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A Study of Management of Colon Cancer Depending Upon Staging in DMCH

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Abstract

Background: Colon cancer is one of the most frequent neoplasms, as encountered by surgeons in their practice. In North America and Western Europe colorectal cancer are the third most common cancer in both men and women and approximately one third occurring in the rectum with the remainder in the colon. The incidence of colon cancer in our country is no less than the western world and there is no broad-based study regarding this.**Aim of the study:** To evaluate the different stages at presentation as well as hospital-based management of colon cancer.**Methods:** This cross-sectional studywas conducted in Department of Surgery, Dhaka Medical College Hospital during September 2012 to February2013. A total 50 patients of proved colon cancer were selected purposively according to inclusion and exclusion criteria. The result was presented by appropriate tables and graphs, data was analyzed by computer with the help of SPSS/PC software and MS Excel.**Result:** This study revealed that highest incidence (30%) of colon cancer was identifiedin 51-60 years age group. Tumours were located more in sigmoid colon(30%) and ascendingcolon(28%).Histopathologically 96% was adenocarcinoma and 64% was moderately differentiated. Majority of the patient presented at stage-III&IV which was accounted for 76%. Curative (stage-I & II) and potential curative resection (stage-III) was possible in 36 cases. Two patients died, 1 due to anastomotic leakage with subsequent sepsis and 2nd one due to secondary haemorrhage. There were 8 morbidities, 5 had superficial wound dehiscence, 2 burst abdomen and 1 with the bleeding from stoma. **Conclusion**:This study revealed that most of the patients in our country presented at advanced stage. Despite thorough pre-operative evaluation for staging of colonic cancer it was found that a significant number of patients were under staged. Curative resection was possible in early stages. Palliation was the only option in advanced stages. Population screening in high-risk patients will definitely reduce morbidity and mortality with increased chance of survival.

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INTRODUCTION

Colon may be defined as part of large intestineincluding ascending, transverse, descending and sigmoid colon. In United States approximately 129,400 cases of colorectal cancer were diagnosed in 1999, approximately 34,700(27%) was confined to the rectum, with the remainder occurring in the rest part of colon. Colorectal cancer is the third most common cancer in both men and women in North America and Western Europe.[1] This incidence of colorectal cancer has been rising dramatically after the economic development and industrialization. Now, this is the leading cause of cancer deaths in both male and female in the United States.[2]Another study shows overall it is the second most common cancer in western countries, with approximately 18000 patients in United Kingdom dying per annum.[3] The exact aetiology is not known, but there are certain predisposing conditions, like- familial polyposis coli, gardener syndrome, villous tumours, ulcerative colitis, genetic factors.[3]Dietary factors receiving most attention, a high fat, alcohol, red meat, smoking and lack of exercise are important risk factors also.[4]Colon cancer comes in many forms, including adenocarcinoma (98%), lymphoma (1.3%), carcinoid tumors (0.4%) and leiomyosarcoma (0.3%).[5]Macroscopically, the tumour may take one of four forms – annular, tubular, ulcerative, cauliflower like.[6]Evaluation begins with a history and physical examination. The stool is inspected and occult blood test is to be done. Blood tests include Full blood count,Liver function tests and carcinoma embryonic antigen (CEA) level. There are many staging systems like- Dukes' staging, Astler-Coller, TNM classification. TNM classification is now recognized internationally[6].Staging procedure commences with the preoperative workup, including radiology and is completed postoperatively by pathologist. CT colonography or virtual colonoscopy can be carried out to evaluate entire colon. The treatment of colon cancer depends on how advanced it is.[7] When colon cancer is diagnosed at early-stage surgery can be curative[8].Whenever colon cancer is detected at later stage, then rational treatment plan is directed in a palliative form to run comfortable life.[8]For colon cancer that have not spread to distant sites, surgery is usually the primary or first treatment. Approximately 10% of the lesion are not resectable at the time of operation and additional 20% have hepatic or other metastases.[9]Hence operation for cure can be performed on only 70% of patients. The operative mortality rate is 2-6%. The survival rates of patient undergoing curative resection is about 55%.The overall survival rate (for all stages) is about 35%.[10,11]Colon cancer represents a major public health problem in developed countries. Even in developing countries like ours the incidence of colon cancer has been on a steady rise. The aim of this study is to

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evaluate different stages at presentation and treatment modalities available in our country.

Objectives:

General objectives

- To evaluate the different stages at presentation as well as hospital-based management of colon cancer.

