LIBYAN INTERNATIONAL JOURNAL OF ONCOLOGY

Original article

Large Bowel Obstruction Caused by Colon Cancer: A Retrospective Study

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Citation: Hounki A, Jabeal I. Large Bowel Obstruction Caused by Colon Cancer: A Retrospective Study. Libyan Int J Oncol. 2022;1(2):39-43.

Received: 16-09-2022
Accepted: 20-10-2022
Published: 15-12-2022

Funding*: This research received no external funding.*

Conflicts *of Interest: The authors declare no conflict of interest.*

Abstract

Background and aims*: Colorectal cancer is one of major cancers that affect both men and women worldwide. The aim of this study was to determine the frequency of large bowel obstruction due to colon cancer among patients who had large bowel obstruction and are admitted to the surgical department at Tripoli Medical Center (TMC). Additionally, to identify if there is an association between large bowel obstruction due to colon cancer and patient's characteristics and clinical features.* ***Methods****: In a retrospective comparative study, medical records of 4600 patients who were admitted to surgical department, TMC, Tripoli-Libya from January 2011to December 2013 were reviewed. Of them, 38 patients had large bowel obstruction and all of them were admitted through emergency department.* ***Results****: Out of 38 patients with large bowel obstruction, there were 18 patients (47.4%) had large bowel obstruction due to colon cancer, 15 patients (39.5%) were due to other causes (i.e., volvulus, intucessuption), and five patients (13.2%) were lacking the histopathological cause of the large bowel obstruction diagnosis. There was no association between large bowel obstruction due to colon cancer and demographic information except age of the patients (p = 0.04) and type of treatment (conservative versus surgical) (p = 0.01). There was no association between large bowel obstructions due to colon cancer and presenting symptoms and signs.* ***Conclusion****: Colon cancer is frequent cause of large bowel obstruction, and it is more common among elderly population and it is more likely to be treated surgically.*

Keywords: *Cancer, Large Bowel, Obstruction, Colon.*

Introduction

Large bowel obstruction is usually an acute blockage of colon or rectum occurring in middle or old age group and requiring medical and surgical treatment. The urgency of management related to the possibility of rupture of distended or compressed colon with risk of fecal peritonitis. The most common cause of mechanical obstruction are carcinoma of colon, sigmoid volvulus and diverticular disease and pseudo obstruction (Ogilvie's syndrome) where acute dilatation of colon without mechanical obstruction present with similar clinical feature of organic obstruction with same potential complication, but usually associated with some other illnesses [1]. The most common site of large bowel obstruction is sigmoid colon followed by colonic splenic flexure due to short kink in colon together with luminal narrowing by tumor, relatively firm stool. The right side obstruction is less common because it is wide in diameter.

The key investigation to be performed urgently is a plain x-ray of abdomen, which will confirm marked colonic distention, a gastro-graffin enema should differentiate between a mechanical obstruction and colonic pseudo obstruction, this differentiation is important as it will determine management. Ultrasound examination and CT scanning of abdomen and pelvis may also useful in determining the presence of occult malignancy and aiding in management planning. Routine hematological and medical assessment is indicated .as most instances surgical intervention is required [2].

The 5 years' survival rate was greater after elective surgery (59% versus 39% in emergency surgery [3]. although overall survival rate similar to those elective surgeries can be achieved in emergency surgery when curative oncological resection performed [4]. Factors affecting colon cancer in general (prognosis) and outcome of obstructing and non- obstructing colon cancer. The prognosis depends upon the age and general condition of the patient the extent of vascular impairment of the bowel, the presence or absence of perforation, the cause of obstruction and promptness of surgical management. The overall mortality rate is about

20%, cecal perforation carries 40% mortality rate. Obstructing cancer of the colon has a worse prognosis than non-obstructing cancer because it is more likely to be locally extensive or metastatic to nodes or distant site [5].
The aim of the present study was to determine the frequency of large bowel obstruction due to colon cancer among patients who had large bowel obstruction and are admitted to the surgical department at TMC. Additionally, to identify if there is an association between large bowel obstruction due to colon cancer and demographic information, site of obstruction, and presenting symptoms.

Patients and Methods
This retrospective comparative study was carried out in Tripoli Medical Center (TMC); medical records of 4600 patients who were admitted to surgical department at TMC from January 2011 to December 2013 were reviewed. Of them, 38 patients were diagnosed as large bowel obstruction. All of these patients were admitted through Emergency Room (ER); and diagnosed by plain abdominal X-ray and CT-scan abdomen. General surgery teams were responsible on deciding what type of treatment option should be received (conservative or surgical); the decision usually depends on clinical presentation of patients, examination and the results of investigations. The final diagnosis of large bowel obstruction by colon cancer was confirmed by histopathology.
The demographic data and, presenting symptoms (i.e., abdominal pain, abdominal distension, constipation, and vomiting), laboratory investigations (i.e., leukocytosis - White Blood Cell >10.000 per mm3), and anemia (hemoglobin <13/dl in men, and <12 in women); and type of treatment (conservative or surgical) were obtained from patient's medical records.
Statistical analysis: The SPSS version 16 was used for both data entry and statistical analysis. P-value of less than 0.05 is considered statistically
significant.

Results
The mean age for the patients was 59.6±1.7 years, range (26 to 98 year). The highest percentage for patients with colon cancer was between 40 and 60 years (50%). There was an association between age of participants and cause of large bowel obstruction (p = 0.04) (Table 1). There were 21 (55.2%) males and 17 (44.7%) females. There was no association between the cause of the large bowel obstruction and gender distribution of the patients (p = 0.75).

