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ORIGINAL ARTICLES

Assessment of complications and outcomes of mechanical bowel obstruction in a military hospital

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Abstract: *Aims: Mechanical bowel obstruction is a frequent surgical emergency and a frequently confronted burden in abdominal operation. This study aimed to find out the model of mechanical bowel obstruction in the Iranian population.*

Methods and materials: In this study, all patients with clinical and radiological evidence of mechanical bowel obstruction that admitted to the Department of Surgery of Baqiyatallah Hospital with a diagnosis of mechanical bowel obstruction from January 2012 to December 2015 were included. The age, gender, symptoms operative details, postoperative complications, outcome, and mortality, were recorded.

Results: 193 patients with mechanical bowel obstruction were admitted in our study. Regarding the clinical presentation of the patients, the absence of passage of flatus and/or feces with abdominal pain (65.8%) were the most common presenting symptoms. Adhesions, colonic volvulus, hernias, different types of colorectal cancer were the most frequent causes of obstruction (54.9%, 15.54%, 7.2%, and 9.8%, respectively). Twenty-one patients died, resulting in a mortality rate of 10.9%. In the 19 patients with colorectal cancer, 7 (31.6%) patients have died and cause of death in all them related to cancer disease.

Conclusion: The results showed that the most common mechanisms of intestinal obstruction were adhesions, volvulus, cancers, and hernias, respectively, and the most common risk factors were appendectomy history, herniation surgery history, and cholecystectomy history, respectively. About 21 patients (10.8%) underwent obstruction surgery with a diagnosis of malignancy, which was confirmed in 19 cases of tumor pathology, of which about one third had recurrence within 3 years.

Keywords: *mechanical bowel obstruction, adhesions, colorectal cancer*

INTRODUCTION

Mechanical bowel obstruction is a frequent surgical emergency and a frequently confronted burden in abdominal operation [1-3]. Intestinal obstruction relates to extremely severe circumstances, demanding a fast and accurate diagnosis as well as critical, rational, and efficient treatment [4].

The diagnosis of mechanical bowel obstruction is not always simple, and an implication of operation requires a vast indication of suspicion [5, 6]. Comprehensive past and precise clinical exams are important to obtain a practical diagnosis and preparation therapy [7]. There are several cardinal characteristics, i.e. colic, distension, vomiting, and constipation, but the influence of each of these is affected by the position and kind of obstruction [5-9]. The administration needs early diagnosis and therapy with meticulous fluid, electrolyte balance, and timely operational intervention [10]. The complications can be decreased by

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early diagnosis and immediate surgical intervention [11].

Emergency surgery for malignant bowel obstruction is correlated with a mortality incidence of up to 30 percent [12]. It also results in considerable morbidity with prolonged hospital stay, delay at the beginning of chemotherapy and many stoma organizations, with a disorder of quality of life [12-14].

Also, malignant bowel obstruction has a major affected on health costs given that these cases are hospitalized and may need multiple mediations [13]. Medical administration has lower short-term mortality but may be correlated with low resolve or recurrence of the obstruction [14]. Because of the enormous problem of MBO in cases with cancer and the meaningful discrepancies in the morbidity of surgical versus medical treatments, it is necessary to characterize the predictors of survival and the impact of therapy modality on case results [15]. However, MBO may be due to the primary tumor, metastatic disease, or past surgical intervention leading to adhesions or an internal hernia [16, 17]. Albeit, many studies showed that MBO in the setting of colon cancer, the actual incidence, and the results remain unknown [9, 12-16].

In a study showed that 10-50% of patients with advanced cancer stage would develop MBO during their illness and experience from intractable abdominal pain, vomiting, which result in a decreased quality of life, mental and emotional problems [18]. Various therapies, including operation, palliative radiotherapy, chemotherapy and total parenteral nutrition formulas, may be used to reduce the symptoms in MBO patients; however, there is currently no agreement about the optimal treatment approach and no substantial evidence supporting the effectiveness of any treatment in enhancing the quality of life and prolonging survival [16-18]. Varying the pattern of the disease from time to time needs periodic studies to assess the etiological factors and behavior of the disease [12-18]. Also, as well as regional differences in the pattern of bowel obstruction and changes in the illness pattern over the years, are well documented in the previous studies [18]. This study aimed to find out the model of mechanical bowel obstruction in the Iranian population.

