



Surgery

A CLINICAL STUDY OF CARCINOMA COLON IN UPPER ASSAM WITH SPECIAL REFERENCE TO ITS MANAGEMENT AND SHORT TERM COMPLICATIONS

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ABSTRACT

Introduction: Colon cancer is the most common type of gastrointestinal cancer. It is a multifactorial disease process, with etiology encompassing genetic factors, environmental exposures (including diet), and inflammatory conditions of the digestive tract. Colon cancer may be of genetic, hereditary, familial and sporadic type. Risk factors for cancer of the colon include colonic polyps, long-standing ulcerative colitis, and genetic or family history. Most colorectal cancers develop from polyps. Removal of colon polyps can prevent colon cancer. Colon polyps and early colon cancer can have no symptoms. Therefore, regular screening is important, starting at age 50. This present study is to emphasize mode of clinical presentation and different treatment modalities of colon cancer in this area of country.

Materials & Method:- The present study was a hospital based prospective study conducted in the Department of General Surgery, Assam Medical College & Hospital, Dibrugarh, during the one year period from June 2017 To May 2018. A total of 54 patients fulfilling the inclusion and exclusion criteria admitted in the General Surgical units of Assam Medical College & Hospital, Dibrugarh with carcinoma colon were included in this study. Patients who had taken Chemotherapy previously were excluded from the study.

Results: In the present study series most of the cases were of age group 50-59 years. Out of 54 patients there were 29 male and 25 females with sex ratio of M : F=1.16:1. Most of the patients attended hospital after 1-6 month of initial symptoms i.e. 40 patients (70.07%) among which 5 patients presented with acute abdomen, presented within one month. Most common site of cancer growth was in sigmoid colon (33.33%), ascending colon 25.92% and caecum accounted for 18.52% and only one case was found to be in splenic flexure. In the present study of 54 patients, 48 patients (88.88%) were operated. Among these 54 patients, growth was resectable in 31 patients (57.40%) and in 31.5% patients growth was unresectable so palliative operations were performed. 5 patients underwent emergency procedure and curative resection could not be performed because of the poor general condition of the patients. Every patient who was taken for surgery, prophylactic drain was placed. Post operative complications were encountered in 35 patients in the form of wound infection, wound dehiscence, Paralytic ileus, Colostomy retraction, Parastomal herniation, skin excoriation around colostomy, Pulmonary complication, Anastomotic leak and Sepsis.

Conclusion: The present study shows that colon carcinoma is one of the common gastrointestinal malignancies in this region of the country. Most common age group affected was old age > 50 years with male predominance. Mostly presentation was late, who presented earlier presented with acute abdomen. Detailed history and physical examination with diagnostic investigations especially radiological and colonoscopy with tissue biopsy helped to obtain a definitive diagnosis. Most of the patients were non vegetarian by diet. Surgery was mainstay of treatment which was either curative or palliative according to site, stage and resectability. Postoperative complications were more in our study due to late stage presentation, poor general status of patients and poor patient compliance. Postoperative chemotherapy was given to all patients. Most of the patients were ignorant about the disease for which they could not turn up for follow up. Our hospital based observational study has similar results with other studies in other parts of world with minimal differences. However, a study with long duration with follow up for long time is needed to obtain an exact incidence, risk factors associated mode of clinical presentation and post treatment status.

KEYWORDS : Crohn's disease, Colorectal cancer, Sigmoidoscopy, Colonoscopy, Hemicolectomy, Colostomy.

INTRODUCTION:

Colon cancer is the most common type of gastrointestinal cancer. It is a multifactorial disease process, with etiology encompassing genetic factors, environmental exposures (including diet), and inflammatory conditions of the digestive tract.

