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Aetiopathologiacl Pattern of Intestinal Obstruction among Different Age Group

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Abstract **Original Research Article**

Background: Intestinal obstruction demands early diagnosis and proper management to reduce morbidity and mortality. The morbidity and mortality is still high despite modern medical and technical facilities. This study was undertaken to highlight the aetiopathological pattern of intestinal obstruction among different age group for early diagnosis and management. Thus reducing the fatal outcome by preventing complications. ***Objective:*** To evaluate aetiopathological pattern of intestinal obstruction among different age group. ***Methods:*** This cross sectional observation study was done in the Surgery Department of Dhaka Medical College Hospital, from July 2008 to 2009. Total 150 cases of clinically diagnosed obstruction were included in this study. All cases were clinically evaluated followed by thorough investigations and their causes were established. The final diagnoses were based on preoperative findings and in some cases histopathological findings of the respected specimen. ***Result:*** 150 Patients were included in this study with the median age 34.5+10.9 years. Male to Female ratio3:1.Clinical diagnosis demonstrates that nearly half(48%) of the patients had inguinal hernia,13.3% had post operative bands and adhesions,12.5% had intestinal; tuberculosis,12.7% had intestinal maligacy, 6.7% had volvulus of sigmoid colon. In this study of association of causes of intestinal obstruction in relation to age showed that young adults (Age-35 or below) had higher frequency of inguinial hernia (55.2%) compared to those that were middle aged or elderly (more than 35 years of age) $P<0.05$ indicating significant difference between the two groups. ***Conclusion:*** This study showed inguinal hernia to be significant cause of intestinal obstruction in young adults compared to those who were middle-aged or elderly. Inguinal hernia though always not complicates but it should be taken seriously as a potential cause of intestinal obstruction and elective operation should be advocated whenever possible.

Keywords: Intestinal obstruction, aetiopathological.

INTRODUCTION

Intestines are hollow viscous composed of small and large intestine situated in the abdominal cavity. The small intestine starts at the pylorus and extends down to the iliocaecal valve. It is approximately 7 meter in length and is divided into duodenum, Jejunum and Ilium. Its main function is breakdown and absorption of food products. The small bowel is present in the central and lower portion of the abdominal cavity. The large intestine extends from the ileocaecal junction to anus. The colon is approximately 1.5 meter in length. It is relatively more fixed than the small bowel. It possesses appendices epiploicae on its surface, which are peritoneal folds containing fat, It also possess taenia, which consist of longitudinal band on the outer muscle coat. It can be divided into caecum, ascending, transverse, descending, sigmoid colon and rectum [1]. Intestinal Obstruction is as old disease as the history of mankind. The earliest known document was written by Hippocrates who observed and treated it. From old records it is noted that the earliest known operation was done by Praxagorous (350 B.C), who created an enetrocutaneous fistula to relieve from obstruction [2]. The earlier treatment consists of no

operative treatment in general and included in reduction of hernia, opium for pain, orally administered mercur.

Intestinal obstruction is common in our country and many patients are ill-treated due to lack of awareness and health care facility. If we know the aetiopathological pattern of intestinal obstruction among different age group, we can categorize the aetiology according to the age group for early diagnosis and manage properly thereby can reduce the fatal outcome by preventing complication. So the rationality of the study is to reduce mortality and morbidity of patients of intestinal obstruction by preventing its cause among all age groups. This study aim to evaluate the aetiopathological pattern of intestinal obstruction in different age group and to study the clinical presentations in intestinal obstruction.

MATERIALS AND METHODS

Cross sectional observational study was research design in this research. Samples was collected from Department of Surgery, Dhaka Medical College Hospital from July, 2020 to June, 2021. Participants were Patients of intestinal obstruction attending in the study place. Total 150 patients were consecutively included in the study. The purposive method and convenient sampling technique were used to select the required number of patients. Inclusion criteria was all patients diagnosed as intestinal obstruction on admission both sexes of variable ages. In addition, patients whom respond well or improved after conservative treatment, immediate post operative patient, pregnant woman and neonates, and patients who did not agree to participate in the study were excluded from this study. Baseline variables include Age, Sex, Clinical presentation, Previous contributory factors, Clinical diagnosis., Site of intestinal obstruction, Per operative diagnosis. The purposed outcome variables were types of intestinal obstruction, duration of hospital stay, post operative complications, and mortality. This study was approved human ethic consideration.

Method and data collection

A detailed history was taken and thorough physical examinations were done to detect the cases of intestinal obstruction and necessary investigations were carried out with all possible means to make a pre-operative diagnosis. The final diagnosis was based on operative findings and in some cases, histopathological findings of the resected specimen.

