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Spectrum of Clinical Presentations and Surgical Management of Tuberculous Small Intestinal Obstruction

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Abstract **Original Research Article**

***Background*:** The causes of acute Intestinal Obstruction vary demographically. In the developing world, tuberculosis account for more than half of all cases of small bowel obstruction. Tuberculosis is a major health burden in developing countries. It can result some medical as well as surgical emergencies. Among the surgical emergencies, small gut obstruction is the burning issue. It can show wide spectrum of presentations**.** ***Objective*:** To find out spectrum of clinical presentations and surgical management of tuberculous small intestinal obstruction. ***Methods*:** It was a cross-sectional study conducted in the Department of Surgery, Sher-E-Bangla Medical College Hospital from July 2015 to December 2015. A total of 100 patients were selected by purposive sampling methods. The detail history and clinical examination findings were recorded including patient's demographic profile and clinical as well as investigation findings. Preoperative findings and post-operative complications were also observed and recorded. ***Results*:** According to the result analysis, maximum patients were young adult and the highest patients (54%) came from 21-30 year's age group followed by 31-40 year's age group (18%). Among the respondents, 62% were male and 38% were female patients. The male to female ratio was 1.63:1. The results of clinical presentations revealed that all (100%) patients presented with abdominal pain followed by abdominal distension (78%) as small gut obstruction was mostly prevalent. Besides, constitutional features like weight loss and low grade and evening rise of temperature were present in almost all tuberculous patients. Operative findings revealed that single/multiple small bowel stricture in 80% patients followed by bands and adhesion in 14% patients. Strictures as well as perforation were present in case of 11% patients. Maximum operative procedures performed right hemicolectomy with ileo- transverse anastomosis (58%) followed by segmental bowel resection with end to end anastomosis (34%). Surgical site infection was observed in 42% patients followed by enterocutaneous fistula (18%). ***Conclusion*:** Spectrum of clinical presentations revealed that mostly the patients with tuberculous small gut obstruction manifest the feature of high obstruction. Stricture, bands and adhesion and stricture with perforation are the common form of tuberculous small gut pathology. Right hemicolectomy with ileo-transverse anastomosis as well as adhesiolysis of bands and adhesion and stricturoplasty are the common form of surgery. Surgical site infection and enterocutaneous fistula are the common complications of surgical management of tuberculous small gut obstruction.

Keywords: Intestinal Obstruction, Tuberculosis, Small Gut Obstruction, Surgical Emergencies.

INTRODUCTION

Tuberculosis is a communicable disease caused by Koch's bacillus discovered by Robert Koch in 1882. In developing countries, it is a major health problem [1, 2]. Approximately 95% of new cases and 98% of deaths occur in the under developed Countries [3]. In 2000-2020, an estimated 1 billion people will be infected, 200 million people will become sick, and 35 million will die from TB, if control is not strengthened [4, 5]. Malnutrition, unhygienic living, overcrowding

