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Original Research Article

Study of the Various Etiologies of Acute Small Intestinal Obstruction

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Abstract

Aim: To find out the common causes of the acute small intestinal obstruction in adult patients.

Methodology: An observational study was conducted at Department of General Surgery, Shree Narayan medical institute and Hospital, Saharsa, Bihar, India for one year. Patients admitted for small intestinal obstruction were analyzed. The patients who were above 14 years of age and operated for mechanical obstruction of the small bowel and whose complete medical record was available were included in the 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 etiologies for small bowel obstruction were identified by analysis of radiological and intra-operative findings obtaining from patients records.

Results: Total 95 operated cases of small intestinal obstruction were recorded in the study. Ages of patients ranged from 18 years the youngest one to 84 years the oldest with a Mean age of 48.35±31.84 years. Out of 95 cases, 54 (56.8%) were male, and 41 (43.2%) were female. Out of 95 patients, 29 (30.5%) were suffered from abdominal tuberculosis. Postoperative adhesions were found in 27 (28.4%) patients. 17 (17.9%) patients were noted with various form obstructed hernias like an inguinal, femoral, ventral hernia. In 11 (11.6%) patient's obstructions found due to malignancy. Mesenteric ischemia found in 3 (3.2%) patients. Intussusception found in 2 (2.1%) cases and 2 (2.1%) cases of Meckel's diverticulum were noted. Post radiation strictures and Gossypiboma were observed with the same frequency of 1 (1.05%) patient of both.

Conclusion: Our study presented that the most common etiological reason for small intestinal obstruction is abdominal tuberculosis and adhesions, respectively. Etiology of small intestinal obstruction has changing pattern from area to area; more studies are needed over small geographical areas to know the pattern of etiologies of small bowel obstruction.

Keywords: Etiology, Small Intestinal, Obstruction.

Introduction

Obstruction to the bowel is a commonly encountered problem in gastrointestinal surgery all over the world. [1-3] It is the most frequent disorder affecting the small

bowel and could complicate any form of abdominal procedure including laparoscopic approach. [2,4] Clinically, intestinal obstruction is classified as small bowel and large bowel obstruction. Small bowel obstruction is partial or complete interference with the distal passage of the contents in the small intestine. It is one of the more common acute abdominal emergencies and is associated with significant mortality and morbidity, especially if it progresses to bowel ischemia [5]. Large bowel becomes obstructed 3-4 times less frequently than the small bowel. The main causes of large bowel obstruction are cancer (primary or recurrent) and sigmoid volvulus, the prevalence being subject to a wide geographical variation [6].

Intestinal obstruction remains one of the most common acute abdominal problems faced by general surgeons in emergency and usually caused by hernia, malignancy, adhesions and strictures. The causes of small bowel obstruction have changed dramatically since 1900s [7]. The resultant pattern of intestinal obstruction is dependent upon several factors including environmental, cultural, dietary, demographic factors, variations in the level of sophistication of the local medical services as well as individuals' anatomic differences [8].

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. Approximately 5% of external hernias will require an emergency operation if they are not repaired electively [9]. The study on bowel obstruction from the Mayo Clinic showed that 50% of patients undergoing an operation for malignant bowel obstruction died within six months [10].

A number of studies conducted in our part of the world had found obstructed/ - strangulated hernias to be the most common underlying cause of acute intestinal obstruction [11,12]. In the last century, significant changes in etiological factors of intestinal obstruction have occurred from changes in epidemiologic and environment factors, health services provision and education. Considering the etiological causes and controlling the risk factors for bowel obstruction is important in decreasing morbidity and mortality [13]. Emphasis placed on prognostic indicators for survival is important for therapeutic decisions making and maximizing outcomes.

Materials and Methods

An observational study was conducted at Department of general surgery at Shree Narayan medical institute and Hospital, Saharsa, Bihar, India for one year. Patients admitted for small intestinal obstruction were analyzed.

Methodology

The patients who were above 14 years of age and operated for mechanical obstruction of the small bowel and whose complete medical record was available were included in the 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 etiologies for small bowel obstruction were identified by analysis of radiological and intra-operative findings obtaining from patients records.

Results

Total 95 operated cases of small intestinal obstruction were recorded in the study. Ages of patients ranged from 18 years the youngest one to 84 years the oldest with a Mean age of 48.35±31.84 years. Out of 95 cases, 54 (56.8%) were male, and 41 (43.2%) were female.

