Original Article

Prevalence of Colorectal Cancer as a Cause of Intestinal Obstruction in a Tertiary Level Hospital

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ABSTRACT

Introduction: *Early identification of colorectal cancer in people with Intestinal Obstruction can lead to more effective treatment and a better prognosis. In a country like ours, where screening for colorectal cancer is yet to be established well, the prevalence of colorectal cancer has not been properly determined.* ***Methods & Materials:*** *This prospective cross-sectional study was conducted at the Department of Surgery in Sir Salimullah Medical College Mitford Hospital for a month of the period following approval of the protocol. A semi-structured questionnaire and collected data were analyzed by using the statistical software SPSS 24.* ***Results:*** *A 30% majority was observed in 20-30 years of age group. All respondents (100%) presented with abdominal pain followed by vomiting (54%), constipation (40%), fever (32%), weight loss (14%), abdominal tenderness (48%) and abdominal mass (20%). Most of the respondents were presented with acute intestinal obstruction (40%) and others were sub-acute intestinal obstruction (60%). No significant statistical association was found in the biopsy findings of respondents. 11(22%) of respondents had intestinal obstruction due to malignancy, among them, 7(14%) had an acute intestinal obstruction and 4(8%) had a sub-acute intestinal obstruction. Histological findings of biopsy among malignant cases showed that among 7 respondents with acute intestinal obstruction, 6 had adenocarcinoma 1 had lymphoma and among the 4 respondents with sub-acute intestinal*

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obstruction 3 had adenocarcinoma, and 1 had lymphoma. ***Conclusion:*** *Colorectal carcinoma was the second most common cause of intestinal obstruction. However, further studies are needed to establish and use the findings.*

Keywords: *Colorectal carcinoma, Intestinal obstruction, Colonoscopy*

INTRODUCTION

A major abdominal emergency with a significant risk of morbidity and death is intestinal obstruction. A partial or total blockage of the colon that prevents intestinal contents from passing through is known as intestinal obstruction (IO)[1]. A common cause of acute abdomen around the world, intestinal obstruction accounts for about 5% of emergency surgical hospitalizations[2]. Large intestinal obstruction is less prevalent than small intestine obstruction. Colon cancer, or CRC, is the second most prevalent cause of cancer-related death and the third most common malignancy to be diagnosed[3]. It accounts for 11% of all cancer diagnoses worldwide and is one of the tumors whose incidence is rising. Based on data from GLOBOCAN 2020, there exists a significant regional variance in the incidence and death of colorectal cancer across different nations worldwide[4]. 2020 was predicted to see more than 1.9 million new cases of colorectal cancer and 935,000 deaths from the disease, or almost one in ten cases and fatalities overall[5]. 12.0 per 100,000 was the crude mortality rate, while 24.8 per 100,000 was the crude incidence rate[6]. Obstruction, accounting for 77% of emergencies in a recent series, is the most prevalent symptom and reason for urgent surgery for colorectal cancer[7]. In terms of CRC cases (of all genders and ages), Asia had the greatest proportion of incident cases (51.8%) and fatality cases (52.4%) per 100,000 people worldwide[8]. Only 3.8 cases of CRC incidence and 2.3 cases of age-standardized mortality were reported in Bangladesh in 2020, according to a thorough review of the GLOBOCAN database used to estimate CRC incidence and mortality worldwide[6]. It is worth noting that colorectal cancer ranks third among cancer diagnoses in males and second among women. More than 60% of cases of major intestinal blockage are caused by colonic cancer[9]. It continues to be a significant global public health concern[10]. It is detected in younger people more often because of risk factors such as obesity, sedentarism, bad nutritional habits (rich in fats and proteins), smoking, and aging populations. Patients with colorectal cancer may present clinically with abdominal pain, changes in chronic bowel habits, bowel movements, involuntary weight loss, nausea, vomiting, malaise, anorexia, and abdominal distension. The clinical presentation of colorectal cancer patients depends on the location, size, and presence or absence of metastases[11]. It has been noted that partial or complete intestinal obstruction occurs in 7%–29% of CRC patients, with the left colon accounting for around 70% of these cases. Fatal effects are highly likely if treatment is not received[12]. If left untreated, the clogged sections of the gut may die and cause major issues. However, intestinal blockage is frequently curable with quick medical attention[13]. The incidence and management outcomes differ between

countries based on factors such as age group, dietary habits, place of residence, geographic region, and community living conditions[14]. A prevalent etiology is volvulus, adhesion, malignancy, and strangulated hernias[2]. Among 150 patients who presented with intestinal obstruction, Markogiannakis et al., discovered that colorectal cancer ranked among the top three causes of intestinal obstruction (13.4%)[15].