and lack of adequate medical care are the factors favoring increased incidence of tuberculosis. It can affect any part of the body. Lung is the commonest site as well as cervical lymphnode. Subsequently abdomen is the mostly affected part of human body. Abdominal lymph nodes, peritoneum, ileum and caecum are the most frequently affected structures [6]. The causes of acute Intestinal Obstruction vary demographically [7]. In the developing world, for small intestines infections like tuberculosis account for more than half of all cases of small bowel obstruction. Autopsies of patients with pulmonary TB before the era of effective treatment demonstrated intestinal involvement in 55-90% of fatal cases [1, 2]. The previously noted frequent association between pulmonary TB and intestinal TB no longer prevails, and only minorities of patients (<50%) with abdominal TB now have abnormal chest radiographic findings. However, approximately 20-25% of patients with GI TB have pulmonary TB. Any part of the GI system may be infected, although the ileum and colon are common sites. On gross pathologic examination, intestinal TB can be classified into 3 categories and first one is the ulcerative form of TB is seen in approximately 60% of patients. Multiple superficial ulcers are largely confined to the epithelial surface. This is considered a highly active form of the disease, with the long axis of the ulcers perpendicular to the long axis of the bowel. The second form is hypertrophic form is seen in approximately 10% of patients and consists of thickening of the bowel wall with scarring; fibrosis; and a rigid, masslike appearance that mimics that of a carcinoma. Third form is ulcerohypertrophic form is a subtype seen in 30% of patients. These patients have a combination of features of the ulcerative and hypertrophic forms [1, 2]. Principal comorbidities associated with lower GI tract TB are type II diabetes mellitus (23%) and alcoholism (23%) [8]. Diagnostic yield of mycobacterial cultures of stool or sputum was approximately 50%, a rate comparable to that of histologic studies of colonoscopic or surgical biopsies. Multidrug-resistant TB was present in 4 of the patients, 2 of whom had alcoholism. The 1-year mortality was 20%, but mortality was 50% in patients with multidrug resistance [1, 2]. Intestinal tuberculosis is attributed to four mechanisms: [9] (i) Hematological spread from active pulmonary or miliary tuberculosis, (ii) Swallowing of infected sputum in patients with active pulmonary tuberculosis, (iii) Ingestion of contaminated milk or food, (iv) Contiguous spread from the adjacent organs Management of intestinal obstruction due to tuberculosis involves surgery and postoperative treatment with anti-tubercular therapy [10]. The objective of this study was to find out spectrum of clinical presentations and surgical management of tuberculous small intestinal obstruction.

OBJECTIVES

General Objective

- To find out spectrum of clinical presentations and surgical management of Tuberculous small intestinal obstruction.

Specific Objectives

- To see the demographic characteristics (age-gender distribution) of the study subjects.
- To observe symptoms and signs of intestinal TB.
- To elucidate mode of surgical management like resection and anastomosis, right hemicolectomy, stricturoplasty, adhesionolysis, Ileostomy among these patients.
- To see the outcome of surgical management among these patients like SSI, anastomatic leakage, fistula, peritonitis and uncomplicatated recovery.

METHODOLOGY

It was a cross sectional study conducted at the Department of Surgery, Sher-e-Bangla Medical College Hospital, Barisal, Bangladesh from July 2015 to December 2015. The study populations were selected by purposive sampling method. A total of 100 patients were included in this study as study population.

Inclusion Criteria

- Clinically diagnosed cases of intestinal tuberculosis and who ultimately diagnosed as small intestinal tuberculosis by histopathology.
- Previously diagnosed cases of small intestinal tuberculosis.

Exclusion Criteria

- Preliminary clinically suspected case of intestinal tuberculosis but ultimately diagnosed as other pathology.
- Intraabdominal tuberculosis (Lymph node, liver, pancreas and spleen) other than intestinal tuberculosis.
- Drop out cases.

Procedures of Data Analysis and Interpretation

Tabulation, graphical bar and pie chart presentation and analysis by SPSS (Version 20-IBM).

Ethical Consideration

Ethical clearance has been received from ethical review committee of Sher-E-Bangla Medical College, Barisal.

RESULTS

Table I showed the maximum respondents were from age group 21-30 years (54%) followed by 31-40 years (18%). The minimum numbers of respondents were from age group 51-60 years (4%). Mean age of study population was 26.89± 7.91 years.

Table 1: Distribution of age group of respondents (N=100)

Age Group (in years)	Frequency (%)
11-20 yrs.	9%
21-30 yrs.	54%
31-40 yrs.	18%
41-50 yrs.	9%
51-60 yrs.	4%
>60 yrs.	6%
Age range (in years)	11-73
Mean age (in years)	26.89±7.91

