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Research Article

Intestinal Obstruction in Adult Saudi Arabian Population: A Review of 754 Patients

Abdulrahman Saleh Al-Mulhim
Associate Professor, Department of Surgery, Medical College, King Faisal University, Hofuf, P.O. Box 1164, Al-Hassa 31982, Kingdom of Saudi Arabia

***Corresponding author**
Dr. Abdulrahman Saleh Al-Mulhim
Email: abdu4949@yahoo.com

Abstract: The etiology of acute intestinal obstruction varies between countries. The objective was to study the causes of intestinal obstruction and the management outcomes in local set up in a secondary care hospital in Eastern Saudi Arabia. This is a descriptive retrospective study containing analysis data in a 20-year period between years 1990 and 2010 of patients admitted in general surgery ward, with the diagnosis of intestinal obstruction. Of the 754 consecutive patients included in the study, 498 (66%) presented with small bowel and 256 (34%) with large bowel obstruction. The study group was composed of 54.4% males and the age ranged from 18 to 85 years with the mean age of 35.8. The mean duration of symptoms was 2.4 days, ranging from 4 hours to 9 days. Absence of passage of flatus (92%) and/or feces (84%), abdominal pain (65.7%) and abdominal distension (73.6%) were the most common symptoms and physical finding, respectively. The main causes of obstructive were adhesions (59.6%), large bowel cancer (22.6%), incarcerated hernias (8.3%), and fecal impaction (3.6%), small bowel tumors (2.6%), pseudo-obstruction (1.8%), intussusceptions (1.3%), and others (0.2%). Sixty-eight percent were treated conservatively and (32%) were operated. The morbidity was 17.25% while mortality was 2.5%. In conclusion, this is a study of the surgical experience of intestinal obstruction in Saudi Arabia over long period (20 years). The causes and pattern of intestinal obstruction seen is more similar to those reported from Asia.
Keywords: intestinal obstruction, abdominal pain, hernias

INTRODUCTION:

Intestinal Obstruction is a serious surgical Emergency [1-3]. The causes of bowel obstruction vary in different countries, and various reports have indicated that the incidence for each cause may have changed over the years in the same country [4, 5].

In Saudi Arabia , only few reports address this condition [6, 7], We therefore , conducted this study to identify and analyze the clinical presentation of patients with bowel obstruction in local set up , the etiology of obstruction as well as management and outcome of these patients.

METHODOLOGY

From January years 1990 and December 2010 (a period of 20 years) , all patients (754) admitted to the general surgery ward of King Fahad Hospital ,Saudi Arabia, with a clinical diagnosis of intestinal obstruction, were included in the study. King Fahad Hospital serves as the university teaching hospital to the medical school in King Faisal University, and it is the main referral hospital in alahsa region of Saudi Arabia.

The study was approved by the hospital ethics committee.

The following information was extracted: age, gender, time between the onset of symptoms and arrival at the emergency department, vital signs, history of previous abdominal surgery, symptoms (presentation with abdominal pain, vomiting and abdominal distension, failure to pass flatus or stool), presence of dilated bowel loops with multiple air/fluid levels on supine and erect abdominal radiographs, and physical examination findings. Data collection also include, time interval from the initial operation to the development of intestinal obstruction, type of initial operation, type of treatment, and outcome.

A retrospective analysis of the data obtained from clinical notes, laboratory results, radiology reports and operation notes was carried out.

RESULTS

During the twenty years study period (1990 -2010), 754 consecutive adult patients with bowel obstruction were Admitted and composed our study group.

Mean age of the patients was 35.8± 3.5 years while male comprised 54.4% of the group. The majority of the patients (66%) presented with small bowel obstruction.

Demographic, clinical, and laboratory data of the study group on admission to surgery Department are presented in Table 1.