Intestinal obstruction is one of the primary causes of colorectal cancer patients' poor prognosis; statistics show that the effective cure rate for individuals with intestinal obstruction with colorectal cancer is about 60–80%[16]. The purpose of this study was to assess the incidence of intestinal obstruction in a tertiary-level hospital due to colorectal cancer.

METHODS & MATERIALS

This prospective cross-sectional study was conducted at the department of Surgery in Sir Salimullah Medical College Mitford Hospital for a six-month period following approval of the protocol. A total of 50 patients with intestinal obstruction took part in the study. Patients who were admitted with features of Acute Intestinal Obstruction from 18 to 80 years of age, Patients with features of subacute Intestinal Obstruction from 18 to 80 years of age, and Patients presenting with obstructive symptoms who had been previously diagnosed as Colorectal Cancer were among the inclusion criteria. Patients below 18 years of age, Patients above 80 years of age, and patients who did not want to participate in the research were excluded from the study. In patients with Acute Intestinal Obstruction: preoperative DRE and proctoscopy were done. Per-operatively, biopsy was taken when there was any growth causing the obstruction and histopathology of the specimen was done. In patients with Subacute Intestinal Obstruction: Preoperatively, Digital Rectal Examination and proctoscopy were done. Those who improved by conservative treatment, colonoscopy and biopsy were done. A standard guideline was followed during post-operative management. A semi-structured questionnaire and collected data were analyzed by using the statistical software SPSS 24.

RESULTS

30% majority was observed in 20-30 years of age group. Among the respondents 76% were male and 24% were female.The occupational status of the respondents was as followed 17(34%) service holders, 10(20%) businessmen, 6(12%) housewives, 4(8%) retired and 13(26%) other job holders. Socioeconomic status of the respondents showed, most of the respondents were in the middle class 21(42%) and others were poor 19(38%) and rich 10(20%) [**Table I**].

Table I: Distribution of demographic characteristics of respondents (*n*=50)

Demographic Characteristics	Frequency	Percentage (%)
Age		
20-30	15	30
31-40	13	26
41-50	9	18
51-60	8	16
61-70	5	10
Gender		
Male	38	76
Female	12	24
Occupation		
Service holder	17	34
Businessman	10	20
Housewife	6	12
Retired	4	8
Others	13	26
Socio-economic status		
Poor	19	38
Middle Class	21	42
Rich	10	20

According to the clinical presentation, all respondents 50(100%) presented with abdominal pain. Other clinical features were vomiting 27(54%), constipation 20(40%), fever 16(32%), weight loss 7(14%), abdominal tenderness 24(48%) and abdominal mass 5(10%) [**Table II**].

Table II: Distribution of clinical presentation of respondents (*n*=50)

Clinical presentation	Frequency (*n*=50)	Percentage (%)
Abdominal pain	50	100
Vomiting	27	54
Constipation	20	40
Fever	16	32
Abdominal tenderness	24	48
Weight loss	7	14
Abdominal mass	5	10

In this study, most of the respondents were presented with acute intestinal obstruction 20(40%) and others were sub-acute intestinal obstruction 30(60%) [**Table III**].

Table III: Distribution of type of intestinal obstruction in respondents (*n*=50)

Type of intestinal obstruction	Frequency (*n*=50)	Percentage (%)
Acute	20	40
Subacute	30	60

No significant statistical association was found in the biopsy findings of respondents. 11(22%) of respondents had intestinal obstruction due to malignancy, among them, 7(14%) had an acute intestinal obstruction and 4(8%) had a sub-acute intestinal obstruction [**Table IV**].

Table IV: Distribution of biopsy findings of respondents (*n*=50)

Biopsy findings	Acute intestinal obstruction n=20 (40%)	Sub-acute intestinal obstruction *n*=30(60%)	p-value*
Malignancy	7(14)	4(8)	0.153
Non-malignant	13(26)	26(52)	

*The P-value was determined by the *chi-square test; n= frequency*

Histological findings of biopsy (taken perioperatively or by colonoscopy) among malignant cases showed that among 7 respondents with acute intestinal obstruction, 6 had adenocarcinoma 1 had lymphoma and among the 4 respondents with sub-acute intestinal obstruction 3 had adenocarcinoma, and 1 had lymphoma [**Table V**].