Table 1: Age distribution of the patients with large bowel obstruction*

Age distribution	**≤40 years**	**40 - 60 years**	**60 - 80 years**	**≥ 80**
Colon cancer (N=18)	1 (5.6%)	9 (50%)	8 (44.4%)	0 (0%)
Other known causes of Obstruction (N=15)	5 (33.3%)	5 (33.3%)	4 (26.6%)	1 (6.7%)
Total (N=33)	**5 (15.2%)**	**14 (42.4%)**	**13 (33.3%)**	**1 (9.1%)**

***P* = 0.046**

The most common symptoms were abdominal pain, abdominal distension, constipation and vomiting.

Causes of large bowel obstruction:
A total of 18 patients (47.7%) had large bowel obstruction due to colon cancer and 15 patients (39.5%) were due to other causes like volvulus, intucessuption. Five patients (13.2% were lacking the histopathological diagnosis of the large bowel obstruction Table 2).

Table 2: Causes of large bowel obstruction

Causes	N (%)
Colon cancer	18 (47.4%)
Other causes	15 (39.5%)
Unclear diagnosis	5 (13.2%)
Total	**38 (100%)**

Site of large bowel involved by cancer

The most common site of large bowel obstruction that involved by cancer was sigmoid colon found in 5 patients (27.8%) followed by rectosigmoid part of large intestine in 4 patients (22.2%). Table 3 shows the sites large bowel obstruction by colon cancer.

Table 3: Sites of large bowel obstructed caused by colon cancer

Sites of large bowel involved by cancer	No. (%)
Sigmoid colon	5 (27.8%)
Rectum	4 (22.2%)
Rectosigmoid	3 (16.7%)
Transverse colon	2 (11.1 %)
Cecum	2 (11.1%)
Hepatic flexure	1 (5.6%)
Splenic flexure	1 (5.6%)
Total	**18 (100%)**

Treatment options

A total of 17 patients (94.4%) with large bowel obstruction due to colon cancer treated surgically compared with only 8 (53.3%) of patients with large bowel obstruction due to other causes than colon cancer had surgical treatment. There was an association between the cause of the large bowel obstruction and type of treatment offered ($p = 0.01$).

Discussion

Similar to our study results, Byrne J. found that colon cancer was one of the major causes of large bowel obstruction followed by other causes like ileocecal, sigmoid volvulus and diverticulitis [6]. Also he found most of the patients were treated surgically after careful evaluation of the patient's condition and correction of any metabolic or physiological defect [6]. As well, he found treatment of large bowel obstruction due to ileocecal and sigmoid volvulus are different from treatment of large bowel obstruction due to cancer (which is treated mainly surgical); conversely, he found constipation was prominent symptoms affected 50% of the patients and abdominal pain affected 50% of other patients. This was opposite to what this study found constipation and abdominal pain affected around 98% and 92.4% of the patient with large bowel obstruction due to cancer, respectively.

Likewise, and similar to this study results, Moolla et, al. found the mean age for large bowel obstruction was 59 years old; this finding is exactly similar to our study finding. Also, they found the most common site of obstruction was sigmoid colon followed by the rectum which corresponds to this study result. However, they found the prevalence of large bowel obstruction due to colon cancer 14.3% which was quite lower than our frequency rate in the current study; this difference is related to difference in duration of the study which was twelve years (between 2000- 2012) in Molla's study were1425 patients with colon cancer participate in the study and a total of 203 of patients had large bowel obstruction due to colon cancer. The duration of current study was only three years and only 38 patients with large bowel obstruction involved in this study and only 18 had large bowel obstruction due to colon cancer [7]. In contrast to our findings, Gandrup P et al found the prevalence of large bowel obstruction due to colon cancer is 61% and the median age of patients is 73 years old even though

the study design was retrospective like the current study and it is done in only one hospital. This is because he includes the only advanced colon cancer in his study and most of them were old population [8]. There are many studies showed difference in the mean age of the patients with large bowel obstruction due to colon cancer; and the mean age was 70 or more; this is because in these studies only advanced stage of colon cancer (stage IV colon cancer) that caused large bowel obstruction included, therefore, study population were elderly population involved in the studies [9,10].

In opposite to current study, Phillips et al. found the prevalence of large bowel obstruction due to colon cancer is 16% (out of 4583 patients in the large bowel obstruction, 713 have large bowel obstruction due to colon cancer) and the most common site of obstruction was splenic flexure [11]. Also, Biondo, S. et al, found the mean age of large bowel obstruction due to cancer is70 years old and mostly happen among those who have stage III or IV of colon cancer, and this explain why the mean age of the patients is high in comparison to our findings [12].

Ng et, al. found the mean patient age with emergency large bowel obstruction was 62 years and main reason for obstruction was colonic carcinoma (33%); This finding has similarity to our study finding [13].

Similar to the current study finding, Foster NM et al. found in population based study of 32583 patients admitted for large bowel obstruction 75% of benign obstructions will be with medical therapy alone (conservative treatment) [14]. In another studies found the conservative management of large bowel obstruction due to colon cancer has low successful rate (24%-32%) [15]. In this study there was a significant association between large bowel obstruction due to colon cancer and surgical intervention as a treatment option.

One limitation of the present study was the retrospective type and use of patient's medical records to collect data, there was some difficulty in access to much important information, and therefore, missed values were reported during statistical analysis. Also, small sample size of our patient during these three years as only 38 patients with large bowel obstruction were admitted to surgical department at TMC.

Conclusion

Colon cancer is frequent cause of large bowel obstruction, and it is more common among elderly population and it is more likely to be treated surgically.

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