Outcome of Surgical Management of Intestinal Tuberculosis in a Tertiary Care Hospital

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Abstract

Background: Intestinal tuberculosis constitutes a common health issues in developing countries. The infection may reach the gastrointestinal tract by direct contact or may spread from infected adjacent lymph nodes and viscera. The ileal and ileocecal regions are the most common sites affected.

Objectives: To assess outcome of surgical management for intestinal tuberculosis in a tertiary care hospital.

Method: This cross sectional study was conducted at Surgery indoor department, Rajshahi Medical College Hospital, Rajshahi between 1st June 2020 and 31st May 2021. A total of 100 patients having intestinal tuberculosis who needed surgical management were enrolled for the study. Statistical analysis of the results was performed by using window based computer software devised with Statistical Packages for Social Sciences (SPSS-23).

Result: Most (49.0%) of the respondents had sub-acute intestinal obstruction as mode of presentation, majority (65.0%) of the respondents' had multiple per-operative findings, greater part (40.0%) of the respondents had resection of affected segment of ileum, exterioration of ends in first stage and stoma reversal with ileo-ileal anastomosis in second stage. The relationship between post-operative outcome of the respondents was statistically significant ($p<0.001$; with age group, sex, BMI, RBS, mode of presentation and operation performed.

Conclusion: Early diagnosis and surgical treatment of the associated complications are essential for survival. So, identification of these surgical outcome as well as to ensure prompt and effective management can improve the health care delivery.

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Introduction

Tuberculosis (TB) is a common and major health problem, especially in developing countries where, ignorance, poverty, overcrowding, poor sanitation and malnutrition are prevalent.[1] It has been declared a global emergency by the World Health Organization (WHO) and is the most important communicable disease worldwide.[2] Approximately three millions die each year from this disease.[3] Most cases of TB are caused by *M. Tuberculosis* and the reservoir of infection is human with active TB. Most cases of TB are pulmonary and acquired by person to person transmission of air-borne droplets of organisms. Abdominal TB may be contracted by drinking dairy milk contaminated with M. Bovis.[4]

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Tuberculosis can affect any part of the body and abdomen is the next common site after lungs affected by the disease[5]. In the abdomen, tuberculosis may affect the gastro-intestinal tract, peritoneum, lymph nodes and solid viscera. Approximately 1-3% of total TB cases are extra pulmonary,[6] of these abdominal tuberculosis (ATB) accounts for 11%-16%[7].

Intestinal (enteric) tuberculosis exists in one of the three main forms i.e. ulcerative, hypertrophic or ulcerohypertrophic and fibrous stricture form[7] peritoneal involvement (TB peritonitis) exists in four main forms namely ascetic, loculated (encysted), plastic (fibrous) and purulent forms.[8] The lymph nodes in the small bowel mesentery and the retro-peritoneum are commonly involved and these may caseate and calcify.[8] Disseminated abdominal tuberculosis involving the gastrointestinal tract, peritoneum, lymph nodes and solid viscera has also been described.[8]

The diagnosis of intestinal TB in initial stages is difficult as the clinical features are vague, diverse and there is no specific diagnostic test.[5,8,9] Intestinal tuberculosis is characterized by different modes of presentation, chronic, acute and acute-on-chronic, or it may be an incidental finding at laparotomy for other diseases.[10] The clinical presentation depends upon the site and type of involvement. It usually runs an indolent course and presents late with complications especially acute or sub-acute intestinal obstruction due to mass (tuberculoma) or stricture formation in small gut and ileocaecal region or gut perforation leading to peritonitis.[11]

The treatment of intestinal tuberculosis is mainly conservative (non-operatively) with anti-tuberculous therapy and surgical treatment is reserved for complications such as intestinal obstruction and bowel perforation with peritonitis.[8,12]

Bangladesh is a poor country. Economic conditions as well as nutritional status of average population are bearing low status. Due to dense population many people live in a crowded and unhygienic condition with poor sanitation. Majority of the people are illiterate and resultantly are unaware of health and disease. Due to these risk factors tuberculosis is a major health issue in our country. The estimated TB mortality is 51 per 100.000 population per year. The extra pulmonary new TB case notified was 33,704.[13]

