wet variety)	02
Cocoon	01
Omentum	01
Adhesions (Mesenteric lymph nodes, peritoneal tubercles)	05
Intestinal	07
Terminal ileum	01
Ileo-caecal junction	05
Ascending colon	01
Organ	00

Management

Conservative management: In this study, 17 patients presented with chronic abdominal pain (n=14) including presumed patients (n=06), abdominal lump (n=03) and distension of abdomen due to sub-acute intestinal obstruction (n=01) were managed conservatively with initial Intravenous fluid and antibiotic therapy followed by AKT category 1 as per DOTS guidelines. In 01 patient colonoscopy with biopsy done followed by category 1 AKT therapy as per DOTS guidelines.

Operative management: In our study, total 13 patients managed with various surgeries, in 09 acute cases and 04 chronic cases. In 12 patients, exploratory laparotomy with following procedures (Table 2) according to lesion were done and in 01 patient diagnostic laparoscopy with biopsy from mesenteric lymph node taken followed by category 1 AKT therapy as per DOTS guidelines.

Post-operative course: In post-operative course injection streptomycin 0.75 gm IM OD given, category 1 AKT was started from next day after patient started orally or by Ryle's tube. We continued Ryle's tube aspiration for minimum 3 days in those patients who had undergone resection and anastomosis or till paralytic ileus passes off and bowels start functioning. Injectable antibiotics were given for 7-8 days post operatively. Drain was removed on fifth or sixth day after patient started orally and output remain less than 20 ml/day.

Table 2: Types of operative procedures.

Operative procedure	No. of patients
Resection and anastomoses of ileum	03
Resection and anastomoses in ileal perforation with diverting loop ileostomy	01
Adhesionolysis	04
Right hemi colectomy	01
Primary suturing of ileal perforation	01
Band release	02

Complications

All patients of confirmed tuberculosis (n=24) by biochemical or microscopy, out of which 17 patients including presumed 06 patients managed conservatively responded well to CAT 1 AKT with cure. There were post-operative complications in 09 patients with superficial wound infection (n=4), wound dehiscence (n=04) and burst abdomen in 01 patient which was re-operated for secondary suturing and recovered well. There was mortality of 02 patients post operatively due to sepsis in those patients operated in emergency with peritonitis. There was faecal fistula in 01 patient, managed conservatively and recovered.

Follow up and outcome

Follow up data were collected from out patient record during follow up visit of patients for 6 months. Out of 30 patients, 05 patients lost in follow up and 25 patients cured after completion of AKT for 6 months. There were no patients having intolerance to AKT or resistance. Ileostomy closure were done in two patients after completion of intensive phase of AKT for two months with uneventful post-operative course. Those patients with HIV were presented with chronic abdominal pain and managed with AKT continuous with anti- retroviral therapy.

Table 3: Clinical outcome.

Clinical outcome	No. of patients
Complete resolution with AKT in conservatively managed patients	17
Required surgery	13
Post-operative complications	09
Death	02
MDR (multidrug Resistant) Tuberculosis	00
Drug induced hepatitis	00

DISCUSSION

The diagnosis of Koch's abdomen is often missed because of its varied and non-specific clinical features. A high degree of suspicion is required to diagnosis a case of abdomen tuberculosis. Some patients have past history of pulmonary tuberculosis or AKT. Most of the patients who are diagnosed of having abdominal tuberculosis can be treated conservatively and most of them improve on taking AKT.[4] Surgery is required for complications of abdominal tuberculosis, such as abdominal perforation, obstruction, fistula formation or when diagnosis is in doubt. Now a days, abdominal tuberculosis is diagnosed well due to laparoscopy and other advance imaging techniques. It should be consider as "the disease of poor'' as 86.67% patients were with low socio-economic status. Food habits, poor hygiene, habits of taking unpasteurized milk, poor nutrition, prevalence of pulmonary tuberculosis, lack of awareness of disease, and this all contribute to it.[5] Because of their good tolerance and lack of knowledge. They open tend to ignore the vague complain of the illness, often present late when the complication have set in.

Most of the patients of abdominal tuberculosis have chronic presentation. However, in our study as patients were those who required surgery the presentation was acute. Almost all patient of them were having chronic non-specific vague complaints and some of them had previous episode of similar illness in the past. In this study 21 patients had chronic presentation and 9 had acute presentation. Out of 9 acute presentation 4 were having intestinal obstruction, 2 were having intestinal perforation and 03 patients with abdominal lump. In our study, 96.67% cases have abdominal pain. Pain is typical vague nonspecific dull aching present all over abdomen especially over umbilical region. This may be due to involving of terminal ileum and ileocaecal junction region. Patient present with acute and sever pain if there is perforation or obstruction. In obstruction there are often bouts of colicky abdominal pain which starts in umbilical region and radiate to all over abdomen. The constitutional symptoms like low grade fever, anorexia and weight loss are found in upto 40% of patients in literature, but in our study it was found in 60% cases.[6]

Any site can be involved in tuberculosis, peritoneum and intestine are most common sites in abdominal tuberculosis.[7,8] In our study, 09 patients had peritoneal and 07 patients had intestinal tuberculosis. Amongst 09 peritoneal tuberculosis, 02 with ascitis, 05 with interbowel adhesions including mesenteric lymph-adenitis, 01 omental (rolled up omentum) and 01 case of cocoon; in intestinal tuberculosis (n=07), 05 cases of ileocaecal, 01 of terminal ileum and 01 of colon involvement were found. Our findings coincide with literature mentioning commonest part of bowel involved in intestinal tuberculosis is ileocaecal and terminal ileum. The diagnosis of abdominal tuberculosis is confirmed by typical radiological findings in USG, CT scan, ascitic fluid examination and USG/CT guided biopsy or diagnostic laparoscopy. Even though we had 06 patients with inconclusive diagnosis subjected to empirical ant tubercular drugs with relief of symptoms.

The response to standard AKT was excellent; with more than 80% showing complete resolution. The duration of therapy was 6 months. This is accordance with various studies done in the past.[8,9] The problems with treatment are development of MDR Tb and Hepato toxicity that we didn't encounter in our study. A recent study from AIIMS, Delhi has shown that around 40% of intestinal tuberculosis had stricturing disease and only one-fourth of strictures show resolution following AKT.[10] The resolution of stricture is dependent on disease location, duration and severity of stricture. The present series showed strictures in seven out of 24 confirmed patients with intestinal tuberculosis (28%). This is probably because of early referral and early initiation of AKT. However, the number of cases with intestinal tuberculosis is too less to derive a conclusion.

Mortality rates have significantly been decreased from 20-50% to around 5% to 6% due to prompt diagnosis and use of potent AKT.[11-13] Despite all efforts, unfortunately, patients die of tuberculosis. In our study two out of 30 patients died (mortality rate 6.6%), these were confirmed cases of abdominal tuberculosis. One of them had presented very late in acute setting, had severe sepsis, and died postoperatively. Except surgical site infections (n=8), superficial (n=4) and deep (n=4), only 01 patient developed post-operative enterocutaneous fistula which was successfully managed conservatively.

CONCLUSION

Abdominal tuberculosis is prevalent in lower socioeconomic class patients and affects younger male patients more commonly. Most commonly intestinal and mesenteric disease presented with chronic abdominal pain and constitutional symptoms of tuberculosis. Those patients presented with acute abdomen required operative intervention had good results with CAT 1 AKT.

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