METHODS AND MATERIALS

In this study, all patients with clinical and radiological evidence of mechanical bowel obstruction that admitted to the Department of Surgery of Baqiyatallah Hospital with a diagnosis of mechanical bowel obstruction from January 2012 to December 2015 were included. The enrollment of the patients in the study was approved by the ethics committee of the Baqiyatallah University of Medical Sciences and written informed consent was obtained from all patients. Patients with paralytic ileus were excluded from our study.

The age, gender, symptoms operative aspects, post-operative complications, result, and death were recorded. Following clinical investigations, every six hours with the same attending surgical unit were conducted in all cases to assess the patients' symptoms. All cases had been operated on by the authors in the general surgery departments of the Baqiyatallah hospitals.

The diagnosis was based on clinical judgments, history, and supported by ultrasonography and radiological studies (plain x-rays) in all cases. The final diagnosis was presented at exploratory laparotomy, which was endeavored following thorough first evaluation, examinations, and resuscitation. The operation was determined as required in those patients where the operation was conducted in thirty-six hours.

Chi-square test and Fisher's exact test was utilized for the relationship between qualitative variables. The non-parametric Mann-Whitney test made a comparison among the groups. The Kolmogorov–Smirnov test was used for the normality of the data. The data was used by SPSS 20 software. The significance level for the tests was considered less than 0.05.

RESULTS

193 consecutive patients with mechanical bowel obstruction were included. The average age was 58.1 ± 19.0 years while women comprised 32.64% of the group. The most of the patients (60.1%) presented in above 59 years old.

Regarding the clinical presentation of the patients, the absence of passage of flatus and/or feces with abdominal pain (65.8%) were the most common presenting symptoms, only abdominal pain (27.5%) was the second frequent physical finding on clinical examination abdominal.

Regarding the types of previous operations, 35 patients (23.33%) had undergone an appendectomy, 27 (18.0%) hernia procedures, 24 (16.0%) had a cholecystectomy, and 86 (43.3%) had other surgical procedures.

Adhesions, colonic volvulus, hernias, different types of colorectal cancer were the most frequent causes of obstruction (54.9%, 15.54%, 7.2%, and 9.8%, respectively). There was no significant difference in the cause of obstruction regarding gender and age levels. An evaluation of 193 cases of mechanical bowel obstruction from the standpoint of etiology, age, and sex distribution, is presented.

Types of colorectal cancer were overrepresented accounting for 8 (42.1%) with obstruction due to sigmoid cancer, whereas six (31.6%) patients had a colon cancer, 3 (15.8%) had a cecum cancer, and one (5.2%) had a rectum cancer.

Regarding the clinical presentation of the patients and cause of obstruction, Adhesions and abdominal pain (56.08%) with were the most common presenting symptoms and cause of obstruction. The absence of passage of flatus and/or feces and Adhesions (33.9%) were the second frequent presenting symptoms and cause of obstruction.

There was a significant association between the cause of obstruction and history of surgery (P<0.001).

109 patients (56.4%) of the total study group were safely and more efficiently treated.

Eighty-four cases of the 193 patients sustained complications; 28 (33.3%) suffered from recurrence adhesion along with obstruction, 15 (17.9%) had abdominal pain, 15 (17.9%) had constipation. In the 19 patients with colorectal cancer, six (31.6%) patients had a recurrence.

Twenty-one patients expired, following in a death rate of 10.9%. In the 19 patients with colorectal cancer, 7 (31.6%) patients have died and cause of death in all them related to cancer disease.

DISCUSSIONS

In the past, the most common cause of intestinal obstruction was a strangulated hernia, but today, due to the higher prevalence of surgery than in the past, the most common cause of intestinal obstruction (75-80% of cases) is adhesions due to previous surgeries [7, 9, 11, 12]. These patients present with clinical signs of obstruction including colic abdominal pain, abdominal distension, and nausea and vomiting, and constipation. The complete obstruction causes intestinal dilation with an accumulation of water and gas. Radiological signs are visible 3-5 hours before obstruction [11-13]. In the present study, the most common postoperative diagnoses were adhesions in 106 patients (54.9%), volvulus in 30 cases (15.5%), colorectal cancers in 19 patients (9.8%) and hernias in 14 patients (7.2%), respectively. While in the study of Saber, the diagnosis of the cause of obstruction was observed in most cases with sigmoid volvulus and inguinal hernia, each with 18% and the site of obstruction in the small intestine with 55%. The most common symptoms in the present study were abdominal pain, which was seen in more than 95% of cases, and the second most common symptom was lack of gas or stool, which was seen in more than 65% of cases. In the study of Markogiannakis et al., the most common symptoms were flatulence (90%) followed by bloating and abdominal pain (65.3%). Adhesion was observed in 64.8% of cases, incarcerated hernia in 14.8%, and colon cancer in 13.4% [3].

