

CAUSES OF ACUTE INTESTINAL OBSTRUCTION PRESENTING TO SURGICAL
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ABSTRACT

Objective: To determine the etiological spectrum of acute intestinal obstruction in surgical emergency department of our hospital. **Methodology:** The study cross sectional study was conducted in department of surgery, Nishtar hospital, Multan. Duration of study was 6 months. Diagnosed cases (age above 15 years) of intestinal obstruction with the help of X-ray and Ultrasonography were included in the study. All the patients were selected by non-probability purposive sampling technique. All patients were initially assessed after resuscitation in emergency room. The decision, to operate or manage conservatively, was taken by a consultant. Emergency laparotomy was done and operative findings were recorded. **Results:** Total 130 patients were enrolled in the study .78 patients were male and 52 were female. 43 patients were in age group 26-40 years, 36 patients were in 41-55 years. The cardinal signs and symptoms were present in almost all the patients. Abdominal pain was present in 128 patients, vomiting in 102 patients, tenderness in 118 patients, absolute constipation in 112 patients and abdominal distension in 119 patients. Out of 130 patients 96 patients were having intestinal obstruction due to mechanical causes like Adhesions were present in 21 patients, Hernias in 26 patients, Malignancy in 10 patients and intestinal tuberculosis in 17 patients. Remaining 34 patients were having non-mechanical (adynamic) intestinal obstruction. Out of these 34 patients 18 patients developed paralytic ileus due to gastrointestinal tract perforations (ileum, duodenal, appendix etc.). 26 patients were managed conservatively and 104 patients underwent surgery. Most common post-surgical complication was wound infection and wound dehiscence. The outcome observed in patients were as, 106 patients improved, 12 patients developed morbid condition, 6 lost to follow up and 6 patient died.

KEYWORDS: Intestine, Mechanical (Dynamic), Intestinal obstruction, Hernias, Adhesions, Tuberculosis, Adynamic.

INTRODUCTION

Intestinal obstruction is one of the common surgical disorders in general surgery practice and most of the times it is a life threatening emergency. Intestinal obstruction can be categorized in to various types: It can be mechanical (dynamic) or non-mechanical (adynamic). Common causes of intestinal obstruction are obstructed hernias, post-operative adhesions, tumors, foreign bodies, inflammatory bowel disease, fecal impaction, volvulus and paralytic ileus etc.^[1] Tuberculosis in various forms remains a very important cause of morbidity and mortality in developing countries.^[2] Intestinal tuberculosis is one of the major causes of stricture formation in small intestine. Abdominal wall hernias are common in developing countries and are one of the major causes of intestinal obstruction in our region. In western countries where abdominal operations are common, the most frequent etiological factor is postoperative adhesions. These patients have a greater recurrence rate than those with other etiologies.^[3,4,5] Regional as

well as worldwide variations in the pattern of intestinal obstruction and changes in the disease pattern from time to time are well documented in the literature. Periodic studies are needed to evaluate the etiological factors as well as changing pattern of disease.^[6] Mechanical obstruction is the cause of about 10 to 20% of cases of severe abdominal pain of sudden onset requiring admission to hospital.^[7,8] Abdominal pain, vomiting, constipation, abdominal distension and failure to pass flatus are the cardinal features of intestinal obstruction. Very often, the decision about whether to operate on the patient or to continue with the non-operative management is a continuous challenge to surgeons all over the world. Patient with intestinal obstruction are often seriously ill and detailed history and thorough clinical examination, frequent assessment, monitoring of vital signs and clinical progress are required to diagnosis and plan treatment.^[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. The purpose of this study is to evaluate the various etiological factors of intestinal obstruction, clinical presentations of the disease, the demographic profile of patients and to evaluate the morbidity and mortality in patients presenting with intestinal obstruction in our tertiary care center.

METHODOLOGY

The study cross sectional study was conducted in department of surgery, Nishtar hospital, Multan. Duration of study was 6 months from December 2016 to April 2017. Ethical approval letter was obtained from the ethical review committee of Nishtar medical university, Multan. Total 130 patients age above 15 years were studied after taking informed consent from patient/relatives. Random sampling technique was used. Data was analyzed using SPSS version 20.0.