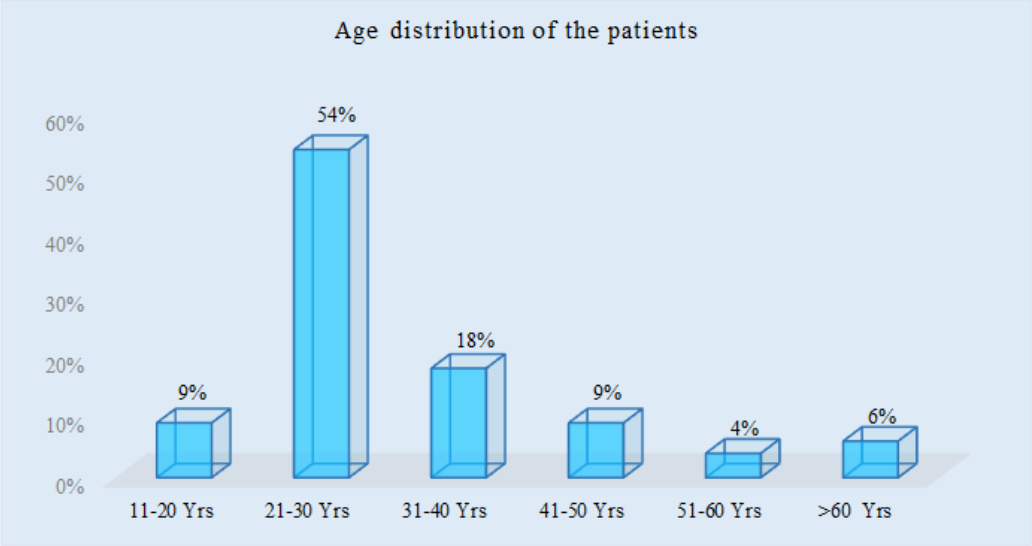

Figure 1: Column chart showed age group wise patients distribution. (N=100)

Figure 2: Showed the male to female ratio was 1.63:1. Maximum respondents were male (62%) in this study

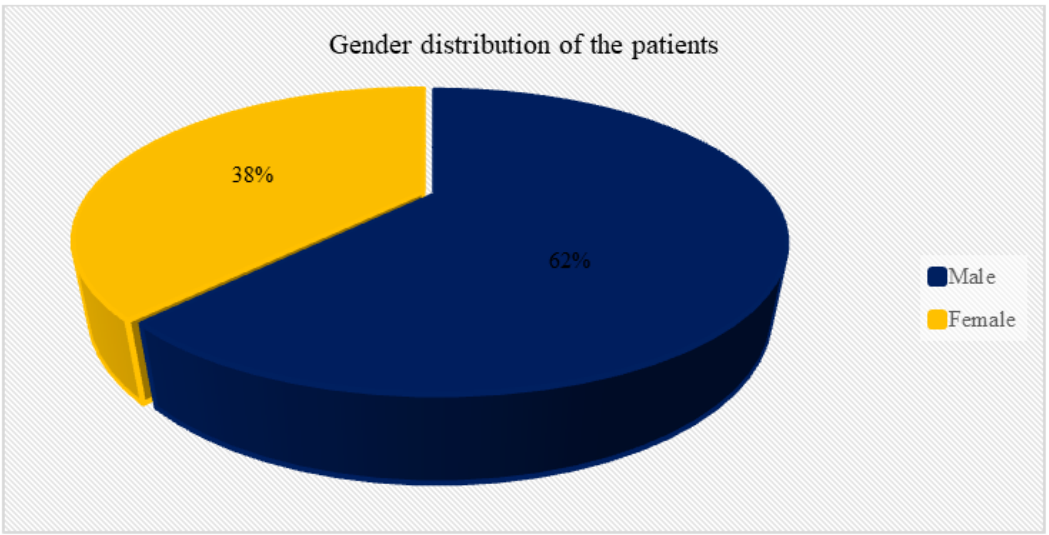

Figure 2: Pie chart showed gender wise patients distribution. (N=100)

Table 2 showed out of 100 patients, all the patients presented with abdominal pain followed by abdominal distention (78%) and constipation (63%) as vomiting (52%) is the early feature of small bowel obstruction. Weight loss (69%), low grade fever (70%) was found other important features coincide with tuberculosis.

