

INCIDENCE OF ABDOMINAL TUBERCULOSIS IN CASES OF THE INTESTINAL OBSTRUCTION WITH ITS CLINICAL COURSE AND MANAGEMENT

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ABSTRACT

Objective: Intestinal obstruction occurs due to the failure of passage of contents through intestine. It can be because of a mechanical or functional pathology. Main causes of intestinal obstruction may vary from country to country or among zones within a specific country. The aim of this study was to evaluate the etiology, presentation, management strategies, and patients with acute mechanical intestinal obstruction and to find incidence of abdominal tuberculosis at a tertiary care hospital in Punjab, North India.

Methods: This prospective study was conducted in the Department of Surgery, Rajindra Medical College Hospital, Patiala, Punjab, India, between November 2020 and September 2022. A total of 100 patients were enrolled in our study who were diagnosed to have intestinal obstruction.

Observation and Results: The most common age group affected was 21–50 years (63%). Intestinal obstruction was diagnosed with males preponderance (66%). Abdominal pain, constipation, and vomiting were the most common presenting symptoms and abdominal distension was the most common physical finding on the clinical examination. The most common radiological finding was multiple air fluid levels seen on X rays. The main cause of obstruction was Adhesions and Bands followed by Ileocecal tuberculosis. About 13% patients diagnosed with abdominal tuberculosis. Patients showed good response to anti-tubercular therapy. About 6% mortality rate was reported.

Conclusion: Adhesions and bands were the main causes of acute intestinal obstruction in our region. An algorithmic diagnostic approach based on different radio investigations, biopsy, and appropriate management with a rational combination of anti-tubercular therapy can reduce the morbidity of this easily curable yet potentially lethal disease.

Keywords: Intestinal obstruction, Abdominal tuberculosis.

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INTRODUCTION

Intestinal obstruction occurs when the passage of intestinal contents is obstructed, which can be due to a mechanical or functional issue. Nowadays, acute mechanical intestinal obstruction is a primary reason for surgical admissions in emergency departments worldwide and it can lead to significant morbidity and mortality, particularly when bowel gangrene or perforation is present. The causes of intestinal obstruction may differ between countries or even within specific regions of a country so understanding the disease patterns and outcomes can increase suspicion and reduce delays in diagnosis and surgical intervention. This is especially helpful in settings where diagnostic modalities are limited so making a definitive diagnostic challenging. The aim of this study was to evaluate the etiology, presentation, management strategies, and outcomes of patients.

Aims and objectives

The objectives are as follows:

1. To find the incidence of abdominal tuberculosis in 100 cases of intestinal obstruction at Rajindra Hospital, Patiala.
2. To study clinical and histopathological (HPE) correlation of abdominal tuberculosis in intestinal obstruction.
3. To study HPE reports findings associated with abdominal tuberculosis.
4. To study the outcome of various treatment modalities in abdominal tuberculosis.
5. To study various medical and surgical complications and their management associated with abdominal tuberculosis over a period of 3 months.

METHODS

This prospective study was carried out on 100 patients coming to Emergency in the Department of General Surgery Rajindra Hospital,

Patiala with presentation of intestinal obstruction to find the incidence of abdominal tuberculosis with its clinical course and management. All the patients who were enrolled in this study were diagnosed to have intestinal obstruction based on clinical, biochemical, radiological, and pathological features. Final diagnosis was made at explorative laparotomy. The cause of obstruction, site of obstruction, and the performed operative procedures was recorded. A biopsy was taken where required for HPE confirmation.

Inclusion criteria

The following criteria were included in the study:

- Those who are able and willing to consent to take part in the trial.
- Any age and gender of patients.
- Patients with intestinal obstruction, as determined by a diagnosis.

Exclusion criteria

The following criteria were excluded from the study:

- Who refuse to provide their permission to take part in the trial.
- Individuals who have sustained abdominal blunt trauma.
- Individuals who leave the study for any reason.
- Women in pregnancy.

