ORIGINAL ARTICLE

# SPECTRUM OF CLINICAL PRESENTATION AND SURGICAL MANAGEMENT OF INTESTINAL TUBERCULOSIS AT TERTIARY CARE HOSPITAL

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**Background:** Tuberculosis can involve gastrointestinal tract anywhere from mouth to anus, the peritoneum and pancreatobiliary system. It has varied clinical presentations sometimes mimicking other common abdominal diseases. Tuberculosis continues to be a major problem especially in developing countries, being responsible for 7–10 million new cases and 6 per cent of deaths worldwide annually. Objective was to assess and evaluate various clinical presentations and management of intestinal tuberculosis at Liaquat University Hospital, Jamshoro/Hyderabad. **Methods:** This 3-year descriptive study was conducted on patients with diagnosed intestinal tuberculosis (by histopathology) in Surgical Unit-I, from January 2006 to December 2008. Detailed history and clinical examination was performed in all the cases. Investigations like Blood CP and ESR, Urea, RBS Electrolytes, Serum A/G Ratio, Ultrasound abdomen, X-Ray chest and abdomen were carried out in all the cases while barium meal, follow through and CT Scan abdomen were performed in selected cases. Preoperative assessment of anatomical site and variety of lesions were also noted. **Results:** A total of 60 patients with diagnosis of intestinal tuberculosis were admitted and operated. Diagnosis was confirmed by histopathology. Among these, 28 (46.7%) were male, and 32 (54.1%) were female. Variable clinical presentations were seen. Majority of patients (46, 76.7%) had abdominal pain, 26 (43.3%) had vomiting; abdominal distension was seen in 22 (36.7%) cases, diarrhoea and constipation in 16 patients (26.7%) and abdominal mass in 14 patients (23.3%). Majority of patients had ulcerostenotic type of tuberculosis. Single stricture of ileum was seen in 15 (25%) while multiple strictures were seen in 13 (21.7%). Ileal perforation was seen in 6 (10%) patients. Weight loss was seen in 40 (66.7%) patients, fever 36 (60%), night sweats 30 (50%), anorexia in 30 (50%) and pulmonary tuberculosis in 18 (30%) patients. Resection and anastomosis was performed on 24 (40%) cases, right hemicolectomy on 22 (36.7%), stricturoplasty on 8 (13.3%), adhesionolysis on 4 (6.7%), and Ileostomy on 2 (3.3%) patients. **Conclusion:** Abdominal pain, vomiting, fever and weight loss are the commonest symptoms in abdominal tuberculosis. Single and multiple strictures in the ileum, and mass in the ileocaecal region were the commonest lesions. Definitive surgical procedure like resection and anastomosis, stricturoplasty and right hemicolectomy are the main surgical options.

**Keywords:** Intestinal tuberculosis, tuberculosis, abdominal tuberculosis, TB, stricture, perforation

## INTRODUCTION

Tuberculosis can involve gastrointestinal tract anywhere from mouth to anus, the peritoneum and pancreatobiliary system.[1] It has varied clinical presentations sometimes mimicking other common abdominal diseases. Tuberculosis continues to be a major problem especially in developing countries, being responsible for 7–10 million new cases and 6 per cent of deaths worldwide annually.[2] Previously a rare disease in the west[3], its incidence is on the rise in west due to increased number of HIV infections with 50% HIV affected patients having extra-pulmonary manifestations of tuberculosis.[4]

Intestinal tuberculosis is one of the common sites of extra-pulmonary involvement. Mycobacterium tuberculosis gains entry in the gastrointestinal tract through haematogenous route, ingestion of infected sputum, or direct spread from infected, contiguous lymph nodes and fallopian tubes.[5] Grossly, the disease is characterized by transverse ulcers and fibrosis leading to typical "napkin ring" strictures, whitish tubercles all over the peritoneum, inflammatory adhesions, thickening, hyperaemia and retraction of greater omentum and long bands.[6] Extensive inflammation of sub-mucosa and sub-serosa, mainly of ileocecal region, gives rise to hyperplastic pattern. Adjacent bowel loops, mesentery and nodes may at times adhere to form mass erroneously termed as the intestinal cocoon.

Intestinal tuberculosis commonly affects the age group between 25–44 years.[7] It commonly presents with abdominal pain, vomiting, abdominal distension, diarrhoea, abdominal mass and constitutional symptoms like weight loss, fever, anorexia and night sweats.[8,9] With a wide array of clinical presentations and lack of definite diagnostic investigations, early diagnosis of intestinal tuberculosis continues to present a challenge for general surgeon. Definite treatment of intestinal tuberculosis remains equally complex.

This study was designed to evaluate the clinical presentations and the outcome of surgery for intestinal tuberculosis. The results would help in early diagnosis of abdominal Koch's thereby helping in proper and prompt intervention in patients with abdominal Koch's.