Table 1: Demographic, clinical data of the total study group

Value	1990-1995	1995-2000	2000-2005	2005-2010	Study period 1990-2010
	Number of cases (%)	Number of cases (%)	Number of cases (%)	Number of cases (%)	Number of cases (%)
Age range years (mean)	25-56 years (32.3)	21-75 years (37.1)	20-85 years (38.7)	20-54 years (31.6)	18 - 85 years (35.8)
Sex % (Male/Female)	57.2- 42.8%	50.4- 49.6%	56.7- 43.3%	51.1- 48.9%	54.4- 45.6%
Absence of passage of flatus	91%	95%	94%	88%	92%
Absence of passage of feces	86%	85%	82%	83%	84%
Nausea	75%	80%	73%	72%	75%
Vomiting	71%	79%	73%	73%	74%
abdominal pain	92%	90%	92%	94%	92%
Abdominal distension	71%	72%	75%	74%	73 %
% of patients with Leukocytosis (> 10,000/mm3)	56%	51%	53%	50%	52 %
% of positive x-ray finding	93%	96%	95%	96%	95%
Time between onset of symptoms and arrival (mean)	3.1	2.8	2.5	2.2	2.4 days
Hospital stay in conservative group (days) (mean)	7	4	3	2	4
Hospital stay in operative group (days) (mean)	10	8	6	6	8
Morbidity (%)	23.2	21.7	13.1	11	17.25%
Mortality (%)	3.1	2.7	2.3	2.1	2.5%

The mean duration of symptoms was 2.4 days, ranging from 4 hours to 9 days. But most patients (79.8%) presented within 48 hours of the onset of symptoms, while (6%) patients delayed for more than a week.

Previous admissions for intestinal obstruction were documented in (21.3 %) patients, and for the rest (78.7%) this was the first episode.

Absence of passage of flatus (92%) and/or feces (84%) was the most common presenting symptoms and abdominal distension (73.6%) was the most frequent physical finding on clinical examination.

Half the patients (47.6%) had a normal leukocyte count, while (52.4%) had an elevated count.

Plain radiology was the primary imaging modality used, air fluid levels were seen in (82.3%) patients, and (78.9%) patients had dilated loops of small intestine .Full colonoscopy and Contrast enhanced CT was ordered if needed. The etiology of obstruction is shown in Table 2.

Table 2: The etiology of obstruction

Diagnosis	1990-1995	1995-2000	2000-2005	2005-2010	1990-2010
Adhesions	57.6	56.9	61.8	62.2	59.6%
Large bowel tumors	20.3	21.5	23.7	24.9	22.6%
Small bowel tumor	1.8	2.6	2.8	2.9	2.6%,
Strangulate hernia	12.6	11.6	5.4	3.7	8.3%
Fecal Impaction	3.8	3.9	3.3	3.4	3.6%
intussusceptions	1.2	1.4	1.3	1.3	1.3%
Pseudo-obstruction	1.9	2	1.7	1.6	1.8%

In the total study group of patients with small or large bowel obstruction, the main causes of obstructive were adhesions (59.6%), large bowel cancer (22.6%), incarcerated hernias (8.3%), and fecal impaction (3.6%), small bowel tumors (2.6%), pseudo-obstruction (1.8%), intussusceptions (1.3%), and others (0.2%) were the most frequent causes of obstruction.

Adhesions, incarcerated hernias, large bowel cancer, and small bowel tumors were the most frequent causes of obstruction in small bowel obstruction group (73.8%, 18.5%, 2.6%, and 2.6%, respectively).

Large bowel cancer, adhesions, retroperitoneal tumors, and hernias were the most common causes in large Intestinal obstruction group (47.4%, 36.3%, 5.5%, and 2.7%, respectively).

Of the 147 patients with obstruction due to a large bowel cancer, 91 patients (62%) was Sigmoid cancer, whereas twenty five (17%) patients had an ascending colon cancer, fourteen (9.5%) had a transverse colon cancer, eleven (7.5%) had a descending colon cancer, and six (4%) had a rectum cancer.

Most patients with adhesive obstruction [59% of the study group (445 patients)] had previously undergone abdominal operations; 347 patients (78%) had undergone one operation, 76 patients (17%) had two and 14 (3%) had three operations and (2%) had no surgery.

In terms of the types of previous operations, (47%) had undergone an appendectomy, (21 %) abdominal wall hernia repair, (13%) had open Cholecystectomy, (9%) had different bowel surgeries , (6%) had gynecological surgical procedures, and (4%) had other surgical procedures.

The types of incarcerated hernias in 63 patients, 34 (54%) presented with an umbilical hernia, 14 (22%) with an incisional hernia, 11 patients (17%) with an inguinal hernia, and 4 (7%) with a femoral hernia.

Data regarding management and outcome of the patients are described in Table 3.

Sixty-eight percent (513 patients) of the total study group were safely and effectively treated conservatively. Seventy- nine percent (79%) of patients with small bowel obstruction treated non-operatively, while only (35%) in the large intestinal obstruction group.

DISCUSSION

Intestinal obstruction is a common surgical emergency. It has a number of underlying causes, which should be diagnosed urgently and promptly treated [1, 8]. The spectrum of etiology of intestinal obstruction varies demographically in many developed and developing countries [9-11]. The clinical picture, radiological finding are variable, and appropriate management occasionally difficult even in experienced hands.