Colon cancer is a malignant tumor arising from the inner wall of the large intestine (the colon). In the US colon cancer is the third leading type of cancer in males and the fourth in females. In US the number of new cases of colorectal was 33/100,000 population with mortality rate of 14.4/100,000. Approximately 4.2% population will be diagnosed with colorectal cancer at some point of time during their lifetime. In 2015 prevalence was about 1,332,082 with new cases detection about 140,250 per year.¹

Recent reports showed emerging trends in cancer incidence in India, such as the increase in lung cancer in women and colon cancer in men.² Colon cancer may be of genetic, hereditary, familial and sporadic type. Risk factors for cancer of the colon include colonic polyps, long-standing ulcerative colitis, and genetic or family history. Most colorectal cancers develop from polyps. Removal of colon polyps can prevent colon cancer. Colon polyps and early colon cancer can have no symptoms. Therefore, regular screening is important, starting at age 50 (or earlier, if added risk factors are present). Diagnosis can be made by CT scan of abdomen or colonoscopy with biopsy confirmation of cancer tissue or barium studies. Surgery is the most common treatment for colon cancer. Chemotherapy improves the survival rate and quality of life.

India is becoming new hub of colon cancer due to urbanization and

adapting western dietary habits with life style changes and socioeconomic development. Incidence of colon cancer is also in increasing trend in this part of country which encouraged me to carry out this study in this institute.

This present study is to emphasize mode of clinical presentation and different treatment modalities of colon cancer in this area of country.

MATERIALS AND METHODS:

The present study was a hospital based prospective study conducted in the Department of General Surgery, Assam Medical College & Hospital, Dibrugarh, during the one year period from June 2017 To May 2018. A total of 54 patients fulfilling the inclusion and exclusion criteria admitted in the General Surgical units of Assam Medical College & Hospital, Dibrugarh with carcinoma colon were included in this study. Patients who had taken Chemotherapy previously were excluded from the study.

METHODS:

Sigmoidoscopy/Colonoscopic Examination: The patient was prepared with PEGLEC/Exelyte solution 8 hours before the procedure. The site of the lesion was identified, images were taken and minimum of 10 biopsies were taken from the lesion, and sent for histopathological examination.

Radiological Investigations:

- **Ba-enema Examination (single & double contrast):** A 25% w/v mixture of BaSO₄ and water was administered per rectally through an enema nozzle by means of gravity drip of 4 feet. Filling of the colon was monitored under fluoroscope control. Double contrast

examination was undertaken in those where the single contrast films did not show definite growths or doubtful shadows.

- **Ultrasonography of the Abdomen:** was done to evaluate the extent of the lesions, secondaries in the liver and lymphnode metastases.
- **CT Scan Abdomen:** to know the extend of the growth and lymph node status.

Biopsy and Histopathological Examination of the Growth

Techniques:

- (1) Collection of Specimen
- (2) Fixation.
- (3) Dehydration
- (4) Cleaning
- (5) Paraffin embedding
- (6) Labeling of blocks
- (7) Paraffin Sections
- (8) Mounting of the sections of glass slides
- (9) Staining of sections:
 - Removal of wax
 - Hydration
 - Staining
- (10) Cleaning
- (11) Mounting
- (12) Examination under the Microscope

SERUM TUMOR MARKERS-

CEA, CA19.9, CA242, CA 72-4, TIMP-1

Among the markers, most extensively studied and user marker is CEA. Others include CA 72-4, Placental alkaline phosphatase, Pseudouridine and Tissue polypptide antigen.

Management:

Bowel Preparation:

For patients undergoing colonoscopy, the quality of the bowel preparation is essential for performing an accurate examination. Polyethylene glycol-electrolyte solution, a nonabsorbed, sodium sulfate-based liquid, was used as an oral MBP. Patients were required to drink at least 2 to 4 liters of the solution, along with additional fluids. In case of surgery, the patient was kept on liquid diet 48 hours before the proposed operation. The patients were nil by mouth 8 hours before the elective operation and were put on I.V. fluids. The patients were given mechanical cleansing with Peglec solution till the bowel contents were clear watery in consistency. Intravenous prophylactic antibiotics were given at the start of the operation.

