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A hospital based observational study to evaluate the common etiological factor related to small bowel obstruction in adult patients

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Abstract

Aim: In this study, it was aimed to evaluate the common etiological factor related to small bowel obstruction in adult patients.

Material and methods: The cross-sectional study was conducted in the Department of Surgery for the duration of 12 months. Ethical approval letter was obtained from the ethical review committee. Total 100 patients age above 15 years were studied after taking informed consent from patient/relatives.

Results: 60 patients were male and 40 were females. All the patients were categorized in different age group, 19 patients belong to 15-25 years age group, 33 patients were in 26-40 years, 26 patients were in 41-55 years, 11 patients were in 56-70 years and remaining 11 were having age above 71 years. The cardinal signs and symptoms were present in almost all the patients. Abdominal pain was present in 97 patients, vomiting in 77 patients, tenderness in 90 patients, absolute constipation in 85 patients, abdominal distension in 92 patients, rebound tenderness in 52 patients, significant finding on per rectal examination in 8 patients, absent/decreased bowel sound in 34 patients, increased bowel sound in 65 patients and palpable mass and swelling was present in 24 patients. Out of 100 patients, Adhesions were present in 18 patients, Hernias in 20 patients, Malignancy in 10 patients, intestinal volvulus in 5 patients, diverticulum in 2 patients, strictures in 6 patients, intestinal tuberculosis in 10 patients, fecal impaction in 3 patients and superior mesenteric artery syndrome in 3 patients.

Conclusion: The causes of intestinal obstruction are variable in different parts of the world. Adhesions are the most common cause of bowel obstruction. The treatment in each patient should be individualized. Atrial of conservative management should be planned in all cases before embarking to a surgical intervention except in patients where strangulation is suspected.

Keywords: Etiology, acute small intestine obstruction, adhesion, improved surgical techniques, laparotomy, low socioeconomic status

Introduction

A wide range of pathologies can inflict both the small and large intestines. Intestinal obstruction accounts for approximately 15% of all emergency department visits for acute abdominal pain [1]. Intestinal obstruction can be broadly differentiated into small bowel and large bowel obstruction. Common causes of intestinal obstruction are obstructed hernias, post-operative adhesions, tumors, foreign bodies, inflammatory bowel disease, fecal impaction, volvulus and paralytic ileus etc. [2]. Tuberculosis in various forms remains a very important cause of morbidity and mortality in developing countries [3]. Small bowel obstruction (SBO) remains a leading cause of admission to surgical wards across the globe. One study found that more than 3% of all emergency surgical admissions to a general hospital were secondary to SBO [4]. The causes of small bowel obstruction have changed dramatically since 1900s [5]. Previously hernia was the most frequent cause of small bowel obstruction in developed countries. But later due to more advancement in meticulous hernia surgery and an increasing number of abdominal and pelvic surgeries, adhesions secondary to previous surgery are now most common (nearly 60%) cause of small bowel obstruction in developed countries [6]. More advancement in minimal access surgeries may decrease the frequency of bowel obstruction secondary to adhesions [7]. Malignancy is the second most common account for around 20% cases of small bowel obstruction mostly due to the metastatic lesion. Low socioeconomic status and poor delivery of health care facilities might be the cause behind this.

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Intestinal obstruction of either the small or large bowel continues to be a major cause of morbidity and mortality. Mortality rates range from up to 3% for simple obstructions to as much as 30% when there is strangulation or perforation of the obstructed bowel. Abdominal pain, vomiting, constipation, abdominal distension and failure to pass flatus are the cardinal features of intestinal obstruction. Diagnosis of such patients should include initial evaluation of clinical signs and symptoms, radiography, complete blood counts, and metabolic panel. Radiography accurately diagnoses intestinal obstruction in approximately 60% of cases [8], and its positive predictive value approaches 80% in patients with high-grade intestinal obstruction [9]. Successful management requires early diagnosis and treatment with meticulous fluid, electrolyte balance and timely surgical intervention [10]. Delaying necessary surgery has also been associated with very poor outcomes especially in elderly patients [11]. Better understanding of pathophysiology, use of radiological techniques, correction of fluid and electrolyte imbalance, giving good antibiotics coverage for effective bacteriological control, gastrointestinal decompression, new surgical principles and improvement in field of anesthesia, all can contribute to lower the morbidity and mortality. Hence the purpose of this study is to evaluate the various acute small intestinal obstruction in adult patient.

