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Clinicopathological study of acute small bowel obstruction & its management at tertiary care hospital

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Abstract

Introduction: Intestinal obstruction is one of the most common surgical emergencies, for which the therapeutic strategy has progressed through several evolution. The aim was to study the various etiologies, spectrum of clinical features, factors affecting type of management- conservative or operative, various surgical procedures and its outcome in relation to etiological factors in patients of intestinal obstruction.

Materials & Methods: It is prospective study including 50 patients fulfilling the inclusion criteria were part of this study conducted from 6-12-2018 to 25-12-2020, with a provisional diagnosis of intestinal Obstruction carried out in our Medical College, India.

Results: The patients were mostly males and from age group 30 -45 years and least were from 70-85 years. The most common clinical symptom was abdominal pain and the sign was tenderness, least common were irreducible hernia and mass per abdomen. Commonest etiology was adhesion and least was worm infestation. Most patients were treated by operative procedure in comparison to conservative management, commonest procedure done was laparotomy with resection and anastomosis and hernioplasty was least common. The histopathology study of resected specimens reveals inflammation as the commonest and the malignancy as the least one. The mortality was highest in patients of adhesions and the least in patients of obstructed hernia. Discharge rates were maximum in patients of adhesion and minimum in patients of volvulus.

Conclusions: In our study it had been observed that early diagnosis, adequate preoperative hydration, prompt investigations and early operative intervention improves survival in patients of intestinal obstruction. If preoperative preparation is improved and anesthetic management is more skillful, the mortality from abdominal exploration should approach to minimum.

Keywords: Acute intestinal obstruction, adhesions, etiology, obstructed/strangulated hernias

Introduction

Obstruction to the bowel is a commonly encountered problem in gastrointestinal surgery all over the world. It is the most frequent disorder affecting the small bowel and could complicate any form of abdominal procedure including laparoscopic approach. Despite advances in surgery, bowel obstruction remains a difficult problem with significant morbidity and mortality due to disrupted gastrointestinal flow. Consequently, Intestinal obstruction is associated with considerable clinical burdens, major financial expenditure, frequent emergency room visits and economic loss from time spent away from duties.

Intestinal obstruction is a symptom complex of a disease with diverse aetiologies of wide geographical variations worldwide. 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. 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. Emphasis placed on prognostic indicators for survival is important for therapeutic decisions making and maximizing outcomes. This study therefore, was embarked upon to determine the aetiology, clinical course and factors predictive of outcome of intestinal obstruction among the adult population.

Interference in the passage of food, liquids and contents of the intestine either due to mechanical or neurological cause".

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It is predisposed by various underlying conditions which are difficult to define preoperatively. There are various etiologies for acute intestinal obstruction from more common causes like adhesions, hernia, malignancy to uncommon conditions like intussusception. Though the classical presentation is pain abdomen, vomiting, constipation and distension of abdomen, it needs a complete understanding of surgical anatomy, pathophysiology, symptoms and signs of obstruction and necessary investigations for diagnosis. In this study analysis of various causes, anatomical and pathological nature, mode of presentation, age factors, investigation modalities, and surgical management, various complications, mortality and outcomes have been discussed. Obstruction may occur in the small bowel (SBO) or large bowel (LBO). SBO is mainly of two types, Mechanical and functional obstruction. Mechanical obstruction means that luminal contents cannot pass through the gut tube because the lumen is physically blocked or obstructed, whereas functional obstruction means that luminal contents fail to pass because of disturbances in gut motility that prevent coordinated transit from one region of the gut to the next. This form is commonly referred to as ileus or pseudo-obstruction. LBO can result from either mechanical interruption of the flow of intestinal contents or by the dilation of the colon in the absence of an anatomic lesion. Intussusception is a unique type of obstruction that results from invagination of a segment of bowel into another. Volvulus (an axial twist of the gastrointestinal tract around its mesentery), Gallstone ileus (mechanical bowel obstruction), Adhesions (postoperative or postinflammatory), hernias, worm obstruction due to *Ascaris lumbricoides* are frequent causes of intestinal obstruction. Sigmoid volvulus, caecal volvulus, congenital cysts (e.g enterogenous cyst) and tumors (e.g. non-Hodgkin lymphoma) are also potential causes of this disorder. Symptoms of intestinal obstruction includes abdominal pain (colicky), vomiting, abdominal distension and obstipation (failure to pass flatus and faeces). Visible peristalsis may be seen in thin patients while in others distention may be prominent. Complete obstruction typically is treated with immediate surgery, while partial obstruction seldom requires surgery. Patients with partial bowel obstruction may be treated conservatively with resuscitation and tube decompression alone. Many Indian studies demonstrated that the pattern of intestinal obstruction differs from the Western world with obstructed hernias being the most important cause. However, little data is available from the Central part of the India especially from the rural population.