Treatment:

The following modalities of treatment was undertaken-

- Surgery : Curative Resection Right hemicolectomy
Extended Right hemicolectomy Left hemicolectomy Segmental colectomy
- Palliative Resection
- Internal Bypass
- Colostomy
- Chemotherapy : FOLFOX 6 regimen As an adjunct to resection
With bypass or colostomy

Post-operatively almost all the patients were treated with the above chemotherapy combination, except those who were not fit for the chemotherapeutic regimens.

Follow Up: After completion of the surgery and in-hospital chemotherapy patients were discharged with instructions to attend the Out Patient Department after 3 weeks or earlier if necessary, for the next pulse of chemotherapy for six such cycles. Asymptomatic patients were then instructed to come for check-up at 3 monthly intervals after the first post-operative period.

The follow up scheme included:

- (1) History
- (2) Clinical Examination:
 - (a) General Examination
 - (b) Abdominal Examination
 - (c) Digital Rectal Examination
- (3) Investigations:
 - (a) Stool for occult blood
 - (b) Hb%, TLC, DLC, ESR

- (c) Platelet count
- (d) LFT, KFT
- (4) Colonoscopic Examination was performed where indicated.

Statistical Analysis: Statistical analysis was carried out using the Statistical Software namely MedCalc 9.0.1 and Microsoft word and Excel have been used to generate graphs, tables etc. Results on continuous measurements are presented on mean \pm standard deviation (Min-Max) and results on categorical measurements are presented in number(%).

RESULTS:

In present study out of 54 patients maximum number of patients were between age of 50-59 years about 35.19% and minimum patients were of age group 20-29 years 7.41%. No patients encountered below age of 20 years in this series. In this present series of study total number of male patients was 29 with overall percentage of 53.70%; whereas the female with 25 patients showed an incidence of 46.30%. The male to female ratio was 1.16 : 1. (Table 1)

Table 1. Demographic Data

Variables	
Age (in years) (Mean \pm S.D.)	53.13 \pm 14.37years
Sex:	
• Male [n (%)]	29 (53.7%)
• Female [n (%)]	25 (46.3%)

Out of 54 patients 49 (90.74%) patients presented with pain in abdomen. The pain was either crampy or constant, localized to the site of the lesion. Weight loss and weakness was next most common symptom experienced by 74.07% patients followed by constipation in 62.96%. Lump in abdomen was found in 29 patients i.e. 53.70% whereas bleeding per rectum was found in 24 patients. 21 patients presented with distension of abdomen and 16 patients with complain of nausea and vomiting. 14 patients attended casualty department with features of large bowel obstruction. (Table 1)

Table 2. Presenting Symptoms

Symptoms	Number (%)
Abdominal Pain	49 (90.74%)
Weight Loss/Weakness	40 (74.07%)
Constipation	34 (62.96%)
Lump Abdomen	29 (53.70%)
Bleeding P/R	24 (44.44%)
Alteration in Bowel Habits	21 (38.89%)
Distension of Abdomen	21 (38.89%)
Nausea/Vomiting	16 (29.63%)
Obstruction	14 (25.93%)

Maximum patients came to hospital within one year of development of symptoms. Out of 54 patients maximum 40 in number i.e. 74.07% visited hospital in duration of 1-6 month of onset of symptoms. None of the cases came after 24 months after onset of complains. Patients who presented early presented with acute abdomen. There was no correlation between the tumour stage and the duration of the symptoms nor did any specific site of the growth bring the patient earlier to the hospital. All the patients were screened with USG whole abdomen. X-ray plain picture abdomen was done in 14 patients who came in emergency with complaints of pain abdomen. Colonoscopy with tissue biopsy was done in 36 patients and biopsied tissue sent for histopathological examination. Contrast enhanced CT Scan of abdomen was carried out in 38 patients. Barium studies was done only in 3 cases. (Table 3)

Table 3. Diagnostic Investigations

Investigations	Number (%)
X-ray Plain Picture Abdomen	14 (25.92%)
USG Whole Abdomen	54 (100%)
Fecal Occult Blood Test (FOBT)	4 (7.41%)
Colonoscopy	36 (66.67%)
CECT Abdomen	38 (70.37%)
Barium Studies	3 (5.56%)

Maximum cases were observed in the sigmoid colon 18 cases out of 54 i.e. 33.33% followed by in ascending colon 14 number of cases with 25.92% and least cases found in splenic flexure, only one case i.e.