Statistical analysis

Collected data were collated and appropriate test statistics were used to analyze the data using computer based Statistical program SPSS (Statistical Package for Social Science) version 12. For comparison of data Chi – square (2) probability test was performed. For each analytical test level of significance was 0.05 and p 0.05 was considered significant.

RESULTS

Age Distribution:

Table I shows the age distribution of the patients. Of the 150 patients 21.4% was below 30 years of age, 40% between 30 – 40 years, 19.3% between 40 – 50 years and another 19.3% 50 or above 50 years of age. The median age of the subjects was 34.5 ± 10.9 years and the lowest and highest ages were 19 and 66 years respectively.

Table I: Distribution of patients by age (n = 150)

Age	Frequency	Percentage
< 30	32	21.4
30 – 40	60	40.0
40 – 50	29	19.3
≥ 50	29	19.3

Sex distribution

Figure 1 shows distribution of the patients by sex. Nearly three-quarter (73%) of patients was male and the rest (27%) female giving a male to female ratio of roughly 3:1.

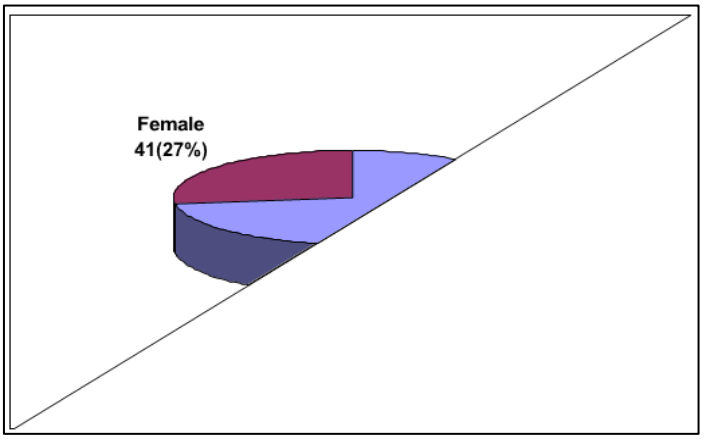

Fig 1: Distribution of patients by sex, (n = 150)

Clinical presentation

The mode of clinical presentation shows that 42.7% of patients complained of moderate abdominal pain and 57.3% severe abdominal pain. About 60% of patients had acute pain and 42% chronic pain. In most cases (86.7%) the pain was distributed diffusely throughout the abdomen. Majority (88.7%) of patients had colicky pain and 11.3% continuous pain in nature. Nearly 30% of patients had a history of vomiting and 2.6% have had vomiting with undigested food. History revealed that two-third (66.7%) of vomitus was green color in colour. Approximately 84% of patients had distension of abdomen. Forty seven patients (41.3%) had constipation as well and71 patient had painful inguinoscortal swelling (47.3%) (Table II).

Table II: Distribution of patients by clinical presentation, (n = 150)

Clinical presentation	Frequency	Percentage
Abdominal pain		
Moderate	64	42.7
Severe	86	57.3
Onset of pain		
Acute	87	58.0
Acute on chronic	63	42.0
Location of pain		
Epigastrium	01	0.7
Mid abdomen	19	12.7
Diffuse	130	86.7
Nature of pain		
Colicky	133	88.7
Steady	17	11.3
Vomiting	43	28.7
Contents of vomiting	01	2.6
Color of vomiting		
Clear	01	2.6
Watery	11	28.2
Coffee ground	01	2.6
Green	26	66.7
Distension		
Central	125	83.3
Diffuse	25	16.7
Constipation	47	41.3
Painful Inguinoscortal swelling	71	47.3

Previous contributory factors

Previous contributory factors demonstrates that 5.3% of patients had a previous history of obstruction, 13.3% previous abdominal operation, 48% hernia, 10.7% history of per rectal bleeding and 12.7% tuberculosis. In rest of 10% cases previous contributory factor were not identified.

Table III: Distribution of patients by precipitation factor, (n = 150)

Previous contributory factors	Frequency	Percentage
Previous obstruction	08	5.3
Previous abdominal operation	20	13.3
History of inguinal hernia	72	48.0
History of per rectal bleeding	16	10.7
History of tuberculosis	19	12.7
Unidentified	15	10

Clinical diagnosis

Clinical diagnosis demonstrates that nearly half (47.3%) of the patients had hernia, 12.7% carcinoma and 6.7% volvulus. The rest 33.3% cases could not be diagnosed clinically (Table IV).