It can occur as a primary disease or develops secondary to pulmonary tuberculosis. It carries significant morbidity and mortality. The tubercle bacilli may reach the gastrointestinal tract via direct contact through the ingested food, swallowing infected sputum, haematogenous route, or may spread from infected adjacent lymph nodes and viscera such as fallopian tube. Intestinal tuberculosis often involves the ileo-caecal region. The ileal and ileo-caecal regions are the most common sites affected. The systemic manifestations of intestinal tuberculosis include chronic ill health, anemia, anorexia, fever and night sweats, dyspepsia and weight loss. There may be history of altered bowel habit, diarrhea and steatorrhea. Abdominal features are of recurrent episodes of sub-acute intestinal obstruction with colicky abdominal pain and vomiting or with a mass in the right iliac fossa (25%-50%). Perforation peritonitis due to bowel perforation or acute intestinal obstruction are the acute presentations of abdominal tuberculosis. Abdominal tuberculosis (uncomplicated) is mainly managed by ant tubercular drugs but the complications, such as perforation peritonitis and acute intestinal obstruction, require prompt surgical intervention followed by anti-tubercular drug therapy.

Intestinal tuberculosis carries a good prognosis if promptly diagnosed and treated early. This study is carried out to find out the outcome of

surgical management in department of surgery of Rajshahi medical college hospital with an aim to reduce its fatal complication by early assessment of outcomes & proper management.

Objective

Objective of the study is to assess outcome of surgical management for intestinal tuberculosis in a tertiary care hospital.

Methods

This cross sectional study was carried out in the department of Surgery, Rajshahi Medical College Hospital between 1st June 2020 and30th May 2021. Ethical clearance for the study was taken from the institutional review board. The aim of the study was to minimize the fatal post-operative complications & timely intervention. A total of 100 patients who had undergone surgery for intestinal obstruction or peritonitis and later confirmed as intestinal TB on histopathology in department of Surgery, RMCH were enrolled for this study. Patients of age group <12 years and patients with sub-acute intestinal obstruction with history of previous abdominal surgery were excluded from this study. Purposive sampling was done according to the availability of the participants who had voluntarily joined this study. The purpose and procedure of study was discussed with the participants and informed written consent was taken. An interviewer administered questionnaire was used for data collection. Information about the patients was taken from Surgery ward. Particulars of the patients and physical examination were taken in admission and post-operative ward. As per operation note performed surgery were resection of affected segment of ileum and ileo-ileal anastomosis, resection of affected segment of ileum, exterioration of ends in first stage and stoma reversal with ileo-ilealanastomisis in second stage, local ileocolic resection (limited right hemicolectomy), exterioration of ends in first stage and stoma reversal with ileo-colic anastomosis in second stage, exterioration of affected segment, biopsy alone for the operations for ileal stricture and perforation, multiple ileal stricture, caecal mass, ileal perforation and mesenteric Lymphadenopathy with omental cake ascites respectively. Details of study were collected from operation notes, postoperative history, clinical findings, investigations, treatment sheet and postoperative follow up. Statistical analysis of the results was performed by using window based computer software devised with Statistical Packages for Social Sciences (SPSS-23).

Results

In this study age in group distribution of the respondents it was found that majority (58.0%) were in the age group of <40 years and 42.0% were in the age group of 40 years and above. The mean age of the respondents was 40.68 ± 6.1363 years. It was revealed that out of 100 respondents majority (70.0%) were male and 30.0% were female. Regarding distribution of the respondents' by RBS revealed that most (85.0%) of the respondents had 4.1-7.5 RBS, 11.0% had more than 7.6 and 4.0% had 4 RBS. The mean RBS of the respondents was $\overline{X}$ ± SD = 6.597 ± 1.656. Regarding BMI of the respondents, it was found that 39.0% of the respondents were healthy, 33.0% were under weight, 16.0% were obese and 12.0% were overweight. The mean BMI of the respondents was 22.77 ± 7.148.

Table I: BMI in group of the respondents

BMI in group	Respondents	
	No.	%
< 18.5 (Underweight)	33	33.0
18.5-24.9 (Healthy)	39	39.0
25.0-29.9 (Over weight)	12	12.0
30.0+ (Obese)	16	16.0
Total	100	100.0

$\overline{X}$ ± SD = 22.77 ± 7.148

Table I showed that 39.0% of the respondents were healthy, 33.0% were under weight, 16.0%

were obese and 12.0% were overweight. The mean BMI of the respondents was 22.77±7.148.

