

Original Research Article

Histopathological Spectrum of Malignant Lesions of Colon

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Abstract

Introduction: Colon is frequently affected by wide variety of lesions ranging from inflammatory to neoplastic processes. Colorectal cancer is the fourth ranking cancer worldwide, accounting for approximately 9% of all cancers. Adenocarcinomas are the commonest tumors in colorectal region.

Aims and Objectives:

1. To study Spectrum of malignant colonic lesions in our institute and compare the findings with other studies.
2. To study age, gender, clinical presentation and site wise distribution of lesions.
3. To study prognostic factors in colorectal carcinomas with emphasis on Histopathological staging.

Material methods: This is a 1-year and 8 months retrospective and prospective study from Jan 2018 to August 2019 done in pathology department, DVVPP's medical college and hospital. Samples included are endoscopic biopsies and surgically resected colonic specimens received from department of General surgery. Sample size- 45. Age, gender and presenting complaints were also studied along with histomorphological analysis. Details of microscopic examination were noted for staging of lesions as per Modified Duke's staging system. *Results and discussion:* Colorectal carcinoma is common with increasing age in 48.89% of cases, commonly presenting with bleeding per rectum (53.33%). Rectum was common site noted in 31.11% cases. Adenocarcinomas are common histological type of colorectal carcinoma. *Conclusion:* Grading and staging are important prognostic factors in colorectal carcinomas affecting the extent of surgery, follow-up treatment and to avoid the risk of tumor recurrence.

Keywords: Adenocarcinoma; Colorectal cancer; Grading; Staging.

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Introduction

Colon is frequently affected by wide variety of lesions ranging from inflammatory to neoplastic processes. Large intestine can be site for infections, ulcers, various inflammatory conditions and neoplasms.¹ However, Colon is the most common site for gastrointestinal neoplasia in the western population.^{2,3} Epithelial tumors are major cause of morbidity and mortality. Colorectal cancer is the fourth ranking cancer worldwide, accounting for approximately 9% of all cancers.⁴ Adenocarcinomas are the commonest tumors in colorectal region, other being carcinoid, anal zone carcinoma and melanoma. Intestinal neoplasms may often present with non-specific symptoms including abdominal pain, vomiting, constipation; etc. So, a list of laboratory tests including biopsy is essential for specific diagnosis and better patient outcome. However, Biopsy is gold standard in the early diagnosis and appropriate management of these lesions. Many authors have studied the entire spectrum of large intestinal lesions including both non-neoplastic and neoplastic. However, in this study we have included only malignant lesions of colon so as to emphasize changing clinical presentation and prognostic factors in patients of colorectal cancer. This would facilitate early diagnosis and appropriate management of these patients.

Aims and Objectives

1. To study Spectrum of malignant colonic lesions in our institute and compare the findings with other studies.
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Materials and Methods

This is a 1-year and 8 months retrospective and prospective study from Jan 2018 to August 2019 done in pathology department, DVVPPF's medical college and hospital. Samples included are endoscopic biopsies and surgically resected colonic specimens received from department of General surgery. Sample size- 45.

Inclusion criteria

1. Colonic biopsies

2. Resected specimens of large colon including terminal ileum, caecum, right and left hemicolon, rectum and anal canal.

Exclusion criteria

Resected specimens of appendix.

The resected specimens received were allowed to fix in 10% formalin for 24–48 hours. Gross features were noted in prescribed Histopathological proforma and representative sections were processed for Histopathological examination. Sections taken from paraffin embedded blocks were stained with hematoxylin and eosin. All the slides were reviewed and interpreted by 2 pathologists. Clinical details like age, gender and presenting complaints were also studied along with histomorphological analysis.

Details of microscopic examination were noted for staging of lesions as per Modified Duke's staging system.

Modified Duke's staging system:⁵⁻⁸

Stage A: Tumor limited to mucosa

Stage B1: Tumor reaching upto submucosa, no lymph node invasion

Stage B2: Tumor extending into muscularis layer, no lymph node invasion

Stage C1: The tumor did not exceed the bowel wall, lymph node metastasis

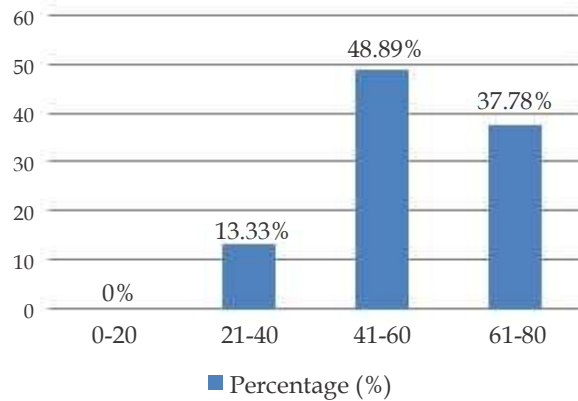
Stage C2: Tumor exceeded the intestinal wall and lymph node metastasis

Stage D: Distant metastasis.