Specific objectives

- To study the various modes of clinical presentation of colon cancer.
- To record the pre-operative findings.
- To correlate clinical staging with post-operative staging of colon cancer.
- To evaluate pre-operative serum level of carcinoma embryonic antigen (CEA) in different stages of colon cancer.
- To determine the immediate post-operative outcome in different stages of colon cancer.

MATERIALS AND METHODS

This cross-sectional study was conducted in Dhaka Medical College Hospital from September, 2012 to February,2013. Purposive sampling technique was taken to identify the study people. The study patients were of colon cancer admitted into different surgical units in DMCH. A total 50 patients of proved colon cancer were selected purposively according to inclusion and exclusion criteria. Patients were clinically assessed after taking proper history. Clinical staging and resectabiliy of the tumour for each were assessed. Different treatmentmodalities and immediate post-operative outcomes were recorded on a standard data collection sheet. The aims and objectives of the study along with its procedure, risks and benefits of this study was explained to the patients in easily understandable local language and then informed written consent was taken from each patient. It was assured that all information and records will be kept confidential.All the information and observations were recorded on pre designed data sheet for each patient after collecting information; data was checked, verified for consistency and edited for finalized result. After editing and coding, the coded data was analyzed by computer with the help of SPSS/PC software. Data cleaning validation and analysis is performed using the SPSS/PC software and graph and chart by MS Excel.

Inclusion criteria:

- All histopathologically proven cases of primary colon cancer irrespective of age and sex.

Exclusion criteria:

- Malignancies invading colon from other structures either by metastasis or local invasion.
- Presence of concurrent other malignancy.

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Page no- 46-55 | Section- Research Article (Surgery)

RESULTS

A total 50 colon cancer patients were selected. About 6(12%) patients were detected in 21-30 years age group, 8(16%) patients in 31-40 years age group, 12(24%) patients in 41-50 years age group, 15(30%) patients in 51-60 years age group and 9(18%) patients were above 60 years [Figure-1].Regarding gender distribution this study shows that 28 (56%) cases of colon cancer were male and the rest of 22 (44%) cases were female. Male female ratio being approximately1.3:1. [Figure-2].Accordingto the site of lesion 30% cases had their lesion in sigmoid colon followed by ascending colon 28%, transverse colon 22%, descending colon 18% and synchronous lesion in 2% cases[Table-1]. The commonest histological type of colon cancer was adenocarcinoma (96%), carcinoid tumour in 2% cases and Lymphoma in 2% cases [Table-2]. As 2 cases were treated by chemotherapy only,so a total 48 study patients underwent operation according to the location of tumour. Right hemicolectomy was done in 15 cases, extended right hemicolectomy in 5 cases, left hemicolectomy in 18 cases, pelvic colectomy in 5 cases, Hartmann's procedure in 1 case, faecal diversion in 3 cases. There also found that resection of the tumour was possible in 45 cases and in remaining 3 cases faecal diversion was performed [Table-III]. Most of cases (98%) surgical intervention were taken in open method and laparoscopic intervention in only 2% cases [Figure-III]. In the per operative findings we got that only palpable tumour was found in 25% cases; tumour with pericolic invasion in 10.42% cases; tumour with enlarged lymph node in 27.08% cases; tumour, pericolic invasion and enlarged lymph node in 14.58% cases; tumour, invasion to other structures & enlarged lymph node in 14.58% cases; tumour& invasion to other structures, enlarged lymph node, ascites & liver metastases in 2.08% cases; tumour, invasion to other structures, enlarged lymph node, ascites & peritoneal seedlings in 6.25% cases [Table-IV]. We found that curative procedure was possible in 36(72%) cases and remaining 14(28%) patients were managed palliatively [Figure-IV]. Among the palliative procedure palliative resection with chemotherapy was performed in 7(50%) cases, faecal diversion with chemotherapy in 4(28.57%) cases, Hartmann's procedure with Chemotherapy in 1(7.14%) cases and palliative chemotherapy in 2(14.28%) cases [Table-V]. After surgery one case was diagnosed as lymphoma and managed by chemotherapy. Remaining 49 cases were treated by different approach- curative resection alone was possible in only 6.12% cases mostly of stage I and 1 case of stage II colon cancer,only chemotherapy was advised as palliative treatment in 4.08% cases all of them were at stage IV, rest of the patients (89.80%) took multimodal treatment. All the patients of stage II (except one case of carcinoid tumour), stage III, stage IV took post-operative adjuvant chemotherapy [Table-VI]. After diagnosis 2 cases were treated by chemotherapy and 1 case was diagnosed as a case of lymphoma postoperatively. Then from the total 47

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Vol-7, Issue-4 | July-August, 2021
Page no- 46-55 | Section- Research Article (Surgery)

cases total 8 patients developed post-operative complication; among them 6 patients were at stage-III. 2 patients died post operatively both of them were at stage-III [Table-VII].