OBSERVATIONS AND RESULTS

Most affected age group was 21–50 years 63/100 (63%). Males 66/100 (64%) were affected more intestinal obstruction as compared to females 34/100 (34%). Most common symptoms of intestinal obstruction were abdominal pain, vomiting, and constipation that was present in 100/100 (100%) patients. Weight loss was seen in 61/100 (61%) patients. Other common signs were Abdominal Distension 100/100 (100%) patients, absent bowel sounds 95/100 (95%) patients, and abdominal tenderness 90/100 (90%) patients. Fever was seen in

34/100 (34%) patients. Pallor was observed in 22/100 (22) patients. Ascites was present in 32/100 (32%) patients. Abdominal mass was palpated in 4/100 (4%) patients. Increased ESR levels 19/100 (19%), ascitic fluid analysis 13/100 (13%), and positive Montoux skin test 15/100 (15%) helped toward diagnosis of abdominal tuberculosis past abdominal surgeries 35/100 (35%) contributed majorly toward intestinal obstruction. 2/100 (2%) patients had history of pulmonary tuberculosis. X-ray of abdomen showed distensions of bowel loops in 88/100 (88%) patients and multiple air fluid levels in 69/100 (69%) patients. Ultrasound whole abdomen showed dilated bowel loops in 88/100 (88%), sluggish peristalsis in 76/100 (76%) patients, abdominal lymphadenopathy in 17/100 (17%) patients, bowel wall was thickened in 22/100 (22%) patients, and ascites seen in 32/100 (32%). 64/100 (64.0%) patients were managed conservatively. 36/100 (36.0%) patients were managed surgically and they underwent exploratory laparotomy to find the cause of intestinal obstruction. 10 out of 100 patients (10%) underwent exploratory laparotomy with adhesiolysis and band excision, while 9 out of 100 patients (9%) h bowel resection and anastomosis was done. Strictureplasty was performed in 7 out of 100 patients (7%), ileostomy in 1 out of 100 patients (1%), derotation and fixation of volvulus in 2 out of 100 patients (2%), and wedge resection of Meckel's diverticulum in 6 out of 100 patients (6%) and appendectomy was performed in 1 out of 100 patients (1%). The leading cause of intestinal obstruction in the study was adhesions and bands, accounting for 44 out of 100 patients (44%). Strictures were observed in 19 out of 100 patients (19%), while obstructed inguinal and umbilical hernias each were seen in 8 out of 100 patients (8%). Sigmoid colon volvulus was observed in 2 out of 100 patients (2%), and Meckel's diverticulum was seen in 6 out of 100 patients (6%). Most common post-operative complications observed was pneumonia and post-operative pyrexia each was seen in 11/36 (30%) patients. Sepsis was seen in 6/36 (16%) patients. Post-operative ileus was seen among 8/36 (22%) patients in post-op time period. Burst abdomen was seen in 4/36 (11%) cases. SSI were observed in 4/36 (11%) cases. Incisional hernia was seen in 2/36 (5%) patients. Chronic pain observed in 8/36 (22%). Deranged RFTs were seen in 3/36 (8%) cases. Urinary tract infection observed in 4/46 (11%) cases. Majority of patients with intestinal obstruction had adhesions and bands, accounting for 44 out of 100 patients (44%). Strictures were seen in 19 out of 100 patients (19%), while obstructed inguinal and umbilical hernias were observed in 8 out of 100 patients each (8%). Sigmoid colon volvulus was seen in 2 out of 100 patients (2%), Meckel's diverticulum in 6 out of 100 patients (6%), and intussusception in 2 out of 100 patients (2%). Fecal matter impaction (fecolith) was present in 8 out of 100 patients (8%), while malignancies caused obstruction in 2 out of 100 cases (2%). Concealed perforation of the appendix was only observed in 1 out of 100 patients (1%). 64 patients (64%) were managed conservatively, while 36 patients (36%) required surgical management. Among the 64 conservatively managed patients, six patients (9.4%) were highly suspected to have abdominal tuberculosis based on clinical and radiological features. These patients were put on a therapeutic trial of anti-tubercular therapy and responded well. The remaining 58 patients (90.6%) did not show any clinical or radiological features of abdominal tuberculosis and were managed conservatively. They responded satisfactorily to conservative management and their follow-up period was uneventful. 36/100 (36%) patients underwent emergency surgeries and 7/36 (19%) patients came out to be positive for abdominal tuberculosis based on finding given in HPE reports. 8/13 (61%) of all abdominal tuberculosis patients, ileocecal junctions is most commonly affected followed by ileum 5/13 (39%). 6/100 (6%) expired during the time of management of intestinal obstruction. 4/100 (4%) patients expired belongs to surgically managed group and 2/100 (2%) patients expired belongs to during conservatively managed group.