Table 1: Demographic details of the patients

Variables		Number	%
Age	≤ 30 years	24	25.3
	31-50 years	44	46.3
	51-70 years	19	20.0
	>70 years	08	8.4
Gender	Male	54	56.8
	Female	41	43.2

Out of 95 patients, 29 (30.5%) were suffered from abdominal tuberculosis. Postoperative adhesions were found in 27 (28.4%) patients. 17 (17.9%) patients were noted with various form obstructed hernias like an inguinal, femoral, ventral hernia. In 11 (11.6%) patients obstructions found due to malignancy. Mesenteric ischemia found in 3 (3.2%) patients. Intussusception found in 2 (2.1%) cases and 2 (2.1%) cases of Meckel's diverticulum were noted. Post radiation strictures and Gossypiboma were observed with the same frequency of 1 (1.05%) patient of both.

Table 2: Causes of small bowel obstruction

Causes	Number	%
Abdominal tuberculosis	29	30.5
Post-operative adhesions	27	28.4
Obstructive hernias	17	17.9
Malignancy	11	11.6
Mesenteric Ischemia	3	3.2
Intussusception	2	2.1
Meckel's diverticulum	2	2.1
Gossypiboma	1	1.05
Post Radiation Strictures	1	1.05
Other Misc. causes	2	2.1

Discussion

Intestinal obstruction is a common and potentially dangerous surgical emergency with high morbidity and mortality if managed inappropriately. In the studies conducted by Adhikari S et al. [14] most commonly affected age group was 41 to 50 years, also similar to the current study. In the current study, the leading cause of small intestinal obstruction was abdominal tuberculosis, accounting in 29 out of 95 patients. Many studies from developing countries have supporting tuberculosis as the commonest cause is consistent with our research.

Three different local studies have revealed tuberculosis as the commonest cause [15-17]. Zahid et al in their study of 357 patients found tuberculosis as the leading cause, accounting for 38.13% of all the cases followed by obstructed /strangulated hernia in 26.84% of patients [15]. Ismail et al in their study of 75 cases, found tuberculosis in 36% patients, as the main cause of dynamic intestinal obstruction followed by carcinoma of large gut and postoperative adhesions [16]. In a similar study of 116 cases, Naseer et al also found abdominal tuberculosis as the commonest cause of dynamic intestinal obstruction followed by obstructed /strangulated external hernia in 27.5% of patients [17]. This data showing abdominal tuberculosis as a leading cause of intestinal obstruction is consistent with our study.

In our study, Post-operative adhesions was 2nd most common cause of small intestinal

obstruction occurring in 28.27% patients whereas obstructive hernias were at 3rd position with 17.80% patients. Small bowel malignancy was responsible for 12.04% of patient stands at 4th palace. This is in contrary to most of the studies in developing countries where strangulated herniae are the leading cause of intestinal obstruction[18, 19] while in developed countries, and even developed region of developing countries, postoperative adhesions and malignant tumours are the main causes[20, 21]. The common causes of adhesive small bowel obstruction are previous appendectomy, gynaecological surgery and operations for colorectal cancers. Adhesions are the consequence of injury which may be traumatic, thermal, ischaemic, inflammatory or due to foreign body [22]. A study [20] from Chandigarh India (consider as a developed region) has described adhesions and hernias to be the most common and second most common cause of intestinal obstruction respectively. According to a study by McEntee et al., adhesions formed the most important cause of intestinal obstruction in western population [21].

Optimal treatment of bowel obstruction depends on an expeditious and precise diagnosis based largely on its clinical features. Abdominal pain followed by vomiting, abdominal distension, constipation or absence of flatus were the most common mode of presentation in our patients in accordance with literature [23]. A thorough consideration of the sequence of evolution of the clinical symptoms is helpful in determining the level of obstruction, prognosticating outcome and provides important therapeutic guides. Early onset bilious vomiting, frequent colicky abdominal pain, vigorous peristalsis and less abdominal distension are more prominent in proximal obstruction; resulting in rapid fluid and electrolytes derangements that warrants a more aggressive resuscitation [23-25].

Conclusion

Our study presented that the most common etiological reason for small intestinal obstruction is abdominal tuberculosis and adhesions, respectively. Etiology of small intestinal obstruction has changing pattern from area to area, more studies are needed over small geographical areas to know the pattern of etiologies of small bowel obstruction.

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