## PATIENTS AND METHODS

This study was conducted in Surgical Unit-I, Liaquat University Hospital Jamshoro/Hyderabad from January 2006 to December 2008. A total of 60 patients with intestinal tuberculosis were included in the study.

Detailed history and clinical examination was performed in all the cases. Investigations including blood complete picture, ESR, blood urea, blood sugar, electrolytes, serum Albumin Globulin ratio, ultrasound abdomen and X-rays chest and abdomen were done in all cases, while barium meal follow-through and CT scan of abdomen were performed in selected cases. All 60 cases underwent laparotomy, elective or emergent, depending upon the presentation. Preoperative assessment included recording of anatomical site of involvement and type of lesions.

The surgical procedures performed in sixty cases included stricturoplasty, adhesionolysis, resection and anastomosis, right hemicolectomy and Ileostomy. All resected specimens, including mesenteric lymph nodes where found, were sent for histopathology.

All relevant information was collected on a pre-designed proforma, and data was analysed and results were drawn.

## RESULTS

Sixty patients of intestinal tuberculosis were included in this study. There were 32 females and 28 males with a male to female ratio of 1.4:1 respectively. The age ranged from 10–56 years, with majority (33.3%) of patients belonging to 3rd decade (Table-1).

The common clinical presentations included abdominal pain (46, 76.7%) and vomiting (26, 43.3%). Other clinical features seen are shown in Table-2. Results of various laboratory and radiological investigations are shown in Table-3.

All patients underwent laparotomy under general anaesthesia. Twenty-two (36.7%) patients were found to have a mass at ileocaecal junction. Fifteen (25%) patients had single stricture in the ileum while multiple strictures were seen in 13 (21.7%) patients. Ileal perforation was encountered in 6 (10%) of cases. Four (6.7%) patients were found to have lymph node enlargement and interloop adhesions.

Postoperative complications occurred in 26 (43.3%) patients. The complications included wound infections (25%), septicaemia (10%), chest infection (10%) and anastomotic leakage (3.3%). Two (3.3%) patients died due to septicaemia following anastomotic leakage.

**Table-1: Age distribution (n=60)**

| Age years | Patients | % |
|---|---|---|
| **1–10** | 2 | 3.3 |
| **11–20** | 16 | 26.6 |
| **21–30** | 20 | 33.3 |
| **31–40** | 14 | 23.3 |
| **41–50** | 6 | 10 |
| **51–61** | 2 | 3.3 |

**Table–2: Clinical Features (n=60)**

| Clinical Profile | Patients | % |
|---|---|---|
| **Abdominal symptoms** | | |
| a) Abdominal pain | 46 | 76.7 |
| b) Vomiting | 26 | 43.3 |
| c) Abdominal distension | 22 | 36.6 |
| d) Diarrhoea | 16 | 26.6 |
| e) Constipation | 16 | 26.6 |
| **Constitutional symptoms** | | |
| a) Weight loss | 40 | 66.6 |
| b) Fever | 38 | 63.3 |
| c) Night sweats | 30 | 50 |
| d) Anorexia | 30 | 50 |
| **Abdominal mass** | 14 | 23.3 |
| **Associated pulmonary Koch's** | 18 | 30 |

**Table-3: Investigation findings (n=60)**

| Laboratory Findings | Patients | % |
|---|---|---|
| **<Hb% (anaemia)** | 49 | 81.7 |
| **Elevated ESR** | 40 | 66.7 |
| **Hypoalbuminaemia** | 30 | 50 |
| **Radiology** | | |
| **X-ray chest (PA view)** | | |
| **Pulmonary tuberculosis present** | 18 | 30 |
| **X-ray abdomen (erect and supine)** | | |
| Dilated bowel loops with air fluid levels | 32 | 53.3 |
| Free gas under right dome of diaphragm | 6 | 10 |
| **X-ray barium meal follow through** | | |
| **Stenotic lesion in small intestine** | 2 | 3.3 |
| **Ultrasound** | | |
| Mass in right iliac fossa | 22 | 36.7 |
| Dilated bowel loops | 32 | 53.3 |
| Free fluid in peritoneal cavity | 6 | 10 |
| **Colonoscopy** | | |
| Intraluminal mass in caecum | 4 | 6.6 |
| CT scan abdomen | 12 | 20 |

## DISCUSSION

In our study, the incidence of abdominal tuberculosis was most common in the third decade. This correlates well with other similar studies.[10] Likewise, slight predominance of female with a female to male ratio of 1.4:1 in our series has also been corroborated by other similar studies.[11,12]

Intestinal tuberculosis has variable clinical presentation. In this study, the presenting symptoms included colicky abdominal pain, weight loss, fever, vomiting, anorexia, diarrhoea and constipation. Niaz and Ashraf also reported abdominal pain as the most common symptom in their series of 100 patients.[13] Abdominal mass and palpable adherent bowel loops

were the commonest findings on abdominal examination in our patients.