Incidence of abdominal tuberculosis among cases of intestinal obstruction was found to be 13%.

DISCUSSION

We observed that the age group most commonly affected by the condition under study was between 21 and 50 years, with 63% of the

cases falling within this range. 45 individuals (45%) were aged between 31 and 50 years. Sharma and Bhatia [4], Sanai and Bzeizi [5] and Alam *et al.* [6], have reported that individuals aged between 21 and 40 years, 35–45 years, and 33–42 years, respectively, were commonly affected by intestinal obstruction. Male patients were more commonly affected than females, with 66 out of 100 male patients (66%) being affected, while only 34 out of 100 female patients (34%) were affected. Alam *et al.* [6] also reported similar results where 66% of the patients affected were males. Deshmukh *et al.* [7] found that males were more commonly affected than females. Mariam *et al.* [8] concluded that 72% of the individuals affected by intestinal obstruction were males. In our study, most common symptoms experienced by patients were abdominal pain, abdominal distension, vomiting, and constipation, which were present in all 100 patients (100%). Other common signs observed were absent bowel sounds and abdominal tenderness. 61 out of 100 patients (61%) had weight loss, 34 out of 100 patients (34%) had fever, 22 out of 100 patients (22%) showed pallor, 32 out of 100 patients (32%) had ascites, and an abdominal mass was palpated in 4 out of 100 patients (4%). Deshmukh *et al.* [7] reported that 100% of their patients had abdominal pain and 94% had abdominal distension. Rai and Thomas [9] concluded that 88% of their patients had abdominal pain, 87% had weight loss, and 59% had fever. Sharma and Bhatia [4] also observed that 80% of their patients had complaints of abdominal pain, 70% had weight loss, and 40% had fever. Alam *et al.* [6] found that 92% of their patients had abdominal pain, 84% had no bowel sounds, 87% had abdominal distension, and 73% had vomiting. Sanai and Bzeizi [5] concluded that 66% of their patients had weight loss, and 55% had fever. Chalya *et al.* [10] found that 80% of their patients had vomiting, and 65% had vomiting, whereas Deshmukh *et al.* [7] confirmed that 90% of their patients had vomiting, and 74% had constipation. 22/100 (22%) patients has Hb levels lower than 10 gm/dL. Mukhopadhyay *et al.* [11] showed that 30% of patients had Hb levels lower than 10 gm/dL. Rana *et al.* [12] showed anemia in 21% patients. Increased ESR levels were observed in 19/100(19%) patients. Sorsa [13] demonstrated that high ESR levels were correlated with abdominal tuberculosis diagnosis. 3/100 (3%) patients were HIV positive. 2/100 (2%) were HCV positive. 1/100 (1%) was HBsAg positive. Ascitic fluid analysis showed increased adenosine deaminase (ADA) levels (>33IU/L) were seen in 13/100 (19%) patients, increased protein content (>3GM) and lymphocytic predominance observed in 13/100 (13%) patients. No one tested positive for AFB sputum. CBNAAT sputum was negative for all patients included in our study. Positive Montoux skin test was seen in 15/100 (15%) patients. Ruiz *et al.* [14] showed that for abdominal tuberculosis, ADA has been shown to be useful in making the diagnosis, specifically when levels are above ≥ 30 U/L. Rodrigo [15] showed that the diagnosis of abdominal tuberculosis required a high index of suspicion because of its insidious development. In any patient with several weeks of abdominal pain, weight loss, fever, and lymphocytic dominant ascites should be considered in differential diagnosis. Nishal *et al.* [16] confirmed that when taken as a single diagnostic tool, HPE had highest sensitivity and specificity in diagnosing abdominal tuberculosis when compared to CBNAAT and AFB culture. Use of CBNAAT alone for diagnosis of abdominal tuberculosis may result in missing the diagnosis. A combined modality incorporating CBNAAT, histopathology, and AFB culture is the best approach for diagnosis of abdominal tuberculosis. This study showed that positive montoux skin test was seen in 15/100 (15%) patients. Nayak and Acharjya [17] demonstrated the significance of montoux skin test in the diagnosis of abdominal tuberculosis. It had a diagnosis supportive value. Ruiz *et al.* [14] advocated that montoux test helped in putting TB on the list of differential diagnosis. Distensions of bowel loops were seen in 88/100 (88%) patients. Multiple air fluid levels were observed in 69/100 (69%) patients. Nicolaou *et al.* [18] showed that abdominal X-ray findings in conjunction with the clinical examination is diagnostic in only 50–60% of cases. Nelms and Kann [19] showed that accuracy of plain radiographs in the diagnosis of bowel obstruction ranges from only 50 to 80%. Ultrasound whole abdomen was a great tool in diagnosing intestinal obstruction. Dilated bowel loops were seen in 88/100 (88%) patients. Sluggish peristalsis was

