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INTESTINAL TUBERCULOSIS;
PATTERN OF PRESENTATION AND SURGICAL MANAGEMENT

f_salman07@hotmail.com

Dr. Raheel Ahmad[1], Dr. Muhammad Salman Shafique[2], Dr. Shahbaz Zafar[3], Dr. Saqib Mehmood[4], Dr. Sajid Mehmood[5], Dr. Usman Qureshi[6], Dr. Jahangir Sarwar Khan[7]

1. MBBS, Postgraduate trainee
2. MBBS, Postgraduate trainee
3. MBBS, Postgraduate trainee
4. MBBS, Postgraduate trainee
5. MBBS, Postgraduate trainee
6. MBBS, FCPS, Assistant Professor
7. MBBS, FCPS, FRCS, FACS, FICS, Dip. M. Ed, Professor

1,2,3,4,5,6,7.
Surgical Unit-I, Holy Family Hospital, Rawalpindi

Correspondence Address:
Dr. Muhammad Salman Shafique
House no. 506-A, Street no. 11,
Margalla Town, Islamabad.
f_salman07@hotmail.com,

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ABSTRACT: Tuberculosis is one of the leading causes of morbidity and mortality, responsible for annual 7–10 million new cases and 6 per cent of deaths in developing countries. It can involve any part of abdomen but most common is intestinal tract in which it can present with wide variety of symptoms. Early diagnosis and appropriate management is challenging for clinicians. **Objectives:** To determine the modes of presentation of abdominal tuberculosis and effectiveness of surgical procedures in our setup. **Study Design:** A retrospective study. **Setting:** Surgical unit-I of Holy Family Hospital, Rawalpindi. **Period:** January 2014 to December 2014. **Materials and Methods:** 50 patients with abdominal tuberculosis were included in the study. Histopathology confirmed the diagnosis of abdominal tuberculosis. Age, gender, mode of presentation, evidence of co-existing tuberculosis, family history, drug history of anti-tuberculous treatment, laboratory and radiological investigations, treatment modalities and duration of hospital stay were recorded. **Results:** There were 28 female (56%) and 22 male (44%) patients with a mean age of 29± 10.23 years. 56% patients presented with subacute intestinal obstruction, 16% with acute intestinal obstruction and 14% with peritonitis. All 50 patients underwent laparotomy. Ileocecal mass with perforation (40%) was seen as the most common per-operative finding. Limited right hemicolectomy with ileocolostomy (44%) was performed in most of the cases. Mean length of hospital stay was 10 ± 4.67 days. **Conclusion:** Abdominal tuberculosis is a common cause of acute abdomen especially intestinal obstruction in our setup, with a variable mode of presentation. Early diagnosis with appropriate surgical management and chemotherapy can prevent significant morbidity and mortality.

Key words: Laparotomy, Abdominal tuberculosis, Anti tuberculous therapy, Obstruction, Morbidity, Mortality.

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INTRODUCTION

Tuberculosis (TB) is one of the devastating infectious causes of morbidity and mortality. Epidemiologists believe that one-third of world population is currently infected with tubercle bacilli, which is responsible for annual 8-9 million deaths.[1] In 2011, World Health Organization (WHO) recorded 6.2 million cases of TB in the world. Out of these, 5.8 million were newly diagnosed, with 15% cases having extra pulmonary TB.[2] Tuberculosis can involve any part of the body.[3] Abdomen is the fourth most common site of extra pulmonary involvement[4], in which gastrointestinal tract and peritoneum are the frequent sites.[5] It can simulate many other GI disorders, notably inflammatory bowel disease (IBD), colonic malignancy, or GI infections, due to its variable features.[6,7] In our country, it is a significant cause of intestinal obstruction.[8] Martinez and Patel in there series found that abdominal tuberculosis poses a great pre-operative diagnostic difficulty for the surgeon.[9,10] The delay in diagnosis often results in delayed treatment and increased morbidity and mortality.[11] The spectrum of presentation of intestinal tuberculosis on surgical floor is wide, with benign stricture formation on one extreme to nodal mass formation, usually termed as intestinal cocoon, on the other. Most cases remain undiagnosed until they develop any complication, when surgery is the only hope. In early cases, medical therapy may result in healing by fibrosis, leading to intestinal obstruction. In

this study, we described various presentations of intestinal tuberculosis along with their surgical management.

METHODS

It was a retrospective study conducted at Surgical Unit-I, Holy Family Hospital, Rawalpindi from January 2014 to December 2014. Approval of the study was obtained from the Institutional Research Ethics Committee.

All patients who were operated for intestinal obstruction with operative and histopathological findings suggestive of tuberculosis were consecutively enrolled into the study. A thorough history and clinical examination was carried out in all patients. Investigations included; complete blood count, erythrocyte sedimentation rate, serum glucose, electrolytes, urea and albumin, trans abdominal ultrasound and radiograph abdomen and chest.