Table V: Distribution of histological findings among Malignant cases (*n*=11)

Histological findings of biopsy among malignant cases	Acute intestinal obstruction n=7 (14%)	Sub-acute intestinal obstruction n=4(8%)	p-value*
Adenocarcinoma	6(85)	3(75)	0.643
Lymphoma	1(15)	1(25)	

Causes of intestinal obstruction of respondents in this study were band and adhesion 21(42%), obstructed hernia 13(26%), colorectal carcinoma 11(22%), and intestinal tuberculosis 5(10%) [**Table VI**].

Table VI: Distribution of causes of intestinal obstruction of respondents (*n*=50)

Causes of intestinal obstruction	Frequency (*n*=50)	Percentage (%)
Band and adhesion	21	42
Intestinal TB	13	26
Colorectal carcinoma	11	22
Obstructed Hernia	5	10

DISCUSSION

In this study among all the participants, 30% of the majority was found among the 20-30 years of age group. A study by Ershad-ul-Quadir M et al. showed the mean age of the patients with bowel obstruction was 48.2±19.7 years[17]. In the current study, about 76% were male and 24% were female respondents in this study. The similarity was found in the study of Arlene Muzira Nakanwagi et al., where they showed a ratio of 2.6:1 between males and females. There 71.8%

were males and 28.2% were females showing male prevalence[18]. Among the occupational status of the respondents 34% of service holders showed the prevalence in this study, whereas the study of Debabrata Paul et al, displayed the majority of the patients were day laborers (30%)[19]. This result echoed the socio-economic status of the respondents where among all the respondents 42% were middle class, 38% were poor and 20% were rich. Besides, many patients with colon cancer do not develop symptoms until it is advanced, and detection in the early stage can only be achieved by a screening of asymptomatic persons. According to the clinical presentation of our study, it was observed that about 100% of respondents faced abdominal pain followed by 54% vomiting, 40% constipation, 32% fever, 14% weight loss, 48% abdominal tenderness, and 10% abdominal mass. Tesfaye Derseh et al. presented similar kinds of results in their study where 96.6%, 95.3%, and 91.3% of patients were found with vomiting, abdominal distension, and failure to pass flatus and feces, respectively[14]. In the current study, among all the respondents about 40% had an acute intestinal obstruction and 60% had sub-acute intestinal obstruction which is close to the result of Rizwan Ahmed et al's., a study presented that intestinal obstruction was acute in 36.84%, chronic in 26.31% and acute on chronic in 35 (36.84%) cases[20]. No significant statistical association was found in the biopsy findings of respondents of this study. 11(22%) of respondents had intestinal obstruction due to malignancy. Among them, 7 (14%) had acute intestinal obstruction and 4(8%) had sub-acute intestinal obstruction. Perhaps, in the study of Sonia Akter et al., out of 200 patients highest 23.5% was found preoperatively with neoplastic obstruction[21]. In the histological findings of the biopsy among malignant cases of the current study showed among the 7 respondents with acute intestinal obstruction, 6 (85%) had adenocarcinoma and 1 had lymphoma and among the 4 respondents with sub-acute intestinal obstruction, 3(75%) had adenocarcinoma and 1 had lymphoma in this study. Through Madhusudan Saha et al.,'s study common histological types, adenocarcinoma was found in 98.7%[22]. Ershad-ul-Quadir M et al., also showed that most of the colorectal carcinoma was adenocarcinoma which represented 92% of cases, but the percentage of lymphosarcoma was also quite high 8%[17]. However, the causes of intestinal obstruction of respondents in this study were band and adhesion possessing 42%, obstructed hernia at 10%, colorectal carcinoma at 22%, and intestinal tuberculosis at 26%. A study by Khayat Meiaad F et al., also revealed that post-operative adhesions were a common cause of intestinal obstruction, with 28.75%[23].

Limitations of the Study:

It was a single-center study with a small sample size where randomization was not done. Besides, the study period was six months, which was insufficient to conduct a quality study**.** So, the results may not represent the whole community.

Conclusion:

In this study, it is observed that Colorectal carcinoma was the third most common cause of intestinal obstruction (with a prevalence of 22% in the study group following band and adhesion and Intestinal

TB. Intestinal obstruction was common in adult (20-30 years) males. Most of the respondents were presented with acute intestinal obstruction followed by sub-acute intestinal obstruction. These results correspond with the findings of previous studies with slight variations. However, further multicenter study is recommended, which could give us more information about the prevalence of colorectal carcinoma in intestinal obstruction, thus helping the clinicians to manage those patients in a better way.

Recommendation:

Further multicenter study with a larger sample size is recommended. Therefore, patients with intestinal obstruction should be evaluated with a thorough clinical history, proper clinical examination, and relevant investigation to exclude colorectal carcinoma for initiating early management.

Ethical approval: The study was approved by the Institutional Ethics Committee.

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