



Original Article

Volvulus Talks Louder than Colon Cancer in Iranian Patients with Acute Large Bowel Obstruction

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Abstract

Background: Acute obstruction of the colon continues to be a lethal disease with little improvement in the mortality rate over the past 50 years. So, this study was undertaken to define the causes of colon obstruction and their probable changes after years.

Methods: From 1979 to 2004, all records of patients with definite diagnosis of intestinal obstruction at all hospitals affiliated to Shiraz University of Medical Sciences in Shiraz, southern Iran were reviewed retrospectively.

Results: One thousand-hundred and seventy-two patients with diagnosis of intestinal obstruction entered our study. Two-hundred records were diagnosed as large bowel obstructions (16.5%) and 80% were male (volvulus: 84%, cancer: 60%). Their age range was 16-105 years, (mean=48 years). Volvulus occurred in 152 (76%) patients (sigmoid, 87%; cecum, 9%; transverse colon, 2.5% and splenic flexure, 1.3%). Colon cancer was diagnosed in 30 patients (15%); and the other causes were adhesion, 3.5%; hernia, 1.5%; fecal impaction, 2%; TB, 1% and ileosigmoid knot, 1%) compromising the remained 9% of cases.

Conclusion: Sigmoid volvulus was the most common cause of colonic obstruction in south of Iran and male predominance was seen in both volvulus and cancer groups.

Keywords: Volvulus; Intestinal obstruction; Cancer

Introduction

Inflammatory intestinal obstruction, a disorder that can afflict both children and adults is associated with significant morbidity especially in cases of acute obstruction of colon, which continues to be a lethal disease. Early recognition and appropriate management can prevent life threatening complications.^{1, 2} Intesti-

nal or bowel obstruction is defined as partial or complete obstruction of the small or large bowel that impedes the natural progression of the digestive processes.³ "Pseudo-obstruction" is a term used when the symptoms of obstruction are evident, but actual obstruction can not be confirmed by the usual diagnostic methods.⁴ Obstruction of the bowel is a common cause of acute abdominal pain, which is the presenting symptom accounting for up to 20% of emergency admissions to surgical services⁵ that requires surgical intervention, either immediately or within several days. Current mortality from bowel obstruction is between 3.5% and 6%, but it can be higher (7-14%)

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in elderly patients, in those with concomitant mesenteric thrombosis, and in patients whose large bowels are obstructed.⁶⁻¹¹ Risk factors, at least in part, are age-specific, with certain disorders being most common in neonates, children, or adults. Across all age groups, the greatest risk for the development of obstruction is abdominal adhesions, which account for 45% to 60% of all cases, with more than 90% of these involving the small intestine.¹²⁻¹⁶

Intestinal obstructions are caused by a variety of gastrointestinal (GI) and external factors, which can be classified as mechanical, paralytic, or functional. The first approach to the treatment of possible intestinal obstruction is to identify the potential risk factors, because some causes require unique intervention, and a missed diagnosis could be life threatening. Previous studies showed that colon cancer is the most etiologic factor in western countries¹⁷⁻²⁰ and volvulus of the large bowel is the primary cause of obstruction in some countries, notably India, and Africa; and there is a low incidence of obstructing colon cancer in these areas.^{21,22} There is only one report from Iran²⁰ that confines the volvulus as the primary cause of colon obstruction. Since acute colon obstruction is a lethal disease, we should consider prompt etiology finding and management. Recent increasing rate of colorectal cancers in Iran and some changes in dietary habits toward low residue diets among the urban populations persuade us to conduct this retrospective study to answer the following questions: "What are the causes of colon obstruction?" and "Is there any changes in the etiology of colonic obstruction in Iran?"

Materials and Methods

From 1979 to 2004, all records of patients with definite diagnosis of intestinal obstruction at all hospitals affiliated to Shiraz University of Medical Sciences in Shiraz, southern Iran were reviewed retrospectively. Several parameters including patient's age, sex, clinical manifestation, diagnostic methods, paraclinical assessments, definite operative diagnosis, site of obstruction and the eventual outcome were recorded. All patients had plain abdominal graphy and colon obstruction. The site of obstruction was confirmed by surgery. All patients underwent operation in Department of Surgery of Shiraz University of Medical Sciences and definite diagnosis of large bowel obstruction was made by gross large bowel obstruction on plain abdominal x-ray compatible with history and physical

findings or rigid sigmoidoscopy/ colonoscopy or surgical findings. A *p value* < 0.05 was considered statistically significant.