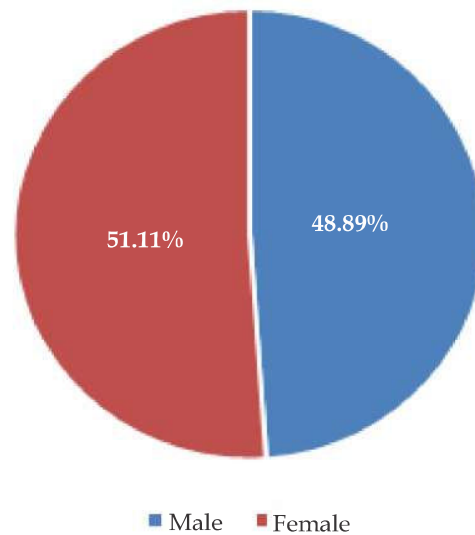
Results

In present study, amongst total 45 cases, 41 cases were of surgically resected colonic specimens and 4 were colonic biopsies for indication of colorectal carcinoma. Majority (48.89%) of colonic malignancies were encountered between 41 and 60 years of age followed by 37.78% cases between 61 and 80 years (Graph 1). In our study, Colorectal carcinoma was found equally increasing in incidence amongst women affecting 48.89% cases as compared to 51.11% in men (Graph 2). Bleeding per rectum was the commonest clinical presentation in 53.33% cases followed by constipation (46.67%), pain in abdomen (33.33%), weakness (22.22%), mass in abdomen (15.55%) and diarrhea in 11.11% cases respectively. Commonest site for colorectal carcinoma in our study was rectum (31.11%) followed by descending colon (20%), ascending

colon (13.33%), sigmoid colon (8.89%) and hepatic flexure in 6.67% of cases respectively. In few cases (2.22%) lesions were also noted in transverse colon (Table 1). On Histopathological grading of lesions, 22 cases were graded as moderately differentiated followed by poorly differentiated 11 cases and 3 cases as well-differentiated adenocarcinomas. Mucinous adenocarcinomas 6 cases (Photograph 2 & 3) and Signet ring cell type (2 cases) sub-groups of adenocarcinomas were also noted with full thickness involvement of bowel wall and lymph node metastasis. However, we also encountered 1 case of High grade spindle cell neoplasm which was reported with differentials of gastrointestinal stromal tumor (GIST) and leiomyosarcoma (Table 2). Details of microscopic examination including extent of the tumor, muscular and serosal involvement, metastasis to mesenteric lymph nodes were studied and further lesions were staged as per modified Duke's staging system wherever possible. Majority of our cases belonged to advanced stages with infiltration of muscular layer (Stage B2- 23 cases), Lymph node metastasis (Stage C1- 8 cases, Stage C2- 5 cases) (Table 3 and Photograph 4).



Graph 1: Age distribution of lesions (n = 45)



Graph 2: Sex distribution of lesions (n = 45)

Table 1: Site wise distribution of lesions (n = 45)

Site	No. of cases	Percentage (%)
Caecum	08	17.78
Ascending colon	06	13.33
Hepatic flexure	03	6.67
Transverse colon	01	2.22
Descending colon	09	20
Sigmoid colon	04	8.89
Rectum	14	31.11
Total	45	100

Table 2: Distribution of Histopathological types of Colonic carcinomas (n = 45)

Histopathological types	No. of cases	Percentage (%)
Well-differentiated adenocarcinoma	03	6.67
Moderately differentiated adenocarcinoma	22	48.89
Poorly differentiated adenocarcinoma	11	24.44
Mucin secreting adenocarcinoma	06	13.33
Signet ring cell type adenocarcinoma	02	4.44
High grade spindle cell neoplasm	01	2.22
Total	45	100

Table 3: Staging of cases as per Modified Duke's staging system (n = 40)

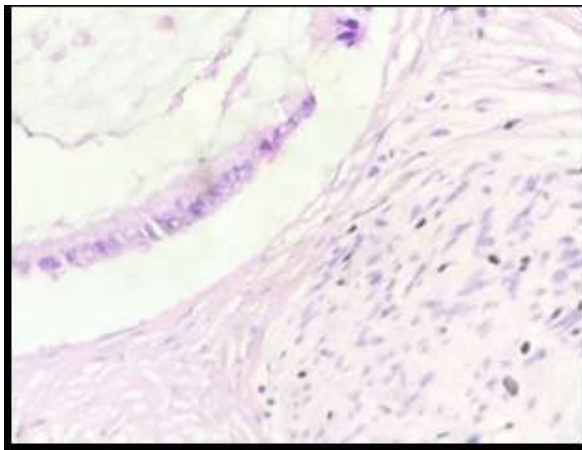
Stage	No of lesions	Percentage (%)
A	1	2.5%
B1	3	7.5%
B2	23	57.5%
C1	8	20%
C2	5	12.5%
Total	40	100