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 with in few hours after presentation.

Patients with abdominal pain due to trauma were excluded from study.

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 anesthesia, 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. Emergency Blood transfusion was given in required cases. 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 intestinal obstruction were recorded and analyzed. Histopathological examination of the specimen of resection/ biopsy was undertaken whenever necessary. 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 intestinal obstruction and surgery performed.

RESULTS

Total 130 patients were enrolled in the study with age 15 years and above. 78 patients were male and 52 were female with male to female ratio of 1.5:1. All the patients were categorized in different age group, 25 patients belong to 15-25 years age group, 43 patients were in 26-40 years, 36 patients were in 41-55 years, 13 patients were in 56-70 years and remaining 13 were having age above 71 years. The cardinal signs and symptoms were present in almost all the patients. Abdominal pain was present in 128 patients, vomiting in 102 patients, tenderness in 118 patients, absolute constipation in 112 patients, abdominal distension in 119 patients, rebound tenderness in 65 patients, shock in 19 patients, significant finding on per rectal examination in 10 patients, absent/decreased bowel sound in 40 patients, increased bowel sound in 86 patients and palpable mass and swelling was present in 30 patients. Out of 130 patients 96 patients were having intestinal obstruction due to mechanical causes like Adhesions were present in 21 patients, Hernias in 26 patients, Malignancy in 10 patients, intestinal volvulus in 7 patients, diverticulum in 2 patients, strictures in 7 patients, intestinal tuberculosis in 17 patients, fecal impaction in 3 patients and superior mesenteric artery syndrome in 3 patients. Remaining 34 patients were having non-mechanical (adynamic) intestinal obstruction. Out of these 34 patients 18 patients developed paralytic ileus due to gastrointestinal tract perforations (ileum, duodenal, appendix etc.), 5 patients were having gangrenous ileum, two female patients were having pelvic abscess and 9 patients were having intestinal obstruction due to unknown paralytic ileus cause. Out of 130 patients 26 were managed conservatively and 104 patients underwent surgery. Some of the patients developed post-surgical complications including wound infection (20 patients), sepsis (4 patients), pneumonia (2 patients), anastomosis leak (2 patients), wound dehiscence (3 patients) and fecal fistula (1 patient). The outcome observed in patients were as, 106 patients

improved, 12 patients developed morbid condition, 6 lost to follow up and 6 patient died.

| Signs and Symptoms | No. of patients | Percentage (%) |
|------------------------------|-----------------|----------------|
| Pain abdomen | 128 | 98.4 |
| Vomiting | 102 | 78.4 |
| Tenderness | 118 | 90.7 |
| Absolute constipation | 112 | 86.1 |
| Abdominal distension | 119 | 91.5 |
| Rebound tenderness | 65 | 50 |
| Absent/decreased bowel sound | 40 | 33.8 |
| Increased bowel sound | 86 | 66.1 |
| Significant finding on PR | 10 | 7.6 |
| Swelling/ palpable mass | 30 | 23 |

| Cause | Male | Female | Total |
|----------------------------------|------|--------|-------|
| Adhesions | 10 | 11 | 21 |
| Hernias | 17 | 9 | 26 |
| Malignancy | 6 | 4 | 10 |
| Volvulus | 4 | 3 | 7 |
| Diverticulum | 2 | 0 | 2 |
| Stricture | 5 | 2 | 7 |
| Tuberculosis | 11 | 6 | 17 |
| Fecal impaction | 1 | 2 | 3 |
| Sup. Mesenteric art. syndrome | 2 | 1 | 3 |
| Intestinal perforations | 12 | 6 | 18 |
| Gangrenous ileum | 4 | 1 | 5 |
| Pelvic abscess | 0 | 2 | 2 |
| Paralytic ileus of unknown cause | 4 | 5 | 9 |