1.85%. (Table 4)

Sigmoid Colon	18 (33.33%)
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Table 4. Site

SITE	Number (%)
Caecum	10 (18.52%)
Ascending Colon	14 (25.92%)
Hepatic Flexure	2 (3.70%)
Transverse Colon	5 (7.41%)
Splenic Flexure	1 (1.85%)
Descending Colon	4 (7.41%)

Most of the patients visited hospital for their treatment in the stage of B and C which accounts for 30 in number (53.71) whereas minimum patients were of stage D (12.96%).

Among 54 patients out of total 48 patients who underwent various surgical procedures in which 32 patients 59.26% had curative resection whereas 16 patients had various palliative procedures according to site and extent of disease. 6 patients in present study would not be operated for various reasons.

Table 5. surgical procedure according to location of tumour

Site	Number	Surgery Performed	Resectability
Caecum	9	Right Hemicolectomy plus Ileo-transverse Anastomosis 6 Ileo-transverse Anastomosis 3	Resectable 6; Unresectable 3
Ascending Colon	12	Right Hemicolectomy plus Ileo-transverse Anastomosis 9 Ileo-transverse Anastomosis 3	Resectable 9 ; Unresectable 3
Hepatic Flexure	2	Right Hemicolectomy plus Ileo-transverse Anastomosis 2	Resectable 2
Transverse Colon	4	Resection & anastomosis 2 Extended Right Hemicolectomy 1 Left hemicolectomy with ileostomy1	Resectable 4
Descending Colon	4	Resection and anastomosis 2 Transverse Colectomy 2	Resectable2; Unresectable 2
Sigmoid Colon	16	Transverse Colostomy 9 Left hemicolectomy 5 Sigmoid resection and transverse colostomy 2	Unresectable 9 Resectable 7
Splenic Flexure	1	Left Hemicolectomy 1	Resectable1

Maximum patients i.e. 17 in number (31.48%) underwent for right hemicolectomy with ileotransverse anastomosis for right sided colon lesions, transverse colostomy was done for left sided unresectable growth in 11 patients (22.92%). Ileo-transverse anastomosis was done in 6 patients for unresectable right sided colon growth as palliative procedure whereas 6 patients had left hemicolectomy for left sided colon cancers. Resection and end to end anastomosis was done in 4 patients, 2 for descending colon growth and 2 for transverse colon growth. Extended Right Hemicolectomy, Left hemicolectomy with Ileostomy and Segmental resection of sigmoid colon with Colostomy was done in one patient each.

Histologically all cases came out to be adenocarcinoma. Well differentiated adenocarcinoma was about 40.74% whereas poorly differentiated and undifferentiated were about 14.81% each.

Out of 54 patients 19 patients recovered without any complications while 35 patients developed complications in which 3 patients expired during study period.

Following complications encountered in our study: Total 35 cases had postoperative complications as mentioned in above table. Among complications most common was skin excoriation at colostomy site encountered in 7 patients followed by paralytic ileus in 6 patients, wound dehiscence in 5 patients, fecal fistula, parastomal herniation & pulmonary complications in 4 patients each, septicemia was developed in 3 patients and colostomy retraction in 2 patients.

Chemotherapy: Out of 54 patients 42 patients received post operative chemotherapy in form of FOLFOX 6 regimen.

Follow up: In our present study we lost maximum patients in follow up, none of them completed one year of follow up. Only 12 patients we could follow up upto 6 month whereas 9 and 10 patients upto 5 and 4 months respectively. Only one patient was able to come upto 7 month. No case was detected for recurrence of cancer during follow up. Disease free status while follow up, upto duration of 3 month found in 10 patients, upto 6 month in 31 patients and only one patient upto 9 months.