Table IV: Distribution of patients by clinical diagnosis, (n = 150)

Findings	Frequency	Percentage
Hernia	71	47.3
Carcinoma	19	12.7
Volvulus	10	6.7
Undiagnosed	50	33.3

Causes of intestinal obstruction

Table V shows that 47.3% of patients' obstruction was caused due to obstruction of hernia, 15.3% adhesion, 13.3% inflammatory stricture, 12.7% carcinoma, 6.7% volvulus, 4% worm infestation and 2.7% intussusception.

Table V: Distribution of patients by causes (n = 150)

Causes	Frequency	Percentage
Obstructed hernia	71	47.3
Adhesion	23	15.3
Inflammatory stricture	20	13.3
Carcinoma	19	12.7
Volvulus	10	6.7
Intussesception	04	2.7
Worm infestation	06	4.0

Site of obstruction

Figure 2 shows the distribution of patients by site of obstruction. Majority (82%) of patients exhibited obstruction in small intestine and 18% in large intestine.

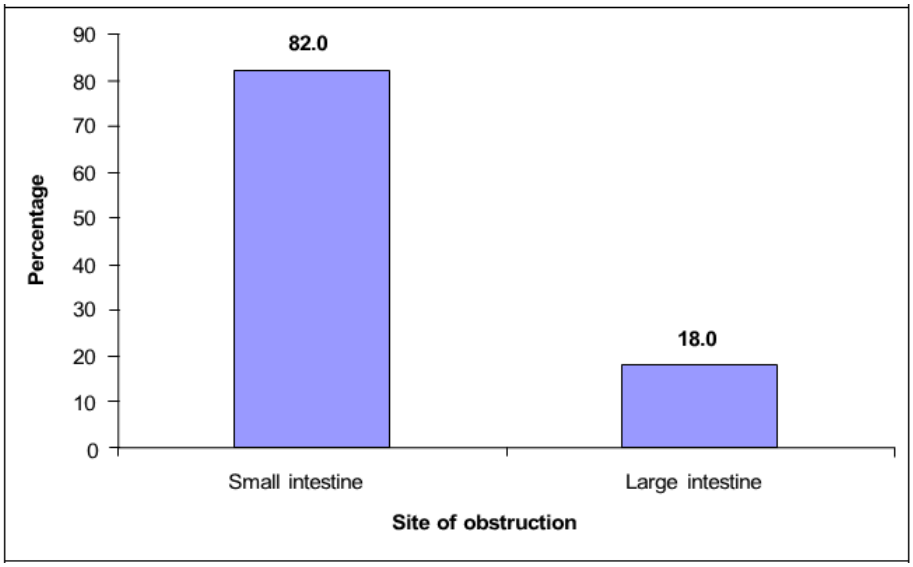

Fig 2: Distribution of patients by site of obstruction, (n = 150)

Types of obstruction

Type of obstruction shows that majority (87.3%) of patients had intestinal obstruction without gangrene and 12.7% turned into gangrenous.

Table VI: Distribution of patients by type of obstruction, (n = 150)

Type of obstruction	Frequency	Percentage
Intestinal obstruction Without gangrene	131	87.3
Gangrenous	19	12.7

Postoperative complications

Figure 3 shows the postoperative complication of the patients. Nearly 80% of patients had no complications. About 12.7% of patients had postoperative wound infection, 3.3% wound dehiscence, 1.3% shock, 1.4% faecal fistula, 1.3% peritonitis and 0.7% other complications.