Early and correct diagnosis of this condition and its etiology is critical, and proper treatment is of extreme importance [12, 13].

Our male to female ratio was 1:1, it is nearly same as reported in local literature [6, 7] whereas the incidence in male is much higher in other countries [14-19].

In our study 13% of patients below 20 years age, 32% of patients belonged to 20 to 40-year age group followed by 55% of patients in above 40-year age group. The mean age of the patients was 35.8± 3.5 years, which is similar to other reports [20].

The diagnosis of intestinal obstruction is based on the four classic features of pain, vomiting, abdominal distension and absolute constipation. The extent of each features differ according to the cause and site of intestinal obstruction.

In our study, absence of passage of flatus (92%) and/or feces (84%) was the most common presenting symptoms and abdominal distension (73.6%) was the most frequent physical finding on clinical examination. These findings are consistent with recent report from Saudi Arabia [21], and other reports from Malaysia [16], Nigeria [18], Turkey [19], and Pakistan [22].

In the current study the main cause of intestinal obstruction was adhesions followed by incarcerated hernias as the second most common cause. Adhesions is the most common cause in the Western world [22], and authors from developing countries observed almost similar findings in their study [23-25].

In our study, 498 (66%) presented with small bowel and 256 (34%) with large bowel obstruction. In the other studies, it is reported that the obstruction secondary to small bowel disease are responsible for the 67.8 - 80% of the total obstruction cases, while large bowel causes form only part of 20 - 30% [26-28].

The causes and patterns of intestinal obstruction show variation globally, as well as in one country over a period of time. This observation noticed in our study, we found the obstructed hernia was common cause in early phase of the study (1990), than at the end (2010). Adhesions become more frequent in the late period of study with the increased rates of elective abdominal surgeries.

Most patients with adhesive obstruction had history of abdominal operations; the majority had undergone

one operation (78%), (17%) had two, (3%) had three operations and (2%) had no surgery. Kapan *et al*. report similar result recently [29].

In terms of the types of previous operations, (47%) had undergone an appendectomy, (21 %) abdominal wall hernia repair, (13%) had open Cholecystectomy, (9%) had different bowel surgeries , (6%) had gynecological surgical procedures, and (4%) had other surgical procedures.

The complication rate in the patients with intestinal obstruction varies between 15 - 54 % [26, 30, 31]. In our study, advanced age, co-morbidity, admission time to the hospital and surgical procedures were risk factors on morbidity and mortality. There are similar results reported by Fevang *et al*. [27], and Halis *et al*. [33].

Appropriate treatment for bowel obstruction and to decide for surgery or conservative treatment, and the timing of the surgical procedure is difficult [34, 35] .Careful assessment should be performed on an individual basis to get good results [36].

Several studies indicate that up to 75% of patients with previous abdominal surgeries can be treated safely and effectively with non-operative management [37, 38]. This is also shown in our patients.

The duration of hospital stay with conservatively treated patients ranges from 3 to 7 days (mean 4 days), and with operatively treated patients ranges from 1 to 13 days (mean 8 days).

There is little data about operative findings and type of operations performed due to intestinal obstruction. The strangulation rate in a study by Fevang *et al*. [39], and study by Wilson *et al*. [40] was up to 20 %. Similarly, in our study, strangulation rate was 19%, these occurred in patients who had delayed operative intervention for longer than 24h.

The morbidity was 17.25% (Table 3), while mortality was 2.5%. The mortality rate in this study was relatively low (2.5%).This may be related to the Low incidence of malignancy and the patients were young.

Table 3: Management and outcome and o outcome of the patients

Value	Small bowel obstruction (n = 498)	Large bowel obstruction (n = 256)	Total study group (n = 754)
Operative treatment	21%	65%	32%
Non-operative treatment	79%	35%	68%
Time between arrival and operation Mean (h)	13 hours	22 hours	17.5
% of patients operated on the 1st 24 hours	63%	24%	43.5
% of patients operated after the 1st 24 hours	37%	76%	56.5
Complication	13.5%	15%	17.25
Intensive Care Unit (ICU) admission	9%	27%	18
ICU length of stay (d)	1day	3day	2
Hospital length of stay (d)	5	7	6
Mortality	1.3	2.1	2.5

CONCLUSION

In conclusion, Intestinal obstruction is a relatively uncommon disease in Saudi Arabia. The frequency of the causes of obstruction in Saudi Arabia are similar to that seen in other countries in Asia.

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