Table II: Distribution of clinical presentation of the respondents (N=100)

Clinical presentation	Frequency (%)
Abdominal pain	100%
Abdominal distention	78%
Fever	70%
Weight loss	69%
Constipation	63%
Abdominal tenderness	57%
Vomiting	52%
Diarrhea/constipation	22%
Features of peritonism	11%
Abdominal mass	5%

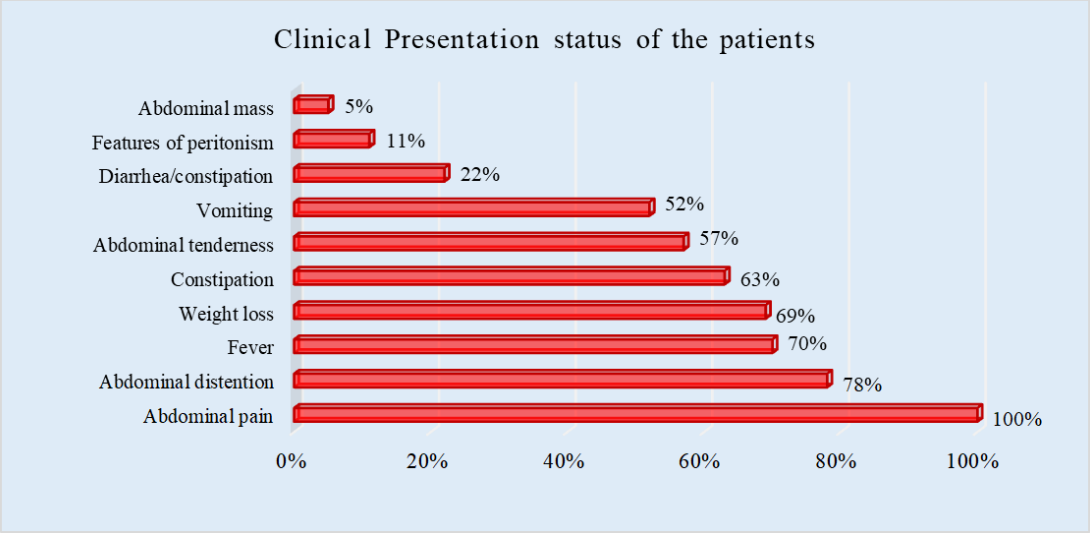

Figure 3: Bar chart showed clinical presentation status of patients. (N=100)

Table III showed out of 100 patients per-operatively our maximum findings were small bowel strictures (80%) followed by bands & adhesions (14%). Basically, maximum findings were co-existing with small bowel strictures.

Table III: Distribution of the patients according to operative findings (N=100)

Operative Findings	Frequency (%)
Small bowel strictures (single/multiple)	80%
Bands and adhesions	14%
Bowel strictures and perforation	11%
Ileocaecal mass	9%
Enlarged mesenteric lymph nodes	7%

Table IV showed Right hemicolectomy with ileo-transverse anastomosis (58%) was the maximum choice of operation followed by segmental bowel resection with end to end anastomosis (34%).

Table IV: Distribution of the patients according to surgical procedures (N=100)

Type of surgical procedures	Frequency (%)
Right hemicolectomy with ileo-transverse anastomosis	58%
Segmental bowel resection with end to end anastomosis	34%
Adhesiolysis	25%
Ileo-transverse bypass procedure	7%
Ileostomy	1%
Stricturoplasty	1%