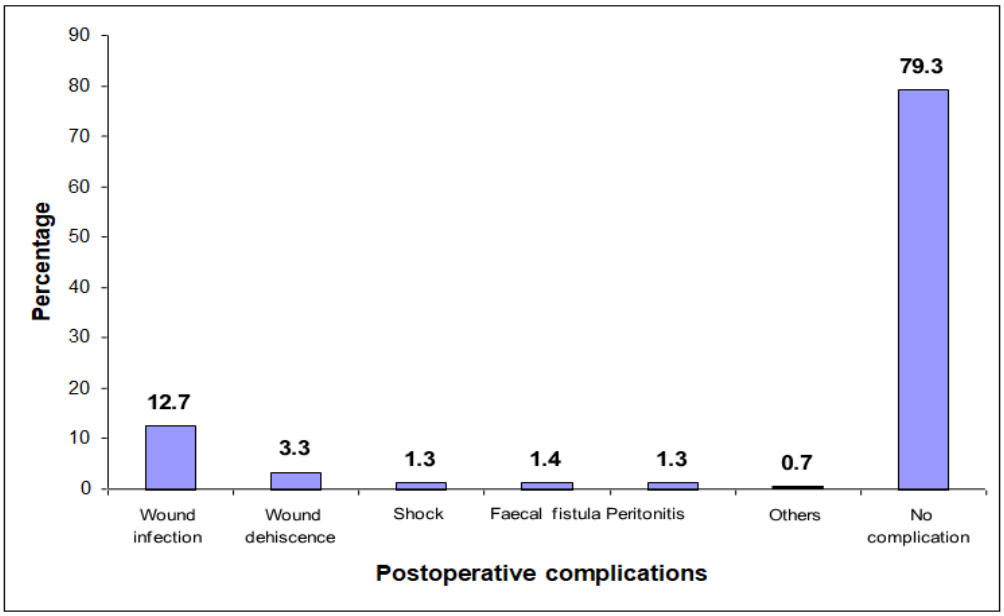

Fig 3: Distribution of patients by postoperative complications (n = 150)

Outcome of the patients

Of the 150 patients, 3(2%) died after operation. Two-third (66%) had duration of hospital stay 12 or less than 12 days and 34% stayed more than 12 days.

Table VII: Distribution of patients by outcome, (n = 150

Outcome	Frequency	Percentage
Mortality	03	2.0
Length of stay		
≤12 days	99	66.0
>12 days	51	34.0

Association of cause of intestinal obstruction with age

Association of causes of intestinal obstruction in relation to age shows that young adults (age 35 or below) had a significantly higher frequency of Inguinal Hernia (55.2%) compared those who were middle aged or elderly (more than 35 years of age) (p =0.024).

Table VIII: Association of cause of intestinal obstruction with age (n = 150)

Causes of obstruction	Age		(*X*2)	P value
	Young adult (≤ 35 years) (n = 87)	Middle aged and elderly (> 35 years) (n = 63)		
Inguinal Hernia	48(55.2)	23(36.5)	4.9424	0.024
Other causes	39(44.8)	40(63.5)		

DISCUSSION

The age distribution of the 150 patients- 21.4% was below 30 years of age, 40% between 30 – 40 years, 19.3% between 40 – 50 years and another 19.3% for 50 or above 50 years of age. The median age of the subjects was 34.5 ± 10.9 years and the lowest and highest ages were 19 and 66 years respectively. Herman et al in their study found the mean age was 38.5 years [9] and Sinha et al in their study found the mean age was 39.46 years [20] which is similar to this study. But Akeakaya et al in their study found the mean age was 59 years [12]. In this study nearly three-quarter (73%) of patients was male and the rest (27%) female giving a male to female ratio of roughly 3:1. Otamiri *et al.*, in their study found 65% were male and 35% were female [11]. Chaib also found the male predominance in their study which is 2.9: 1 which is also similar to this study [15]. But Miller *et al.*, in their study of intestinal obstruction found male: female were 1.5: 1.17 which is not similar to this result.

The mode of clinical presentation shows that 42.7% of patients complained of moderate abdominal pain and 57.3% severe abdominal pain. About 60% of patients had acute pain and 42% chronic pain. In most cases (86.7%) the pain was distributed diffusely throughout the abdomen. Majority (88.7%) of patients had colicky pain and 11.3% continus. Nearly 30% of

patients had a history of vomiting and 2.6% have vomited undigested food. History revealed that two-third (66.7%) of vomitus was green color in colour. Approximately 84% of patients had distension of abdomen. Forty seven patients (41.3%) had constipation. Rai *et al*., in their study found 54% of their patient had severe abdominal pain [9] which is similar to this study. Pal *et al*., in their study found 88% of the patent has colicky abdominal pain which is similar to this study [13]. McEntee *et al*., in their study found in their study that nearly 31% patient had vomiting which is similar to this study [16]. This is also similar to this study. Fuzin *et al*., in their study found 52% had abdominal distension [19] this result is dissimilar form this study. Hasnain *et al*., in their study found nearly 60% patient had constipation [21]. This is also dissimilar from this study. Previous contributory factors demonstrates that 5.3% of patients had a previous history of obstruction, 13.3% previous abdominal operation, 48% hernia, 10.7% history of per rectal bleeding and 12.7% tuberculosis. George W *et al*., in their study found that around 6% patients had previous history of obstruction [10] they also found 42% of their patient had history of hernia which is similar to this study. Mucha et al in their study found 46% of their patient had history of hernia.18 which is similar to this study. Hasnain *et al*., in their study found adhesion 34% of their patient had history of operation [21]. which is dissimilar from study. Lawal et al in their study found that 44% of their patient had adhesion [22]. which is dissimilar from this study.