Results

Among 1172 patients with the diagnosis of intestinal obstruction, 15 records were incomplete. Two hundred records were diagnosed as large bowel obstructions (16.5%) while 80% of them were male and 20% female. Their age distribution ranged from 16 to 105 years, with a mean age of 48 (Table 1). The mean duration of symptoms was 6 days. This was 3 and 21 days for sigmoid volvulus and cancer, respectively (Table 1).

Table 1: Characteristics of patients with volvulus and cancer.

	Volvulus	Cancer	Total
No	152 (76%)	30 (15%)	200
Male	128 (84%)	18 (60%)	160 (80%)
Female	24 (16%)	12 (40%)	40 (20%)
Age (yr)	49 (16-105)	50 (26-72)	48 (16-105)
Symptom duration (day)	3	21	6

The most common complaints of patients were depicted in Table 2. Signs of patients are shown in Table 3. Sigmoidoscopy was used for therapeutic management of 68 patients with sigmoid volvulus. Volvulus occurred in 152 patients (76%) and colon cancer was diagnosed in 30 patients (15%), all other causes made the remainder 9% of the diagnoses including adhesion (3.5%), hernia (1.5%), fecal impaction (2%), TB (1%) and ileosigmoid knot (1%) (Table 4).

Table 2: Presenting symptoms of patients with volvulus and cancer.

	Symptoms		
	Total	Volvulus	Cancer
Abdominal pain	83	90	67
Constipation and obstipation	79	80	80
Nausea and vomiting	61	59	60
Abdominal distention	60	63	53

Table 3: Presenting signs of patients with volvulus and cancer.

	Signs		
	Total	Volvulus	Cancer
Abdominal distention	87	91	80
Altered bowel sounds	82	76	83
Tenderness	61	62	60
Abdominal mass	7	3	20
Rectal Mass	6	0	20
Hematochezia	6	3	0
Fever and Malaise	0	12	0

Table 4: Causes of colon obstruction in patients with volvulus and cancer.

Cause	No.	Percentage
Volvulus	152	76
Cancer (carcinoma)	30	15
Adhesions	7	3.5
Fecal impaction	4	2
Hernia	3	1.5
Ileosigmoid knot	2	1
TB	2	1
Total	200	100

Of 152 subjects with volvulus, 84% were male with mean age of 40 years (16-105 years) (Table 1). One-hundred and thirty two cases had sigmoid (87%), 14 cases cecal (9%), 4 cases transverse colon (2.5%) and 2 patients had splenic flexure volvulus (1.3%) (Table 5). The most common complaints and physical findings of these patients were shown in Table 2 and 3, respectively. The mean duration of symptom was 3 days (Tables 1 and 2). After a mean of 4.5 year (2-5.5) follow ups, 9 patients showed recurrence. In plain abdominal graphy with an accuracy of 97%, the disease was confirmed and bent inner tube sign was observed in 56% of sigmoid volvulus cases. Sixty eight of 132 patients with sigmoid volvulus underwent sigmoidoscopic detorsion, which was successful in 36 cases (58%). In patients with unsuccessful sigmoidoscopic detorsion and those who had not undergone sigmoidoscopic detorsion, surgical detorsion was done. In volvulus with other etiologies, surgical management was carried out. Eighty three point five percent of patients underwent definite surgical management (sigmoid resection), that in 42.5% of cases, secondary resection was performed after primary detorsion (23% sigmoidoscopic, 19.5% surgical). Preoperative mortality rate was recorded for the whole volvulus group which was about 13.5%.

Table 5: Type of volvulus.