A total of 50 patients met the inclusion criteria. All patients received intravenous fluids for correction of fluid and electrolyte imbalances, broad-spectrum antibiotics, nasogastric suctioning and urethral catheterization. Informed written consent was obtained from all patients. Depending upon the mode of presentation, all patients underwent laparotomy in general anesthesia, either elective or emergent. The operative procedures included strictureplasty, resection and anastomosis, limited right hemicolectomy with ileocolostomy and loop jejunostomy. Intraoperative tissue biopsies, resected specimens and mesenteric lymph nodes, were sent for histopathological analysis. Microscopic evidence of caseating granulomas, surrounded by epitheloid cells, lymphocytes, plasma cells and giant cells was diagnostic of tuberculosis.

Diagnosed cases were given anti-tuberculosis therapy in postoperative period according to National Tuberculosis Control Programme guidelines. Anti-tuberculosis therapy included Isoniazid, Rifampicin, Pyrazinamide, Ethambutol and Streptomycin. All patients were discharged on ATT for duration of 12 months.

Patient demographics, details of the procedure and any untoward event were noted. Patients were advised to return to normal activities after removal of stitches. Follow up of all patients was performed on an out-patient basis. Post-operative hospital stay was noted with the day of surgery being day zero. Surgical site infection was defined as purulent discharge from the incision line accompanied by microbiological growth in the wound culture. All the data was recorded and results analyzed using S.P.S.S. (Version 19).

RESULTS

The study consisted of 22 male (44%) and 28 female (56%) patients, with a mean age of 29 ± 10.23 years (range 14- 60 years). 14 patients (28%) gave positive family history of abdominal tuberculosis and 26 patients (52%) had a history of pulmonary tuberculosis, of which only 16 patients (61.54%) had completed the treatment course of anti-tuberculosis drugs. Clinical evaluation showed that 28 patients (56%) had sub-acute intestinal obstruction, 8 patients (16%) acute intestinal obstruction, 7 patients (14%) had signs and symptoms of peritonitis, 5 patients (10%) with an abdominal mass and 2 patients (4%) having nonspecific findings. The distribution of patients according to demographic characteristics and duration of hospital stay are given in Table-I and Figure I. Laboratory results, operative findings and type of surgical procedure are shown in Table-II, III and IV respectively.

16 patients experienced postoperative complications, with surgical site infection seen in 50% of cases. Mortality rate of 16% was recorded. The distribution of complications is shown in Table-V.

Characteristics	Total (n=50)
Age (years)	29 ± 10.23 (14- 60)
Gender Male Female	 22 28
Post-operative hospital stay (days)	10 ± 4.67

Table-I. Demographic characteristics and duration of hospital stay in all patients

Laboratory Findings	Patients	Percentage
Hemoglobin (< 10 G %)	28	56%
ESR (> 10-15 mm at 1st hour)	27	54%
Albumin (<35 G %)	19	38%
Radiological Findings		
Chest X-ray Findings of pulmonary tuberculosis	06	12%
Abdominal X-ray (Supine and Erect) Dilated bowel loops with air fluid levels Free gas under right dome of diaphragm	21 07	42% 14%
Ultrasound abdomen Mass in right iliac fossa Free fluid in peritoneal cavity	08 11	16% 22%

Table-II. Laboratory findings of all patients

Operative Findings	Patients	Percentage
Ileocaecal mass with perforation	20	40%
Isolated intestinal mass	05	10%
Bowel strictures	11	22%
Perforation	09	18%
Matted Gut Loops/ Cocoon formation	05	10%

Table-III. Operative findings of cases

Operative Procedures	Patients	Percentage
Right hemicolectomy and ileocolostomy	22	44%
Strictureplasty	08	16%
Resection with end to end anastomosis	07	14%
Loop jejunostomy	06	12%
Biopsy	06	12%
Colostomy	01	2%

Table-IV. Operative procedures done on all patients

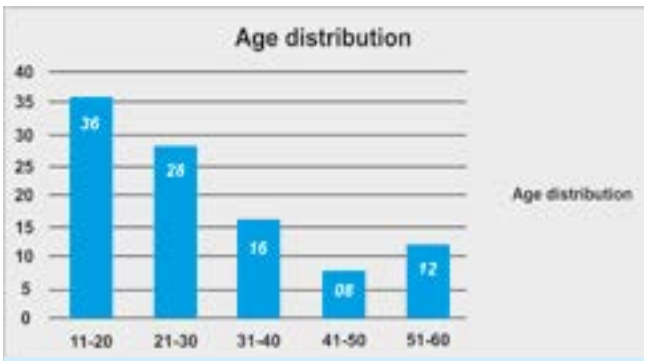

Figure-1. Age distribution of patients

Postoperative Complications	Patients	Percentage
Wound infection	08	50%
Anastomotic leakage	03	18.75%
Acute respiratory distress syndrome	02	12.5%
Sepsis	03	18.75

Table–V. Post-operative complications in cases (n=16)

All patients had a regular follow up. Second stage surgery i.e. stoma closure was done after 8 to 9 months in patients with widespread disease and in those with localized disease; it was performed after 4 to 6 month duration.