Füzün et al. (2005), which looked at the causes of mechanical intestinal obstruction, found that intestinal adhesions were the most common cause of obstruction with 44%, followed by hernias with 23.9% and volvulus with 12.7%. Colon carcinoma was 10.1% of the causes of intestinal obstruction [9]. Our study is consistent with the above study in terms of 4 common factors and only slightly different in order after the most common cause, which is adhesion in both studies. The prevalence of colorectal cancers is very close in the two studies.

Regarding the clinical presentation of our cases, the lack of passage of feces or/and flatus with abdominal pain were the many common presenting symptoms and abdominal pain was the second most prevalent physical conclusion on clinical research [12-14]. The results, even though some variations are marked, are in agreement with the studies. Especially, Cheadle et al. showed abdominal vomiting 82%, pain 92%, distention 59%, and abdominal tenderness 64% as the most frequent signs [19]. While abdominal distension, bilious vomiting, absolute constipation, and abdominal pain were the main signs and symptoms in another study. In research on 100 patients with adhesive small bowel obstruction and recognized that the most common symptoms were vomiting 77%, colicky abdominal pain 68%, and absence of passage of flatus and/or feces 52% while abdominal distension developed the most common clinical symptom with a rate of 56% [20]. In a study of patients with bowel obstruction due to large bowel volvulus, the most common symptom of sigmoid volvulus was distension 79% and the most common symptoms were pain 58% and obstipation 55%, while most patients with cecal volvulus presented with pain 89% [21]. Moreover, in a review study of patients with obstruction because of small and large bowel intussusception, abdominal pain, nausea, vomiting, and abdominal distension were the frequent symptoms and signs, respectively [22].

Adhesions, colonic volvulus, hernias, different types of colorectal cancer were the most common causes of obstruction [23]. These results were also mentioned in the current research.

Furthermore, adhesions were the most common etiology of obstruction in and the total study group. Several studies propose that adhesions are responsible for 32%-74% of bowel obstruction and are the leading cause of small intestinal obstruction representing 45%-80% of it [20-23]. The large majority of the cases with adhesive obstruction

have experienced previous abdominal procedures [23]. In the present study, this was agreement with previous studies.

The model of mechanical intestinal obstruction shows a difference in various areas. The obstructed herniae were observed as the 3rd common condition in the current research, whereas it was the second common condition of the other research, which almost is comparable with the other investigations carried in the country [14-15]. As for the types of surgeries in our cases, appendectomies, and hernia surgeries, cholecystectomies were more prevalent. This results also in agreement with the literature [9, 16].

However, the proper administration of adhesive obstruction is still uncertain, a large portion of these cases, varying from 35% to 65% in some investigations, can reliably and efficiently be managed with operation administration as it was also noted in our cases [23, 24].

The growing performance of adhesions as a condition of acute intestinal obstruction requires a higher requirement for regular precautionary standards toward adhesion formation [25]. Some effective actions are now supported through elective abdominal surgery to reduce the increase of adhesions that might consequently produce intestinal obstruction [26].

In previous studies showed sigmoid cancer is the etiology of obstruction that cases with high intestinal obstruction with a percentage of 40%-90% [27]. A study by Baloch et al., of 252 patients with mechanical bowel obstruction, showed due to the regional epidemic, the most common cause of obstruction was abdominal tuberculosis, which was observed in 30% of cases, and unlike our study and most other studies, adhesion was the second most common cause of obstruction. Also, in this study, the hernia was observed in only 17.5% of patients [15].

In our research, complication and mortality percentage were almost small. In the previous studies, complication proportion varies from 6 to 47 percent while death ranges from 2 to 19 percent [25, 28]. In our study, there was the association between mortality rate and colorectal cancer disease.

CONCLUSION

The results showed that the most common mechanisms of intestinal obstruction were adhesions, volvulus, cancers, and hernias, respectively, and the most common risk factors were appendectomy history, herniation surgery history, and cholecystectomy history, respectively. About 21 patients (10.8%) underwent obstruction surgery with a diagnosis of malignancy, which was confirmed in 19 cases of tumor pathology, of which about one third had recurrence within 3 years.

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