Table 1: Presenting signs and symptoms

Signs/symptoms	No of patients	Percentage
Abdominal pain	100/100	100
Weight loss	61/100	61
Abdominal Distension	100/100	100
Vomiting	100/100	100
constipation	100/100	100
Fever	34/100	34
Pallor	22/100	22
Absent bowel sounds	95/100	95
Ascites	38/100	32
Abdominal tenderness	90/100	90
Abdominal mass/lump	4/100	4

Table 2: Causes of intestinal obstruction in our study

Etiology	Number of patients n=100	Surgical management	Conservative
Adhesions And bands	44/100	10/100	34/100
Strictures	19/100	7/100	12/100
Obstructed inguinal hernia	8/100	4/100	4/100
Sigmoid volvulus	2/100	2/100	0/100
Meckel diverticulum	6/100	6/100	0/100
Obstructed umbilical hernia	8/100	3/100	5/100
Intussusception	2/100	2/100	0/100
Malignancy	2/100	1/100	1/100
Fecal impaction	8/100	0/100	8/100
Concealed perforation of appendix	1/100	1/100	0/100
Total	100	36/100	64/100

Table 3: Surgeries performed in patients of intestinal obstruction

Surgical procedure	Number of patients	Percentage
Exploratory laparotomy+	10/100	10
Adhesiolysis and band excision		
Exploratory laparotomy+	9/100	9
Resection and anastomosis of bowel		
Exploratory laparotomy+Strictureplasty	7/100	7
Exploratory laparotomy+Ileostomy	1/100	1
Exploratory laparotomy+	2/100	2
Derotation and fixation of volvulus		
Exploratory laparotomy+Wedge resection of meckel diverticulum	6/100	6
Exploratory laparotomy+Appendectomy	1/100	1
Total	36/100	36

seen in 76/100 (76%) patients. Abdominal lymphadenopathy was observed in 17/100 (17%) patients. Bowel wall was thickened in 22/100 (22%) patients. Van Hoving *et al.* [20] concluded that Ultrasound is an excellent initial imaging modality for assisting physicians in the rapid and accurate diagnosis of a variety of pathologies to expedite management. 88/100 (80%) had dilated bowel loops on CECT whole abdomen. Bowel thickenings was seen in 22/100 (22%) patients. Ascites was found in 32/100 (32%). Abdominal lymphadenopathy observed in 19/100 (19%) patients. Sinan *et al.* showed that CECT whole abdomen showed abdominal lymphadenopathy, bowel thickenings and dilated bowel loops more accurately. 44/100 (44%) cases of adhesions and bands. 35/100 (35%) patients had past surgical history. Correa-Rovelo *et al.* [21] demonstrated that post-operative adhesions accounted for 75% of intestinal obstruction. Chalya *et al.* [10] showed that 31% cases of

Table 4: Post-op complications in patients of intestinal obstruction

Complications	No of patients
Pneumonia	11/36
Septicemia	6/36
Incisional hernia	2/36
Burst abdomen	4/36
SSI	4/36
Chronic pain	9/36
Post operative ileus	8/36
Post-operative pyrexia	11/36
Deranged RFT	3/36
Urinary tract infection	4/36

Table 5: Correlation of management with outcomes in cases of intestinal obstruction