Materials and Methods

A prospective study of 50 patients, presenting with acute intestinal obstruction, admitted and treated at a teaching hospital over a period of 2 years from 6-12-2018 to 25-12-2020, was undertaken. All patients with radiological and clinical evidence of acute bowel obstruction admitted and treated in a surgical unit were included in this study regardless of the gender of the patients. However, patients below the age of 10 years and those with incarcerated and irreducible hernia and paralytic ileus were excluded from the study. All patients were admitted through casualty department and were received by two of the co-authors in the ward. Upon arrival of the patients in the ward, an immediate fluid and electrolyte resuscitation was started on every patient, and necessary investigations were done before surgery. Patients with previous laparotomy were initially put on conservative management comprising of nasogastric decompression, fluid and electrolyte correction by intravenous route and broad-spectrum antibiotics. Failure of relief of obstruction on this conservative treatment for more than 48 hours was followed by laparotomy. Patients with clinical

suspicion and previous history of tuberculosis were also initially kept on conservative regime. The data collection was started by two of the co-authors immediately upon arrival of the patient in the ward.

The variables studied included demographic details, time between onset of symptoms and arrival in ward, symptoms and signs, imaging studies, initial resuscitation, type of treatment offered, operative findings, cause of obstruction and eventual outcome of the treatment offered. The data were collected on a pro forma sheet of individual patient and statistically analyzed using Statistical package for social sciences (SPSS, version 14.0; Chicago, IL, USA).

Results

In the present study the majority of patients belonged to 30-45 years of age, followed by 21-30 years. The mean age of patients was 38 years.

Table 1: Demographic study

Patients & Parameters	Number of patients	Percentage
Age in years		
< or equal to 20	2	5
21-30	12	30
31-40	14	35
41-50	10	
>50	2	5

Table 2: Sex Ratio

Males constituted 80% & females 20%

Males	32	80%
Females	8	20%
Total	40	100%

Table 3: Etiology of intestinal obstruction

Age groups	Cause	Frequency	%
≤ 20	Intussusception	1	2.5
21-30	Adhesions & Bands	19	47.5
31-50	Stricture	5	12.5
	Tuberculosis	5	12.5
	Obstructed hernia	2	5
>50	Volvulus	3	7.5
	Carcinoma Colon	3	7.5
	Foreign body	2	5

Table 4: Surgical procedures performed, 37 patients

Operative procedure performed		
Resection and anastomosis	18	48.65
Adhesiolysis and release of bands	15	40.54
Resection with stoma	2	5.4
Foreign body removal with primary repair	2	5.4

Discussion

A total 50 patients with a mean age of 38 years and a range of 13-85 presented with classical acute bowel obstruction during a period of two years and were included in this study. Males constituted 80% of the study population; and females, 20%. Site of obstruction was found to be in the small bowel in a vast majority (84%) of the study population; while in (16%) patients, the site of obstruction was in the large bowel. The most common features on presentation included distension of the abdomen (87%), vomiting (73%), absolute constipation (88%), dehydration (69%) and pain in abdomen (74%). In majority of the patients, there was a substantial delay in admission to the hospital from the time of development of the symptoms. Preliminary investigations included complete blood picture, plain x-ray abdomen (erect and supine films), ultrasound of

abdomen, serum electrolytes and urea. There were multiple air-fluid levels on plain x-ray films in 87% of the patients. We found concomitant pulmonary tuberculosis in 1 patient who presented with acute intestinal obstruction due to abdominal tuberculosis. Patients with adhesive obstruction and suspected abdominal tuberculosis were given a trial of conservative treatment for 48 to 72 hours. Of these, 78% responded with complete recovery, but the remaining 32% needed exploration due to worsening condition. Overall 34 patients were operated, and the various underlying causes of obstruction discovered in relation to the site of obstruction. There was a surprisingly high proportion of adhesive obstruction followed by tuberculosis of abdomen. This is contrary to the results obtained a couple of decades back in the same setting, when obstructed hernias were the most common cause of acute bowel obstruction. Depending upon the underlying cause of the obstruction, various treatment modalities were adopted, ranging from conservative measures to resuscitation followed by laparotomy and resection anastomosis wherever indicated. Of the total number of patients, 1 recovered completely while 1 patients developed fecal fistula, 2 patients developed wound infection and 1 patients developed wound dehiscence. There was an overall mortality of 3.2%. Mortality was high in patients who were brought too late to our hospital after the onset of the symptoms.

Conclusion

In our study it had been observed that early diagnosis, adequate preoperative hydration, prompt investigations and early operative intervention improves survival in patients of intestinal obstruction. If preoperative preparation is improved and anesthetic management is more skillful, the mortality from abdominal exploration should approach to minimum. Abdominal pain and distention of the abdomen are the most common symptoms and physical findings in patients presenting with acute mechanical small bowel obstruction (SBO). Worm (ascariidial) obstruction is the most common cause of obstruction followed by postoperative adhesions. Although all patients were managed conservatively to start with, the operative rate in our series remained very high because it is very difficult to distinguish simple from strangulation obstruction on clinical, biochemical and/or radiological grounds with certainty. Majority of bowel obstructions occurred from benign lesions of adhesions, hernia and volvulus; however, neoplasms have replaced volvulus as the leading cause of large bowel obstruction. Prognosis with adverse outcome is associated with the presence of strangulation, shock, delayed presentation and loop obstruction. Considering the serious impact of intestinal obstruction on the quality and quantity of individual's life, instituting measures against adhesion formation, elective hernia repair, prompt screening and cancer treatment are critical to reducing the morbidity and mortality of bowel obstruction.

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