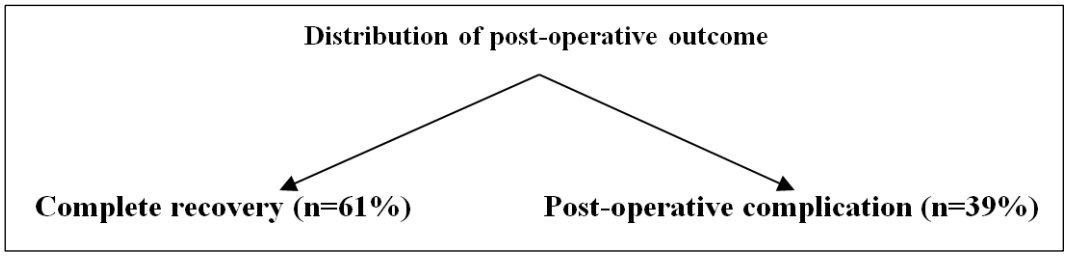

Table V showed out of 100 patients 39 manifested post-operative complications. Among them, maximum patients suffered from surgical site infection (42%) followed by enterocutaneous fistula (18%). The minimum number of patients suffered from paralytic ileus (6%).

Table V: Distribution of the percentage according to Post-operative complication (N=100)

Post-operative complication	Frequency (%)
SSI	42%
Enterocutaneous fistula	18%
Hypertrophic scar	14%
Burst abdomen	10%
Intraabdominal abscess/peritonitis	10%
Paralytic ileus	6%

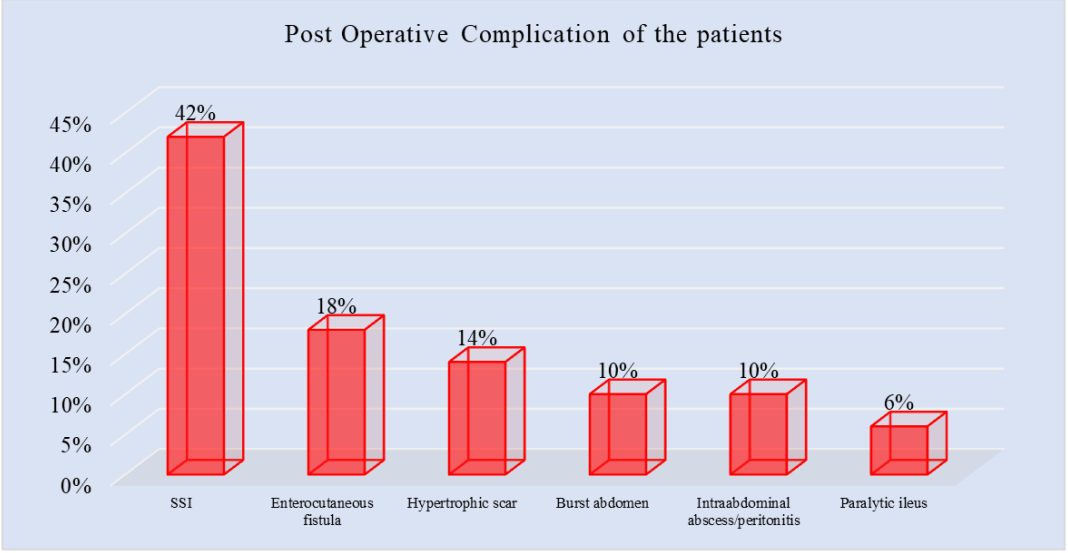

Figure 4: Column chart showed post-operative complication status wise patients. (N=100)

DISCUSSION

In this study, all the intestinal obstruction of a specified period reviewed and the underlying cause of bowel obstruction was found as tuberculosis in 18.4% of patients. This figure is comparable with 21.8% reported by Ali *et al.,* [11] in Pakistan. However, this figure is higher than that observed in many other studies. These differences in the rate of tuberculous intestinal obstruction reflect differences in the prevalence and risk factors for developing complications of TB such as bowel obstruction among different study settings. The figures for the rate of tuberculous intestinal obstruction in our study may actually be an underestimate and the magnitude of the problem may not be apparent because of high number of patients excluded from this study. This study showed that males were slightly more affected than females with a male to female ratio of 1.63:1 which is comparable to the global ratio of 1.5 to 2.1:1 [12]. Some workers report that the disease is more common in males in the western countries while in developing counties the females predominate. The reasons for this gender differences was not searched for in our study. Intestinal tuberculosis, like tuberculosis elsewhere in the body affects the young people at the peak of their productive life [13]. This fact is reflected in our study as the highest age incidence of the patients was in the second and third decades of life and more than 80% of respondents were aged forty years and below. This is in accordance with the results of other workers. The presentation of tuberculous intestinal obstruction in this age group has serious impacts on the national economy and production, as working and productive class of community is replaced by sick and ill individuals.