Material and Methods

The cross-sectional study was conducted in the Department of Surgery for the duration of 12 months. Ethical approval letter was obtained from the ethical review committee. Total 100 patients age above 15 years were studied after taking informed consent from patient/relatives.

Inclusion criteria

- Diagnosed cases of intestinal obstruction with the help of X-ray and Ultrasonography.
- Adult patients (Age 15 years and above), regardless of gender.

Exclusion criteria

- Age below 15 years.
- Patient got expired within few hours after presentation.
- Patients with abdominal pain due to trauma were excluded from study.

The patient's particulars such as age, gender, pre-operative clinical examinations and investigations, history regarding previous surgeries, post-operative morbidity and mortality were noted from files. The diagnosis of intestinal obstruction was made on the basis of detailed history especially regarding cardinal features of intestinal obstruction like, abdominal distension, pain, vomiting, and absolute constipation, clinical findings, x-ray abdomen and ultra sound of the abdomen. Other investigations for fitness for anaesthesia, to exclude a dynamic cause and for the management of intestinal obstruction were carried out, i.e., complete blood picture, electrolytes, urea, creatinine, X ray chest and ECG. Immediately after the admission along with above procedure, resuscitation with IV fluids especially ringer lactate and normal saline infusion were started till the hydration and urine output become normal. Nasogastric decompression was carried out and antibiotic prophylaxis initiated. A close observation of all bedside parameters (like pulse rate, BP, RR, urine output, abdominal

girth, bowel sounds and tenderness and guarding) were done. Patients who showed a reduction in the abdominal distension and improvement in the general condition managed conservatively. Patients with clear-cut signs and symptoms of acute obstruction had been managed by appropriate surgical procedure after initial resuscitation. Operative information of every case was recorded on proforma. Frequency and pattern of different causes of small intestinal obstruction were recorded and analyzed.

The postoperative period had been monitored carefully and all the parameters were recorded hourly or fourth hourly basis depending on the patient's general condition and toxemia. Postoperatively Nasogastric tube aspiration, intravenous fluids and antibiotics were administered. Any complications were noted and treated accordingly. All the patients were called for regular follow up depending on their cause of small intestinal obstruction and surgery performed.

Statistical Analysis

The data were recorded, and descriptive analysis was made with SPSS v23 (IBM SPSS Statistics 2015). The data are defined in percent ratios.

Results

Table 1: Distribution of patients with respect to age group and gender

Age groups	Male	Female	Total
15-25 years	12 (12%)	7 (7%)	19 (19%)
26-40 years	16 (16%)	17 (17%)	33 (33%)
41-55 years	20 (20%)	6 (6%)	26 (26%)
56-70 years	8 (8%)	3 (3%)	11 (11%)
70 years and above	4 (4%)	7 (7%)	11 (11%)
Total	60	40	100 (100)

60 patients were male and 40 were females. All the patients were categorized in different age group, 19 patients belong to 15-25 years age group, 33 patients were in 26-40 years, 26 patients were in 41-55 years, 11 patients were in 56-70 years and remaining 11 were having age above 71 years.

Table 2: Sign and symptoms present in patients with intestinal obstruction

Signs and Symptoms	No. of patients	Percentage (%)
Pain abdomen	97	97
Vomiting	77	77
Tenderness	90	90
Absolute constipation	85	85
Abdominal distension	92	92
Rebound tenderness	52	52
Absent/decreased bowel sound	34	34
Increased bowel sound	65	65
Significant finding on PR	8	8
Swelling/ palpable mass	24	24

The cardinal signs and symptoms were present in almost all the patients. Abdominal pain was present in 97 patients, vomiting in 77 patients, tenderness in 90 patients, absolute constipation in 85 patients, abdominal distension in 92 patients, rebound tenderness in 52 patients, significant finding on per rectal examination in 8 patients, absent/decreased bowel sound in 34 patients, increased bowel sound in 65 patients and palpable mass and swelling was present in 24 patients.

Table 3: Causes of intestinal obstruction

Cause	Male	Female	Total
Adhesions	8	10	18
Hernias	11	9	20
Malignancy	5	5	10
Volvulus	3	2	5
Diverticulum	2	0	2
Stricture	4	2	6
Tuberculosis	8	2	10
Fecal impaction	1	2	3
Sup. Mesenteric art. syndrome	2	1	3
Intestinal perforations	10	2	12
Gangrenous ileum	3	1	4
Pelvic abscess	0	2	2
Paralytic ileus of unknown cause	3	2	5

Out of 100 patients, Adhesions were present in 18 patients, Hernias in 20 patients, Malignancy in 10 patients, intestinal volvulus in 5 patients, diverticulum in 2 patients, strictures in 6 patients, intestinal tuberculosis in 10 patients, fecal impaction in 3 patients and superior mesenteric artery syndrome in 3 patients. Remaining patients were having non-mechanical (adynamic) intestinal obstruction. Out of these patients, 4 patients were having gangrenous ileum, two female patients were having pelvic abscess and 12 patients were having intestinal obstruction due to unknown paralytic ileus cause.