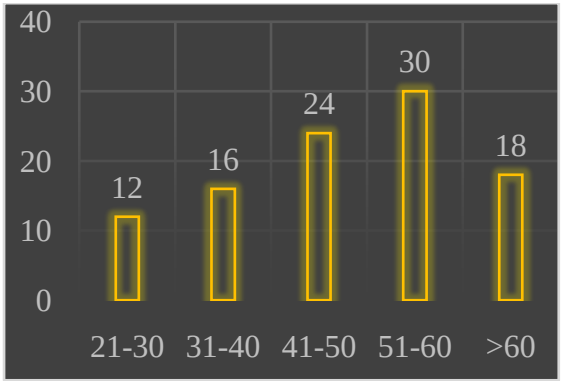


Figure-I: Age distribution of the patients (N=50)

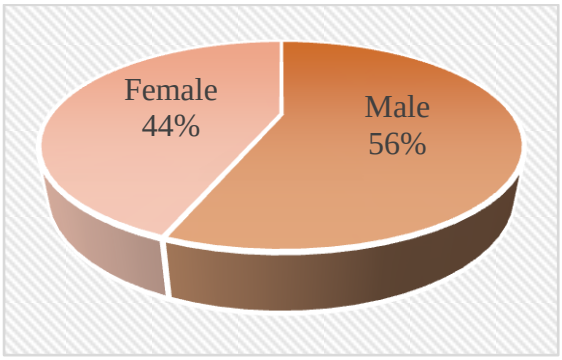


Figure-II: Sex distribution of the patients (N=50)

Table-I: Distribution of patients by site of lesion (N=50)

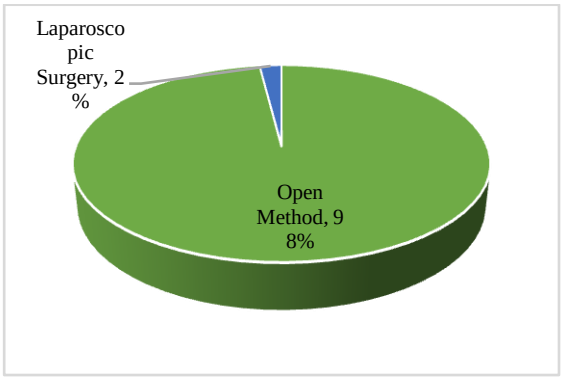
Site of lesion	n	%
Ascending colon	14	28
Transverse colon	11	22
Descending colon	9	18
Sigmoid colon	15	30
Synchronous	1	2

Table-II: Distribution of histological type of colon cancer (n-50)

Type	n	%
Adenocarcinoma	48	96
Carcinoidtumour	01	02
Lymphoma	01	02

Table-III: Different types of operation according to the location of tumour (N=48)

Name of operation	Location of Tumour				Total
	Ascending colon	Transverse colon	Descending colon	Sigmoid colon	
Right hemicolectomy	13	2	0	0	15
Extended right hemicolectomy	0	5	0	0	5
Left hemicolectomy	0	3	9	6	18
Pelvic colectomy	0	0	0	5	5
Hartmann's procedure	0	0	0	1	1
Colostomy /Ileostomy	0	1	0	3	4
Total	13	11	9	15	48



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Vol-7, Issue-4 | July-August, 2021
Page no- 46-55 | Section- Research Article (Surgery)

Figure-III: Different Surgical approaches (N=50).

Table-IV: Per operative findings (N-48)

Findings	n	%
Palpable tumour only	12	25
Tumour&Pericolic invasion	05	10.42
Tumour& enlarged lymph node	13	27.08
Tumour, pericolic invasion & enlarged lymph node	07	14.58
Tumour, invasion to other structures & enlarged lymph node	07	14.58
Tumour& invasion to other structures, enlarged lymph node, ascites & liver metastases	01	2.08
Tumour , invasion to other structures, enlarged lymph node, ascites & peritoneal seedlings	03	6.25

Table-V: Different palliative procedures (N=1)

Palliative procedure	n	%
Palliative resection & Chemotherapy	7	50
Palliative colostomy / ileostomy And Chemotherapy	4	28.57
Hartmann's procedure & Chemotherapy	1	7.14
Chemotherapy only	2	14.28