Clinical diagnosis demonstrates that nearly half (47.3%) of the patients had hernia, 12.7% carcinoma and 6.7% volvulus (table IV). Ihedioha *et al*., in their study found that hernias were more frequent cause of intestinal obstruction [25]. which is similar to this study. Fuzin *et al*., in their study found adhesion were most common (44%) [19] which is dissimilar from this study. Miller et al also found adhesion is 74 % cause of intestinal obstruction [17]. Nearly half (47.3%) of patients obstruction was caused due to obstruction of hernia, 15.3% adhesion, 13.3% inflammatory stricture, 12.7% carcinoma, 6.7% volvulus, 4% worm infestation and 2.7% intussusception. Akeakaya *et al*., in their study found 62.5% had inguinal hernia for the cause of intestinal obstruction [12]. this result is similar to this study. But McEntee *et al*., in their study found adhesion is 32% cause in case of intestinal obstruction and inguinal hernia is 25% [16]. which is dissimilar from this study.

Majority (82%) of patients exhibited obstruction in small intestine and 18% in large intestine. Chaib *et al*., in their study of surgical treatment of intestinal obstruction in 1990 operated 121 cases of intestinal obstruction treated surgically; adhesions were the commonest cause of high intestinal obstruction, accounting 43.03% in a total of 79 patients, with hernia being the obstruction lesion in 16.45%. Colorectal cancers were the commonest cause of low intestinal obstruction accounted for 73.81%, with volvulus of the sigmoid colon in 14.28% [15]. which is similar to my study. Pal *et al*., in their study found that large gut obstruction [13]. which is dissimilar from this study.

In this study type of obstruction shows that majority (87.3%) of patients had simple small intestinal obstruction and 12.7% turned into gangrenous. Markogiannakis et al in their study found that majority of the patient (80%) had simple obstruction [23]. which is similar to this study. Wysocki *et al*., in their study found 40 % of their patient had gangrenous intestinal obstruction [24]. which is dissimilar from this study. Nearly 80% of patients had no postoperative complications. About 12.7% of patients had postoperative wound infection, 3.3% wound dehiscence, 1.3% shock, 1.4% faecal fistula, 1.3% peritonitis and 0.7% other complications. Chaib *et al*., in their study of surgical treatment of intestinal obstruction in 1990 operated 121 cases of intestinal obstruction treated surgically. Complications occurred in 15.7% of patients following operative intervention; wound infection was the most common post operative complication [15]. which I similar to this study. In this study out of the 150 patients, 3(2%) died after operation. Two-third (66%) had duration of hospital stay 12 or less than 12 days and 34% stayed more than 12 days. Herman *et al*., in their study found the mortality rate was 4.5% which is similar to this study [9]. Otamiri *et al*., found 5% mortality [11] and Akeakya *et al*., found the mortality rate were 12% [12] which is dissimilar form this study. Although there are some other important causes which are not so uncommon like femoral hernia, Incisional hernia, umbilical hernia, Mekel's diverticulam persistant uracuus and other uncommon causes can be a cause of Intestinal Obstruction but these are not included in this study due to unavailability of cases during my study period. The number of patient in clinical diagnosis of intestinal obstruction due to carcinoma and volvulus are not same in practical situation than that of final diagnosis after histopathological or peroparative finding postoperatively, but in the present study it is equal which is a incidental finding. In the study association of causes of intestinal obstruction in relation to age shows that young adults (age 35 or below) had a significantly higher frequency of hernia (55.2%) compared those who were middle aged or elderly (more than 35 years of age) Chi-square (X^2) result was 4.924 (p =0.024) which was statistically significant. Ohene *et al*., found that frequency of Inguinal hernia occurs in more men than woman and 75% of these patients were aged 50 years or below [14]. Mucha *et al*., also found that majority of the patient had hernia were below the age group of 37 years [18]. This result is similar to the study result, and it proves hypothesis inguinal hernia is the most common cause of intestinal obstruction among the young age group.

CONCLUSION

Intestinal obstruction is common in our country and many patients are ill treated due to lack of health education and delayed admission in the hospital. From this study association of causes of intestinal obstruction in relation to age showed that young adults had a significantly higher frequency of Inguinal hernia compared those who were middle aged or elderly. Inguinal hernia is condition which will not always be obstructed but it should be emphasized seriously and elective operation should be advocated whenever possible. Thus early operation will reduce mortality and morbidity of patients of intestinal obstruction.

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