DISCUSSION:

Our study also shown the similar age incidence with the study by P Kumari *et. al*, 2017³ And Prabhakar *et. al*, 1965–75⁴ also found that incidence was most common in age group 50-59 whereas Peedikayil *et. al* in 2009 found mean age at diagnosis was found to be 58.4 years (SD 13.3; range 23–85 years) with The majority (31.8%) cases were

aged between 61–70 years.⁴

Sex ratio found in study by Mastalier B *et. al* 2012⁵ found ratio of 1.11 : 1 Silverbery (1967) 1.2:1 which is almost similar with present study. Whereas Peedikayil *et. al*, 2009 had males twice than female.⁴

Clinical presentation in present study has quite similarity with study By Mastalier B *et. al*, 2012⁶ and Peedikayil *et. al*, 2009.⁷

Our study is supported by Bailey and Love, Short practice of Surgery⁸ which states that most large bowel cancers arise from the left colon notably rectum (38%), sigmoid (21%) and descending colon (4%). Cancer of caecum (12%) and ascending colon (5%) are less common. Cancer of the transverse colon (5.5%), flexures (2-3%) and appendix are relatively uncommon.⁹

Finding in our study were almost similar with study by Lan liu *et. al* (2017), Frank Benedix MD *et. al*¹⁰ and Peediyakal *et. al* (2009)¹¹

Late stage presentation also supported by study by D Smith *et. al* 2006,¹² and McDermott *et. al* 1983.¹³

In our study resection was possible in 48 patients (88.88%) out of total 54 patients whereas 6 patients could not be placed for resection for various reasons. Resectability rate is almost similar with study by D Smith *et. al* 2006 (88%)¹², McDermott *et. al* 1983 (86.9%)¹³ and Gilberstein *et. al*, 1959.¹⁴

Among 48 cases who underwent for surgery only 59.25% had curative resection, rest of cases had different palliative procedures depending upon extent of disease and location. Curative resection rate is almost similar with McDermott 1983 i.e. 65%.

In our study operative treatment was offered to 48 patients out of which 35 cases had postoperative complications which included mainly anastomotic leaks, parastomal hernia, skin excoriation at colostomy site, colostomy retraction, wound infections, septicemia and paralytic ileus. On the other hand 19 cases recovered eventfully. As compared with other studies rate of complications was high because of late stage presentation, poor nutritional status specially anemia & hypoproteinemia. In our study >60% cases were of age more than 50 years. 5 cases who were admitted from emergency and underwent emergency exploration without bowel preparation. Because of above mentioned reasons complication rate was high in our study.

Histopathology of all operated cases came out to be adenocarcinoma. In which well differentiated type was most common accounting for

40.74 5 cases whereas moderately differentiated was 18.52 and poorly & un- differentiated collectively accounted in 29.62% cases. A study by Ayse Neslin Akkoca found most of the cases of moderately differentiated type histology.¹⁵

While follow up no recurrent case detected. This may be due to short duration of study period with poor patient compliance. During follow up we lost most of the patients. Only 57% cases were followed up upto 6 month. Main reason behind this poor follow up rate is illiteracy and poor socioeconomic status.

CONFLICTS OF INTEREST:

There are no conflicts of interest.

CONCLUSION:

The present study shows that colon carcinoma is one of the common gastrointestinal malignancies in this region of the country. Most common age group affected was old age > 50 years with male predominance. Mostly presentation was late, who presented earlier presented with acute abdomen. Detailed history and physical examination with diagnostic investigations especially radiological and colonoscopy with tissue biopsy helped to obtain a definitive diagnosis. Patients with left sided colon cancer had change in bowel habits with bleeding per rectum while right sided typically presented with weakness, anemia and mass. Most of the patients were non vegetarian by diet. Surgery was mainstay of treatment which was either curative or palliative according to site, stage and resectability. Postoperative complications were more in our study due to late stage presentation, poor general status of patients and poor patient compliance. Postoperative chemotherapy was given to all patients. Most of the patients were ignorant about the disease for which they could not turn up for follow up. Our hospital bases observational study has similar results with other studies in other parts of world with minimal differences. However, a study with long duration with follow up for long time is needed to obtain an exact incidence, risk factors associated mode of clinical presentation and post treatment status.

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