Table 4: Post-operative complications

Complication	No. of patient	Percentage
Wound infection	16	16
Sepsis	3	3
Pneumonia	2	2
Anastomosis leak	2	2
Wound dehiscence	2	2
Fecal fistula	1	1

Some of the patients developed post-surgical complications including wound infection (16 patients), sepsis (3 patients), pneumonia (2 patients), anastomosis leak (2 patients), wound dehiscence (2 patients) and fecal fistula (1 patient).

Discussion

The causes of small bowel obstruction have changed dramatically since 1900s^[5]. Previously hernia was the most frequent cause of small bowel obstruction in developed countries. But later due to more advancement in meticulous hernia surgery and an increasing number of abdominal and pelvic surgeries, adhesions secondary to previous surgery are now most common (nearly 60%) cause of small bowel obstruction in developed countries. More advancement in minimal access surgeries may decrease the frequency of bowel obstruction secondary to adhesions^[7]. Malignancy is the second most common account for around 20% cases of small bowel obstruction mostly due to the metastatic lesion. Hernias are dropped to the third most common cause nearly 10%. Most commonly, these represent ventral or inguinal hernias. Internal hernias, usually related to prior abdominal surgery, can also result in small bowel obstruction.

60 patients were male and 40 were females. All the patients were categorized in different age group, 19 patients belong to 15-25 years age group, 33 patients were in 26-40 years, 26 patients were in 41-55 years, 11 patients were in 56-70 years and remaining 11 were having age above 71 years. In our study the most commonly effected age group was 26-40 years similar

results was shown in the studies by Singh H *et al.*^[12] and Cole GJ *et al.*^[13] the most commonly affected age group was 31 to 40 years. But in a study conducted by Adhikari S *et al.*^[14] most commonly affected age group was 41 to 50 years.

The cardinal signs and symptoms were present in almost all the patients. Abdominal pain was present in 97 patients, vomiting in 77 patients, tenderness in 90 patients, absolute constipation in 85 patients, abdominal distension in 92 patients, rebound tenderness in 52 patients, significant finding on per rectal examination in 8 patients, absent/decreased bowel sound in 34 patients, increased bowel sound in 65 patients and palpable mass and swelling was present in 24 patients. Similar findings were reported by a number of studies^[15, 16]. Out of 100 patients, Adhesions were present in 18 patients, Hernias in 20 patients, Malignancy in 10 patients, intestinal volvulus in 5 patients, diverticulum in 2 patients, strictures in 6 patients, intestinal tuberculosis in 10 patients, fecal impaction in 3 patients and superior mesenteric artery syndrome in 3 patients. Remaining patients were having non-mechanical (adynamic) intestinal obstruction. Out of these patients, 4 patients were having gangrenous ileum, two female patients were having pelvic abscess and 12 patients were having intestinal obstruction due to unknown paralytic ileus cause. The obstructed/strangulated hernias were found as the first common cause in the present study, while it was the second common cause in the previous study, which almost is analogous with the other studies conducted in the country^[17]. The frequency of abdominal tuberculosis as the cause of bowel obstruction in our region is quite high as compared to other studies^[18]. Some local studies done in Pakistan by Mehmood Z^[19], Zahra T^[20] also found that Tuberculosis is the most common cause of intestinal obstruction.

Some of the patients developed post-surgical complications including wound infection (16 patients), sepsis (3 patients), pneumonia (2 patients), anastomosis leak (2 patients), wound dehiscence (2 patients) and fecal fistula (1 patient).

Conclusion

The causes of intestinal obstruction are variable in different parts of the world. Adhesions are the most common cause of bowel obstruction. The treatment in each patient should be individualized. Atrial of conservative management should be planned in all cases before embarking to a surgical intervention except in patients where strangulation is suspected. Among non-mechanical (adynamic) causes, paralytic ileus due to intestinal perforation is common cause of intestinal obstruction in our study although, some patients can be treated conservatively, but an ample portion requires immediate surgical intervention. High mortality was observed in old age patients with late presentation.

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Author's Contribution

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Conflict of Interest

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