Management	Survive		Dead	
	Number	Percentage	Number	Percentage
Conservative	64	64.0	2	2.0%
Surgical	36	36.0	4	4.0%
Total	100	100.0	6	5.0%

intestinal obstruction had past history of surgery. Alam *et al.* confirmed that 28% cases of intestinal obstruction had past history of surgery. 2/100 (2%) patients had past pulmonary tuberculosis. Hatwal *et al.* [22] showed that 4 % patients had old history of pulmonary tuberculosis. Majority of patients were of adhesions and bands 44/100 (44%) as a leading cause of intestinal obstruction followed by strictures 19/100 (19%). 44/100 (44%) patients had bands and adhesions. Duron *et al.* [23] showed that Post-operative bands and adhesions were common cause of bowel obstruction in 25% of patients. Al Jabri and El Sherbini [24] showed that 38% patients had adhesions and bands. Obokhare [25] found that bands and adhesions were seen in 35-45% cases of obstruction. Strictures were seen in 19/100 (19%) patients. Van Buren *et al.* [26] emphasized that strictures caused obstruction in 15% of patients. Most of them were in terminal ileal region based on CECT findings. Al Jabri and El Sherbini [24] showed 13% patients had strictures. Marinis *et al.* [27] showed 11% patients had strictures. Obstructed inguinal hernias and obstructed umbilical hernias were observed in 8/100 (8%) patients each respectively. Sigmoid colon volvulus seen in 2/100 (2%) patients. Malignancies caused obstruction in 2/100 (2%) cases. Tuca *et al.* [28] reported that malignancy caused obstruction in 3% patients. Al Jabri and El Sherbini [24] demonstrated that fecal impaction caused obstruction in 3-10% patients. Intussusception was observed in 2/100 (2%). Marinis *et al.* [27] showed that intussusception caused intestinal obstruction in 1-5% of patients. Concealed perforation of appendix was seen in only 1/100 (1%) patient. Chen *et al.* [29] demonstrated that appendicular perforation in 1-3% patients can cause small-bowel obstruction. 64/100 (64.0%) patients were managed conservatively. 36/100 (36.0%) patients were managed surgically and they underwent exploratory laparotomy to find the cause of intestinal obstruction. Lin *et al.* showed that rate of conservative treatment success ranged from 16% to 75%. Most common post-op complications observed was pneumonia and post-operative pyrexia each seen in 11/36 (30%) patients. In our study, post-operative pyrexia was seen in 11/36 (30%) patients. Qin *et al.* showed post-operative fever in 24% patients. Chauhan *et al.* [31] showed post-operative fever in 18.2% patients. In our study, Pneumonia seen in 11/36 (30%) patients. Debi *et al.* [32] confirmed that most common involved sites were ileocecal and distal ileal parts of small bowel in causing abdominal tuberculosis. Mukhopadhyay *et al.* [11] concluded that abdominal tuberculosis Terminal ileum and ileocecal region most commonly. The incidence of abdominal tuberculosis is 13/100 (13%). Tarafder *et al.* [33] also concluded that the incidence of abdominal tuberculosis for up to 12% of all cases of extra pulmonary

tuberculosis. Skopin *et al.* [34] showed that abdominal tuberculosis incidence is on the rise and is about 8.3%. Mukhopadhyay *et al.* [11] showed that abdominal TB incidence is 10%. Global tb report [35] showed that incidence of abdominal tuberculosis is around 8–24% globally. 6/100 (6%) patients expired during the time of management of intestinal obstruction.

SUMMARY AND CONCLUSIONS

Based on the findings of the study, it can be concluded that abdominal tuberculosis is a significant cause of intestinal obstruction in patients, especially in those with a history of pulmonary TB and surgery. The incidence of abdominal tuberculosis among cases of intestinal obstruction was found to be 13%. The most commonly affected age group was 21–50 years, and males were more affected than females. Conservative management was the most common treatment option. The ileocecal junction was the most commonly affected site by abdominal tuberculosis. Diagnostic tools such as X-ray abdomen, USG abdomen, CECT abdomen, ESR, ascitic fluid study, and montoux skin test were helpful in making a diagnosis. However, a larger sample size study is needed to strengthen the findings of this study. It is important to diagnose and treat intestinal obstruction early to reduce morbidity and mortality associated with it. Even a therapeutic trial of anti-tuberculosis treatment on highly suspicious patients can be helpful.

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