DISCUSSION

Intestinal tuberculosis is a rarity in the west due to improved healthcare facilities but is not uncommon in the developing countries[12] where preventive, diagnostic and treatment facilities are not well established.[13,14] In countries like Pakistan, tuberculosis is recognized as the second most common cause of intestinal obstruction.[15] Patients, in our study, had the age range between 14 and 60 years, with a peak incidence in 2nd and 3rd decade. This correlates with national and international literature.[15,16] Similarly, gender ratio was almost equal (1.3:1) with a female prepondarance.[17]

Abdominal tuberculosis has an inconstant clinical presentation and outcomes. In our study, patients presented with colicky abdominal pain, vomiting, constipation, diarrhea, fever, anorexia and weight loss. Abdominal pain was reported by Niaz et al as the commonest complaint.[17] In our study, 28 (56%) patients presented with subacute intestinal obstruction and 8 patients had acute intestinal obstruction. This is in concert with the data obtained from Afshan[15] and Joy[11] study. Signs and symptoms of peritonitis were observed in only 7 (14%) cases which is contrary to other studies in literature.[15,18]

Diagnosis of intestin al tuberculosis is quite challenging. The accuracy of clinical diagnosis is only 50%, even in highly endemic areas.[19] Only histopathology can accurately diagnose intestinal tuberculosis. This study showed raised ESR, anaemia and hypoproteinaemia in 54%, 54% and 38% patients respectively. Al Muneef et al[20]

reported slightly higher values of these laboratory findings. Signs of pulmonary tuberculosis were evident on x-ray chest in only 20% cases in our study. This is contradictory to another study[11] that showed 60% of patients with associated pulmonary tuberculosis. The reason for this disparity may be due to a small sample size in our study. However, statistics of other studies are well consistent with our observations.[21,22]

At laparotomy, the most common operative finding was found to be ileocecal mass with perforation in 40% cases. Rajput[23] and Akbar[24] in there study found the same pathology intraoperatively but this is contrary to some studies which showed a high incidence of bowel perforation.[25,26] the low incidence of intestinal perforation due to tuberculosis may be due to early presentation or early intervention in our setup. Small bowel stricture (22%) after ileocecal mass was the second most common operative finding. The underlying pathophysiology of stricture is due to granulomatous involvement of mesenteric vessels, either by intraluminal thrombi or perivascular cuffing leads to gut ischemia, which may contribute to the development of strictures.[27]

Resection-anastomosis and jejunostomy or ileostomy was performed in our patients with multiple strictures or perforation. Limited right hemicolectomy with ileocolostomy and strictureplasty was performed in all patients having a perforated ileocaecal mass and single stricture, respectively. These procedures are also recommended in literature.[25,26] In six patients, only biopsy was taken due to either cocoon formation or dense adhesions. One patient underwent transverse colostomy for a perforation in transverse colon. In terms of postoperative outcome, limited right hemicolectomy with ileocolostomy was the safest procedure with a low complication rate as compared to strictureplasty and resection-anastomosis.

The ultimate outcome of patients with intestinal TB is directly or indirectly influenced by complications of the disease. The commonest postoperative complication, in our study, was surgical site infection, which is similar to the data published in our studies.[17,24] Mortality rate in our study was 16% which was mostly due to delayed presentation, sepsis and advanced disease. In this series, mean hospital stay was 10 days which is similar to 7-14 days and 8-10 days of Rajpoot[23] and Iqbal[28] respectively.

Patients with intestinal perforation had a two stage procedure. In the first stage, stoma was made which was later closed after disease control. Ileostomy is documented as a safe primary procedure in the literature.[29] Published series[30] supported the prescription of anti-tuberculosis drugs for 12 months, which was also adopted in the present study.

CONCLUSION

The diagnosis of intestinal tuberculosis (TB) on clinical grounds is rarely accurate. High suspicion of intestinal tuberculosis should be kept in mind while evaluating patients with intestinal obstruction presenting in endemic areas. Like other infectious diseases early diagnosis is cornerstone of management. Countries like Pakistan, where there is high incidence and prevalence of this disease, a therapeutic trial of anti-tuberculosis drugs may be reasonable if the clinical and operative picture is compatible, and should be started even before availability of histopathology report.

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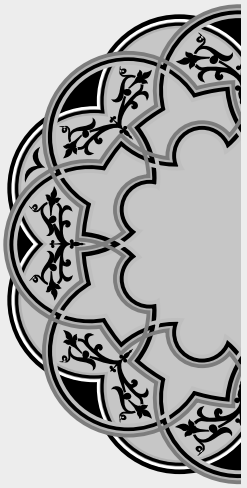

"Those who do not move,
do not notice their chains."

Rosa Luxemburg

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Dr. Raheel Ahmad	Conception of idea & manuscript writing	
2	Dr. Muhammad Salman Shafique	Design of article, statistical analysis & editing of manuscript	
3	Dr. Shahbaz Zafar	Literature review	
4	Dr. Saqib Mehmood	Data collection	
5	Dr. Sajid Mehmood	Data collection	
6	Dr. Usman Qureshi	Critical analysis	
7	Dr. Jahangir Sarwar Khan	Review & final approval of manuscript	