Table II: Distribution of the respondents by mode of presentation

Mode of presentation	Respondents	
	No.	%
Acute intestinal obstruction	36	36.0
Sub-acute intestinal obstruction	49	49.0
Intestinal perforation	15	15.0
Total	100	100.0

Table II showed that 49.0% of the respondents had sub-acute intestinal obstruction as mode of presentation, 36.0% had acute intestinal obstruction and 15.0% had Intestinal perforation.

Table III: Distribution of the respondents by per-operative findings

Per-operative findings	Respondents	
	No.	%
Stricture	4	4.0
Band-adhesion	7	7.0
Perforation	9	9.0
Ascietes	8	8.0
Lymphadenopathy	5	5.0
Cocoon	2	2.0
Multiple	65	65.0
Total	100	100.0

Table III showed that 65.0% of the respondents' had multiple per-operative findings, 9.0% had perforation, 8.0% had ascites, 7.0% had band adhesion, 5.0% had Lymphadenopathy, 4.0% had stricture and 2.0% had cocoon.

Table IV: Operation performed of the respondents

Operation performed	Respondents	
	No.	%
Local ileocolic resection (Limited Right hemicolectomy)	26	26.0
Resection of affected segment of ileum and ileo-ileal anastomosis	2	2.0
Resection of affected segment of ileum, exterioration of ends in first stage and stoma reversal with ileo-ileal anastomosis in second stage	40	40.0
Biopsy alone	7	7.0
Exterioration of affected segment	25	25.0
Total	100	100.0

Table V showed that 40.0% of the respondents had resection of affected segment of ileum, exterioration of ends in first stage and stoma reversal with ileo-ileal anastomosis in second stage, 26.0% had limited Rt. hemicolectomy, exterioration of ends in first stage and stoma reversal with ileo-colic anastomosis in second stage, 25.0% had exterioration of affected segment, 7.0% had biopsy alone and 2.0% had Resection of affected segment of ileum and ileo-ileal anastomosis.

Table V: Duration of surgery in minutes

Duration of surgery in minutes	Respondents	
	No.	%
Up to 30 Min	7	7.0
31-60 Min	25	25.0
61+ Min	68	68.0
Total	100	100.0

$\overline{X}$ ± SD = 69.78 ± 25.486 Minutes

Table V found that majorities (68.07.1%) of the respondents' required more than 61 minutes for performing the surgery, 25.0% required 31-60 minutes and 7.0% required up to 30 minutes. The mean required time for surgery was 69.78 ± 25.486 Minutes.

Table VI: Distribution of the respondents by post-operative outcome

Post-operative outcome	Respondents	
	No.	%
Uneventful	61	61.0
Superficial wound infection	23	23.0
Chest infection with ARDS	9	9.0
Anastomotic leak	1	1.0
Abdominal wound dchiscence	4	4.0
Enterocutaneous fistula	2	2.0
Total	100	100.0

Table VI found regarding post-operative outcome that 61.0% of the respondents' had uneventful, 23.0% had superficial wound infection, 9.0% had chest infection with ARDS, 4.0% had abdominal wound dehiscence, 2.0% had enter cutaneous fistula and 1.0% had anastomotic leak.

It was found that previously treated with anti TB chemotherapy that majorities (89.0%) of the respondents did not take any anti TB chemotherapy and rest (11.0%) took the therapy.

The relationship between post-operative outcome of the respondents was statistically significant ($p<0.001$; $p<0.005$) with age group, sex, BMI, RBS, mode of presentation, operation performed and previously treated anti TB.

Discussion

This cross sectional study was carried out to assess the outcome of surgical management of intestinal tuberculosis in department of Surgery of RMCH. Regarding age in group distribution of the respondents it was found that majority (58.0%) were in the age group of <40 years and 42.0% were in the age group of 40 years and above. The mean age of the respondents was 40.68 ± 6.1363 years. Abdominal Tuberculosis can affect any age group but is more common in young people at the peak of their productive life.[14] This is reflected in this study as majority of our patients were in the third and more decades of life, which is consistent with other studies. Regarding sex of the respondents it was revealed that out of 100 respondents' majority (70.0%) were male and 30.0% were female. Regarding educational status, it was observed that 40.0% of the respondents had class VI-XII level of education, 30.0% had up to class V level of education, 20.0% were illiterate and 10.0% were graduates. Regarding occupation, it was observed that 45.0% were in service, 25.0% were housewives, 10.0% were in business, farmers and in other professions. Most (43.0%) of the respondents' had 15001-30000 taka as monthly family income, 35.0% had less than 15000 taka and 22.0% had 30001+ taka as monthly family income. However, due to the poor socio-economic conditions in Rajshahi, Bangladesh, the duration of inpatient stay for our patients may be longer than expected. Regarding BMI of the respondents, it was found that 39.0% of the respondents were healthy, 33.0% were under weight, 16.0% were obese and 12.0% were overweight. The mean BMI of the respondents was 22.77 ± 7.148. A large amount (85.0%) of the respondents had 4.1-7.5 RBS, 11.0% had more than 7.6 and 4.0% had 4 RBS. The mean RBS of the respondents was $\overline{X}$ ± SD = 6.597 ± 1.656. Majority (49.0%) of the respondents had sub-acute intestinal obstruction as mode of presentation, 36.0% had acute intestinal obstruction and 15.0% had Intestinal perforation. Another similar type of study conducted by Saaiq M and colleagues has also reported similar observations[15]. About 20%-40% of patients of abdominal TB present with an acute abdomen and require emergency surgery.[16] The patients with subacute obstruction initially can be managed