Intestinal obstruction resulting from tuberculous has been reported to be more prevalent in people with low socio-economic status. This observation is reflected in our study where 61% came from low socioeconomic status. The majority of patients in the present study came from the rural areas located a considerable distance from the study area and more than eighty percent of them had no identifiable health insurance. Similar observation was reported by others [14]. This observation has an implication on accessibility to health care facilities and awareness of the disease. The clinical presentation of tuberculous intestinal obstruction in our patients is not different from those in other studies [15], with abdominal pain being common to all the patients. The clinical presentation of abdominal TB is usually non-specific and, therefore, often results in diagnostic delay and hence the development of complications such as intestinal obstruction. In keeping with other studies [14], the majority of our patients had symptoms of more than 6 months' duration at the time of presentation. The reasons or late presentation in this study may be attributed to the fact that the diagnosis of intestinal TB in its initial stages is usually difficult due to vague and non-specific symptoms as a result patients remain undiagnosed for prolong periods, receiving symptomatic treatment and subsequently present late with complications such acute or sub-acute intestinal obstruction. In our study, associated pulmonary tuberculosis was found in 23.7% of cases, a figure which is comparable with Baloch *et al.,* [16]. However, higher figures of associated pulmonary tuberculosis have been reported by others. We could not find in literature, the reasons for these differences. The presence of co-existing medical illness has been reported elsewhere to have an effect on the outcome of patients with tuberculous intestinal obstruction. This is reflected in our study where patients with co-existing medical illness had significantly high mortality rate. In agreement with other studies [17], the ileocaecal region was the most common site of the bowel affected. This is in sharp contrast to other authors who reported the terminal ileum as the most common site of involvement. Many studies have been reported that the most common site of involvement of intestinal TB is the ileocaecal region, possibly because of the increased physiological stasis, increased rate of fluid and electrolyte absorption, minimal digestive activity and an abundance of lymphoid tissue at this site. It has been shown that the M cells associated with Peyer's patches can phagocytes BCG bacilli. The frequency of bowel involvement declines as one proceeds both proximally and distally from the ileocaecal region. In this study, the main lesion causing obstruction was intestinal tuberculosis in the hypertrophic form which is in agreement with Nguyen [18] in Vietnam.

CONCLUSION

Small gut obstruction is one of the important tuberculous surgical emergencies in our perspectives. This clinical condition contributes significantly to high morbidity though mortality is not uncommon. To comment regarding mortality is beyond the limit of this research work. Young age at presentation specially second and third decades of life, delayed presentation; poverty and high morbidity are among the hallmarks of the disease in our country. Some multidimensional approach like a high index of suspicion, proper evaluation, therapeutic trial and obviously expertise and skill implementation are essential for an early diagnosis and timely definitive treatment. Factors that were recognized in this study should be addressed for better management. In this study, it was proclaimed that the commonest form of bowel obstruction was through single or multiple stricture followed by bands and adhesions as well as stricture with perforation.

Limitations of the Study

- This is single blinded, single centered study.
- This is a descriptive study.
- Duration is short.
- Sample size is small.
- Does not proclaim the scenario of whole country.

RECOMMENDATIONS

A multicenter double blinded study in the divisional tertiary hospitals of whole Bangladesh can reveal the real picture of intestinal tuberculosis. The study period should be long. Multi-disciplinary approach of research work can make a study precise & more authentic in this regard. The whole country patient's conditions should be recorded so that we can generate a protocol as a national guideline for effective management of intestinal tuberculosis.

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