Table-VI: Distribution of management options for different stages of colon cancer (n-49)

Treatment options	Stage-I	Stage-II	Stage-III	Stage-IV	%
En bloc resection	02	01	00	00	6.12
En bloc resection & Chemotherapy	00	08	24	00	65.30
Palliative resection & Chemotherapy	00	00	06	01	14.29
Hartmann's procedure & Chemotherapy	00	00	00	01	2.04
Palliative colostomy/ileostomy & Chemotherapy	00	00	02	02	8.16
Chemotherapy only	00	00	00	02	4.08

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Vol-7, Issue-4 | July-August, 2021
Page no- 46-55 | Section- Research Article (Surgery)

Table-VII: Post-operative events (N=47)

Stage	Operated	Uneventful	complications	Death
Stage-I	2	2	0	0
Stage-II	9	8	1	0
Stage-III	32	24	6	2
Stage-IV	4	3	1	0
Total	47	37	8	2

DISCUSSION

This study of colon cancer included 50 cases treated in Dhaka Medical College Hospital during the period from September 2012 to February 2013. All these were finally diagnosed after being confirmed by histopathological examination. In this study the highest incidence of colon cancer was among the people of 51-60 years age group (30%), next highest was in the people of 41-50 years age group (24%), third highest incidence was among the people who aged >60 years (18%). Incidence of colon carcinoma in the 41-60 years were significantly higher (54%).A study by Quddus MA, Alimunzzaman M, Rahman MZ, Alam MK[12] showed colorectal cancer was most frequent in 35-44 years age group in Bangladesh.A study by Arthur Schoenstadt[13] on colon cancer statistics of USA showed that the median age at colon cancer diagnosis for 2000-2003 was 71 years of age. The incidence was highest (28.8%) among the people aged 75-84 years. Galante M, Dunphy JE, Fletcher WS[14] in their study showed that the median age was 60 years. The incidence was highest in the 6th decade and considerably lower in the 7th decade. Floyd CE, Stirling CT, Cohn I Jr[9]in their 15 years review of 1687 cases also reported the peak incidence in the 6th decade. This study shows considerably increase in incidence in between the 40-60 years. Finding in this study is similar to the last two studies but first study that was conducted in Bangladesh showed incidence of colon cancer was common in younger people. Regarding gender distribution this study shows that 28 (56%) cases of colon cancer were male and the rest of 22 (44%) cases were female. Male female ratio being approximately 1.3:1. A study conducted by Jessica B, O'Connell, Melinda A. Maggard, Edward H, Livingston et al.[15] showed that 51.4% were male and 48.6% were female, showing minimum difference in gender distribution. Another study conducted by MVC de Silva, MS Fernando and De Fernando[16]showed male female ratio 1.6:1. This study shows that 30% cases of colon carcinoma had their lesion in sigmoid colon followed by ascending colon 28%, transverse colon 22%, descending colon 18% and synchronous lesion in 2% cases. Galante M, Dunphy JE, Fletcher WS[14] in their study found that sigmoid colon was the commonest site (44.5%), followed by caecum, transverse colon and ascending colon. HC Umpleby and RCN Williamson studied carcinoma of large bowel in the first four decades. They observed 13% occurred in the right colon, 16%

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Page no- 46-55 | Section- Research Article (Surgery)