conservatively, and surgery can be planned electively. Recent studies show that most patients (76%) of abdominal TB require emergency surgery. It was established that majority (65.0%) of the respondents' had multiple per-operative findings, 9.0% had perforation, 8.0% had ascites, 7.0% had band adhesion, 5.0% had Lymphadenopathy, 4.0% had stricture and 2.0% had cocoon. Majority of the intestinal lesions resolve with ATT (Ant tuberculous treatment). A few studies indicate that even strictures resolve with routine ATT and suggest that stricture are inflammatory rather than fibrotic. It was found that only 25% of the patients with stricture respond well to ATT, and it depends upon the location of the stricture.[17] It was initiated that majority (40.0%) of the respondents had resection of affected segment of ileum, exterioration of ends in first stage and stoma reversal with ileo-ileal anastomosis in second stage, 26.0% had limited Right hemicolectomy, exterioration of ends in first stage and stoma reversal with ileo-colic anastomosis in second stage, 25.0% had exterioration of affected segment, 7.0% had biopsy alone and 2.0% had Resection of affected segment of ileum and ileo-ileal anastomosis. It was found that majorities (368.07.1%) of the respondents' required more than 61 minutes for performing the surgery, 25.0% required 31-60 minutes and 7.0% required up to 30 minutes. The mean required time for surgery was 69.78 ± 25.486 Minutes. It was found regarding post-operative outcome that majorities (61.0%) of the respondents' had uneventful, 23.0% had superficial wound infection, 9.0% had chest infection with ARDS, 4.0% had abdominal wound dehiscence, 2.0% had enterocutaneous filtula and 1.0% had anastomotic leak. Twelve patients developed postoperative complications, with the most common being wound infection (12%) followed by chest infection (8%) and burst abdomen (4%). All patients were followed up for 6 months, and complete resolution of symptoms and weight gain was noted in all.[18] Regarding immunization status of the respondents it was observed that 57.0% of the respondents were immunized and 43.0% were not immunized. It was found that 89.0% did not take any anti TB chemotherapy and 11.0% took the therapy. The relationship between post-operative outcome of the respondents was statistically significant ($p<0.001$; $p<0.005$) with age group, sex, BMI, RBS, mode of presentation, operation performed and previously treated with anti TB chemotherapy. In summary, the results of our study indicate that post-operative outcome of surgical management of intestinal tuberculosis was related to their various socio-demographic and others characteristics. The study has provided local data that can be utilized by health care providers to plan for preventive strategies as well as establishment of management guidelines for these patients. Surgical outcome of intestinal tuberculosis will be improved by maintaining the above mentioned procedures which will be more helpful for the patients in this region.

Conclusion

Intestinal tuberculosis constitutes a major public health problem in our environment and presents a diagnostic challenge. A high index of clinical suspicion in populations where TB is common in Bangladesh, timely diagnosis and judicious management with a combined therapy of ant-tubercular drugs and conservative surgery can reduce the mortality of this curable yet potentially lethal disease. Early diagnosis is the key factor in avoiding systemic and local complications of intestinal tuberculosis. In emergency cases, prompt surgical exploration and vigilant care is met with good recovery.

Recommendation

Standardization of technique, a well-trained surgery team and high volume practice are important for safety and good outcomes. The mainstay of treatment is medical therapy and timely surgical intervention is required in a sizable number of patients. Early diagnosis and

management can prevent unnecessary surgical intervention.A multicenter study may be undertaken with large sample size.

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