| Age groups | Male | Female | Total |
|--------------------|------------|------------|------------|
| 15-25 years | 16 (12.3%) | 9 (6.9%) | 25 (19.2%) |
| 26-40 years | 20 (15.3%) | 23 (17.6%) | 43 (33%) |
| 41-55 years | 26 (20%) | 10 (7.6%) | 36 (27%) |
| 56-70 years | 10 (7.6%) | 3 (2.3%) | 13 (10%) |
| 70 years and above | 6 (4.6%) | 7 (5.3%) | 13 (10%) |

| Complication | No. of patient | Percentage |
|------------------|----------------|------------|
| Wound infection | 20 | 15.3% |
| Sepsis | 4 | 3% |
| Pneumonia | 2 | 1.5% |
| Anastomosis leak | 2 | 1.5% |
| Wound dehiscence | 3 | 2.3% |
| Fecal fistula | 1 | 0.7% |

DISCUSSION

Bowel obstruction has been documented throughout history with cases detailed in the Ebers Papyrus of 1550 BC and by Hippocrates.^[12,13] Small bowel obstructions are most often due to adhesions and hernias while large bowel obstructions are most often due to tumors and volvulus.^[14] The mean age of the patient in our study was 48.2±6.3 years. Compare to

the other studies like, Markogiannakis H *et al.*^[15] reported mean age of the patients as 63.8±1.3 years while mean age of patients was 25 years in a study conducted by Drozd W *et al.*^[16] These gross discrepancies may be due to different disease patterns in different geographic regions of the world. 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.*^[17] and Cole GJ *et al.*^[18] the most commonly affected age group was 31 to 40 years. But in a study conducted by Adhikari S *et al.*^[19] most commonly affected age group was 41 to 50 years.

In our study the male cases were more as compared to female cases with ratio 1.5:1, showing that in our set up there is higher incidence of intestinal obstruction among males. Male predominance in this study may be because a large number of our patients had obstructed or strangulated inguinal hernia, and in our country males as compared to females.

Commonest symptom in our study was abdominal pain followed by abdominal distention, absolute constipation and with vomiting being the last symptoms to appear. Increased bowel sound, tachycardia and abdominal tenderness were the common signs. Similar findings were reported by a number of studies.^[20,21]

In the current study the main cause of mechanical intestinal obstruction was hernias followed by adhesions and intestinal tuberculosis as the second most common cause.^[22] 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.^[23]

According to a study by McEntee *et al.*, adhesions formed the most important cause of intestinal obstruction in western population. Ch AK *et al.* reported that adhesion is the most common cause of intestinal obstruction followed by tuberculosis and malignancies. Qureshi MI *et al.* observed almost similar findings in their study where postoperative adhesions (38%) was the most common cause for mechanical small bowel obstruction.

The frequency of abdominal tuberculosis as the cause of bowel obstruction in our region is quite high as compared to other studies.^[24] Some local studies done in Pakistan by Mehmood Z^[25], Zahra T^[26] also found that Tuberculosis is the most common cause of intestinal obstruction.

Malignancy was encountered in 10 patients in our study, while in Malaysia malignancy was found to be a common cause of bowel obstruction.^[27] Addis Ababa^[28] and Kigali University teaching hospital of Rwanda^[29] which had shown that sigmoid volvulus was the leading cause of intestinal obstruction.

The percentage of adynamic causes of intestinal obstruction was also very high in our study mainly due to intestinal perforation, most of these cases were managed conservatively.

The most frequent postoperative complication was wound infection 15.3% followed by sepsis 3% and wound dehiscence 3%.

In this current study 80% of the patients undergone surgical intervention. Regarding outcome 81.5% patient improved and mortality rate was 4.6%

The limitations of our study included the fact that the study was carried out in a tertiary care center, so it reflected a population in whom the treatment could not be done in a primary or secondary healthcare facility. Hence it cannot be taken as representative enough of the entire community.

CONCLUSION

We concluded that Hernias are the most common cause of mechanical obstruction followed by Adhesions and Tuberculosis. Among non-mechanical (adynamic) causes, paralytic ileus due to intestinal perforation is common cause of intestinal obstruction in our set up. 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.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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