occurred in the transverse colon, 39% occurred in the left colon, 32% occurred in rectum. Present study shows increased incidence of colon cancer in ascending colon which is in accordance to other.Regarding histopathological type this study showed that most of the histological type of colon cancer were adenocarcinoma (96%), Carcinoid tumour in 2% cases and Lymphoma in 2% cases.Burt RW, Barthel JS, Dunn KB et al.[17] showed that, adenocarcinoma comprise the vast majority (98%) of colon cancers, lymphoma 1.3%, carcinoid 0.4%, and sarcoma in 0.3% cases.Present study showed that most of patients in our country presented at an advanced stage in contrast to USA and Europe because there is no screening programme for colon cancer in Bangladesh and the people are not aware of this kind of disease as well as they are very reluctant to seek proper medical treatment. Primarily most of patients are treated by physicians as bacillary dysentery or haemorrhoids and patients make very late when they attend a surgeon.Present study showed that right hemicolectomy was done in 15 cases, extended right hemicolectomy in 5 cases, left hemicolectomy in 18 cases, pelvic colectomy in 5 cases, Hartmann's procedure in 1 case, faecal diversion in 3 cases.Resection of the tumour was possible in 45 cases.Peroperatively only palpable tumour was found in 25% cases; tumour with pericolic invasion in 10.42% cases;tumour with enlarged lymph node in 27.08% cases; tumour, pericolic invasion and enlarged lymph node in 14.58% cases; tumour, invasion to other structures & enlarged lymph node in 14.58% cases; tumour& invasion to other structures, enlarged lymph node, ascites & liver metastases in 2.08% cases; tumour , invasion to other structures, enlarged lymph node, ascites & peritoneal seedlings in 6.25% cases. Patients treated by curative resection alone was possible in only 6.12% cases mostly of stage I and1 case of stage II colon cancer. Only chemotherapy was advised as palliative treatment in 4.08% cases all of them were at stage IV, rest of the patient (89.80%) took multimodal treatment. This study showed that all the patients of stage II (except one case of carcinoid tumour), stage III, stage IV took post-operative adjuvant chemotherapy.Regarding the management of stage II colon cancerCunningham D, Atkin W, Lenz HJ, LynchHT, Minsky B, Nordlinger B,et al[8]showed that surgery may be the only treatment needed. But adjuvant chemotherapy recommended if cancer had a higher risk of recurrence because of certain factors, such as: (1) The cancer looks very abnormal (is high grade) when viewed under a microscope;(2) The cancer shows microsatellite instability (MSI); (3)The cancer has grown into nearby organs; (4)The surgeon did not remove at least 12 lymph nodes; (5)Cancer was found in or near the margin (edge) of the surgical specimen, meaning that some cancer may have been left behind; (6) The cancer had obstructed the colon; (7) The cancer caused a perforation in the wall of the colon.This study showed all the patients (except one case of carcinoid tumour) of stage II colon cancer received adjuvant

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Vol-7, Issue-4 | July-August, 2021
Page no- 46-55 | Section- Research Article (Surgery)

chemotherapy. A study of Adjuvant Therapy of colon cancer by John S. Macdonald showed that patients with locally advanced (Dukes stages B2, B3, and C; TNM stages-II and III) large bowel cancer have a significantly increased risk of relapse after surgical resection alone, and in patients with stage III disease (node positive), the risk of death from cancer was as high as 70% during the five years after surgical resection[18].Present study showed that curative resection was possible in 36 cases and remaining 14 patients were managed palliatively. Among all palliative procedures palliative resection with chemotherapy was performed in 7 cases, faecal diversion with chemotherapy in 4 cases, Hartmann's procedure with Chemotherapy in 1 case and palliative chemotherapy in 2 cases. Galante M, Dunphy JE, Fletcher WS[13]in their study found that among 975 patients' curative resection was possible in 712 patients (73%), palliative resection or faecal diversion were done in 172 patients (17.5%), in remaining 91 patients no surgical intervention was done. In their study they experienced that the morbidity was significantly decreased when patients with incurable disease undergo palliative resections instead of colostomy alone. Park et al.[19]Studied stoma morbidity in 1616 patients who underwent anostomy procedure for various indications.This study showed that in most of cases (98%) surgical intervention were taken in open method.Laparoscopic intervention was undertaken in only 2% case. A study by Oliver MJ, Ian L, Chris C[20]on laparoscopic colorectal surgery showed the rationale for using laparoscopic surgery, it can minimize the trauma of access, reduce pain, and accelerate postoperative return of bowel function and general mobility.This study showed that 8 patients developed post-operative complication, among them 6 patients were at stage-III. Two patients died post operatively both of them were at stage-III. Wound infection was occurred in 5 cases, wound dehiscence in 2 cases and haemorrhage in 1 case. Post-operative complications were more in advanced cases. Floyd CE,Stirling CT, Cohn I Jr[9] in their large series of 1687 cases reported 12.89% mortality following the operative procedure.Wound infections are sadly common after colonic surgery and may well be more than 10%.[6]

Limitations of the study:

The present study had few limitations such as this study was conducted in a single hospital and had a small sample size that may not reflect the whole scenario.

CONCLUSION

This study revealed that most of the patients in our country presented at advanced stage. Despite thorough pre-operative evaluation for staging of colonic cancer it is found that a significant number of patients were under staged. Curative resection was possible in early stages. Palliation was the only option in advanced stages. Population screening in high-risk patients will definitely reduce morbidity and mortality with increased

chance of survival. The incidence of colon cancer is increasing in our country and there is no study on the management of colon cancer with long time follow up in Bangladesh. So, it is recommended to carry out more studies with long time follow up and large sample size regarding the management of colon cancer.

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