Type	No.	Percentage
Sigmoid	132	87
Cecum	14	9.2
Transverse colon	4	2.5
Splenic flexure	2	1.3

The patients with colon cancer (30 cases) had an age range of 26-75 years (mean 50 years), 60% were male (Table 1) and 33% were under 40 years of age. The most common symptoms and signs were shown in Table 2 and 3, respectively. The most common site of involvements were the rectum and sigmoid regions (33.5% for each). Rectum and sigmoid cancer compromised the most frequent site of obstruction (67%, 10 patients). Eighty percent of cancers (23 cases) were adenocarcinoma (56% were well differentiated, 22% moderately differentiated and 22% poorly differentiated). Six point five percent were bladder metastasis, and 4 cases did not have any pathology report.

Twelve patients of 24 cases with left colon involvement underwent decompression surgery. In the other half of the patients, surgical decompression and tumor resection were undertaken. In cecum involvement (2 patients), right hemicolectomy accompanied by end to-end anastomosis was done. Patients with hepatic flexure involvement underwent bypass surgery because of outgrowing of the tumor. Ileostomy was done in two patients with transverse colon cancer.

Discussion

Acute obstruction of the colon continues to be a lethal disease with little overall improvement in mortality rate over the past 50 years. Although colorectal carcinoma has been the main cause (58-90%) of large bowel obstruction in western countries,^{17-19,23} sigmoid volvulus seems to be another common cause of colonic obstruction in developing countries.^{20,24,25} Obstructed colon, irrespective of etiological causes, carries a higher mortality rate in spite of diagnostic and therapeutic improvements.²⁶⁻²⁸

In the present study, volvulus was the most common cause of colon obstruction, which is consistent with some previous studies^{21,22,28,29} and in contrast to some other western studies.^{1,7-19,23,30} The mean age of occurrence of sigmoid volvulus was 48 years, which is far lower than that of reported series from western nations which is similar to previous reports from Iran, India and Africa. This may be due to etiologic

differences.^{25,29,31} Male predominance was obviously noted in our volvulus cases with more than 5 folds [Male: 109 (83%)] but in the cancer group the male predominance rate has been 1.5/1.

Although chronologically there was an upward slope of cancer incidence from 1974 to 1999, the same is true of volvulus occurrence simultaneously. In our geographic area, the etiologic background has not changed significantly since Saidi's²⁰ review in 1965. In the last quarter of 20th century, volvulus was still the most common case of obstruction. Most of our patients fell in 5th decade of life, and 30% were younger than 40 years, but in Kennan et al.'s study, most of them were in 7th decade and just 4% were younger than 40 years.³² Age range in the present study was 16-105 years, which is wider than that in American studies, and shows a younger age group of patients in our area. This characteristic is consistent with previous studies in India, Africa, Iran and Eastern Europe, but it is in contrast with studies in the United States, Australia, Britain and Canada.³¹ In our study, other etiologies of obstruction are as rare as in western studies (Table 4). The most common symptoms of our patients were abdominal pain, constipation, obstipation, nausea, vomiting and abdominal distension, but in Kennan et al.'s study, abdominal pain and constipation/obstipation were the most and least complaints, respectively.³² The most common signs of our patients are the same as Kennan et al.'s study and other rare signs are less frequent in our study.³² The most common type of volvulus in this

study is identical to the previous study. In the present study, sigmoid and cecal involvements were more and less frequent than in Kennan et al.'s study, respectively.³¹⁻³⁴

As for volvulus, the most common complaints and signs were similar to western studies. Symptom duration (3 days) was the same as Kennan et al.'s study but recurrent rate was less than that in American studies (9% versus 30%). This is likely due to more definite operations in our study. Comorbid diseases were few (8% versus 66%). The most prevalent site of cancer involvement was rectum and sigmoid (67%); left colon involvement generally made most of the cases. Adenocarcinoma was the most common type of cancer, which is similar to western countries.³¹

The results of this study seem to signify and confirm all the previous reports and show that sigmoid volvulus is still the most common cause of colonic obstruction in southern Iran, comprising about 76% of all colonic obstructions. Male predominance is statistically significant ($p=0.05$) in both volvulus and cancer groups, but there is no accurate explanation for this fact.

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