Diagnosis of intestinal tuberculosis is challenging; even in highly endemic areas, the accuracy of clinical acumen is only 50%.[4] No investigation, except histopathology, can reliably diagnose this disease. In our study elevated ESR was found in 66.7%, anaemia in 81.7%, and hypoproteinaemia in 50% patients. Al Muneef *et al*[7] reported similar laboratory findings. Evidence of pulmonary tuberculosis on X-ray chest was found in only 30% patients in our study. This is in wide contrast to another study that showed over 60% of patients with associated pulmonary tuberculosis.[14] This difference may be due to small sample in our study. However, findings of other studies are well consistent with our observations.[15,16]

Both ultrasound[17] and CT scan[18] of abdomen are valuable investigations for the diagnosis of abdominal Koch's. Ultrasound guided biopsy is a valuable investigation in making preoperative diagnosis of abdominal Koch's.[18–20] We did not perform this investigation.

In our study, barium meal follow through was done in 2 patients (3.3%). Twelve (20%) patients had CT scan of the abdomen while colonoscopy was done in 4 (6.7%) cases. Diagnostic laparoscopy is now considered as most appropriate evaluation because of its ability to visualise whole abdominal cavity in detail and to take biopsies from suspected lesions at the same time.[21,22]

A study by Bahrgava *et al* demonstrates that the ascitic fluid/serum ADA ratio is higher in patients with peritoneal tuberculosis than with other causes of ascites ($p<0.01$) and a ratio of more than 0.984 was suggestive of tuberculosis.[23] Genetic tests like TB nested (PCR) polymerase chain reaction is very rapid, highly sensitive and specific method of diagnosis of intestinal tuberculosis.[24] The common sites of involvement in our series were terminal ileum and ileocaecal region (46.7%). Other studies corroborate our findings.[25] All patients in our study underwent exploratory laparotomy. However, exploratory laparotomy is increasingly being replaced by minimally invasive procedures like laparoscopic hemicolectomy, laparoscopic resection and anastomosis and endoscopic balloon dilatation of the stricture.[26] Resection and anastomosis was carried out in patients with multiple strictures or perforation. Right hemicolectomy and stricturoplasty were the procedures done in patients with single strictures and ileocaecal mass, respectively. These procedures are also favoured and recommended in other studies.[27,28] Four patients underwent adhesionolysis. In 2 patients, ileostomy was performed due to preoperative moribund condition of patient and contaminated peritoneal cavity due to ileal perforation. Both these procedure well coincide with data of other studies.[10,28,29]

Twenty-nine (48.3%) patients developed complications in our series. The commonest complication was wound infection, which occurred in 25% of our patients. Rajput *et al* also report a similar incidence of postoperative complication.[30] Septicaemia and pulmonary infection were seen in 6 (10%) patients each and majority of them had pre-existing chest infection including pulmonary tuberculosis. Anastomotic leakage occurred in 2 (3.3%) patients in this series resulting in enterocutaneous fistula. One patient successfully settled on conservative treatment while 1 patient had high type of fistula and was managed by ileostomy.

In this series, the mortality rate was 3.3%. One patient died due to septicaemia secondary to enterocutaneous fistula, and 1 patient succumbed to pulmonary complications. The mortality rate of this study is well consistent with other studies; Rajput *et al* in their study conducted on 40 patients with abdominal Koch's, operated on 35 patients with a mortality rate of 2.6%.[30] In their study the commonest cause of death was septicaemia. In a similar study conducted by Marshal JB[31], a mortality rate of 1.5 has been reported which too correlates well with our study.

## CONCLUSION

Intestinal tuberculosis is a common extra-pulmonary manifestation of tuberculosis. Its incidence is increasing in urban and rural areas due to poverty, under nutrition and overcrowding. Treating intestinal TB is challenging since its early presentation evades diagnosis. Abdominal pain, vomiting, fever and weight loss are the commonest symptoms. Single and multiple strictures in ileum and mass in the ileocaecal region are the commonest lesions in patients with abdominal Koch's.

Definitive surgical procedures like resection and anastomosis, stricturoplasty and right hemicolectomy are the main surgical options. Intestinal tuberculosis is a systemic disease, Anti-tuberculous therapy remains main stay of treatment before and after the surgery. Early diagnosis is the key factor in avoiding systemic and local complications of intestinal tuberculosis. For rapid and specific diagnosis genetic tests like PCR along with laparoscopy are essential and should be employed in the management of intestinal tuberculosis.

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