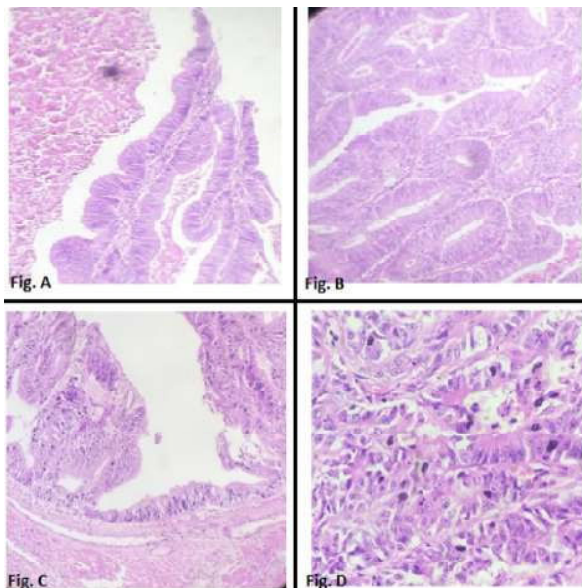
Photograph 1: Resected specimen of IC Junction showing ulceroproliferative caecal mass with adjacent classical polyp.



Photograph 2: Resected specimen of large intestine showing ulceronodular mass with cut surface showing multiple cystic areas filled with gelatinous/mucoid material.



Photograph 3: Showing Mucinous adenocarcinoma with perineural invasion.



Photograph 4: Showing different grades of adenocarcinoma (Fig. A- D).

Fig. A: Showing well-differentiated (Grade I) papillary adenocarcinoma (H & E 40X)

Fig. B: Moderately differentiated (Grade II) adenocarcinoma with glandular pattern (H & E 40X)

Fig. C: Duke's stage B1- Tumor confined to muscle layer (H & E 40X)

Fig. D: Poorly differentiated (Grade III) adenocarcinoma (H & E 40X)

Discussion

Our study included 4 colonic biopsies and 41 resected specimens indicated for colonic carcinoma. In the present study, maximum number of lesions were encountered in elderly age group from 41-80 years of age suggesting increasing incidence of colon cancer after 40 years of age and peaks between 60 and 75 years which is well documented in literature.⁸⁻¹⁴ The youngest patient in our study was 35 years female, whereas elderly patient was 80 years male. However, Mohsin-ul-Rasool, Basharat Mubeen et al. in their study have concluded that colorectal cancers are showing increasing trend towards younger age group (<35 years).^{8,14} Geographic variations for colorectal cancers are probably explained by dietary and other environmental exposures. Dietary causes for higher risk of colorectal cancers include diet poor in fiber and rich in meat whereas non-dietary causes include genetic predisposition.¹⁴ Important finding in our study was that equal number of females were also diagnosed with colorectal cancers. Sulegaon R, Shete S et al. have also found equal sex incidence in their malignant cases.¹ Bleeding per rectum (24 cases) was the commonest presenting complaint in our study followed by constipation (21 cases), pain in abdomen (15 cases) and weakness (10 cases) which was in accordance with other authors.^{1,8} However, we also encountered 5 cases presenting with non-specific diarrhea which suggests changing clinical presentation and the need for early biopsy. Authors have also recommended that, any person with altered bowel habits, iron deficiency anemia should undergo proper evaluation to rule out colonic carcinoma as early as possible.⁸ On studying site-wise distribution of the lesions, rectum was the commonest site for colorectal adenocarcinomas in 14 cases (31.11%) (Table 1). More than 95% of all cases of colorectal cancer are adenocarcinomas.⁵ On histological typing, majority of our cases (22) 48.89% were interpreted as moderately differentiated adenocarcinomas followed by poorly differentiated 11 cases (24.44%) and well-differentiated 3 cases (6.67%). Studies have suggested well-differentiated type corresponding

to histological Grade I (15–20%), Moderately differentiated as Grade II (60–70%) and poorly differentiated to be Grade III (15–20%).¹⁵ Histological grades are found to be related to rate of survival.^{16–18} We also found significant number of our cases diagnosed as Mucinous (13.33%) and Signet ring cell type (4.44%) of adenocarcinomas respectively. Both these sub-groups of adenocarcinomas are considered to be Grade III with frequency ranging from 10 to 15% and from 0.1 to 2.4% respectively. Literature has well documented these variants to carry poorer prognosis as compared to classic adenocarcinomas.¹⁹ Many factors affect the prognosis of colorectal carcinoma. Most important of these is the stage of tumor.^{2,3} Staging is done based on degree of bowel wall invasion, lymph node metastasis and distant metastasis. We preferred to stage cases as per Modified Duke's staging system.^{6,7} In present study, Staging was done in 40 cases. In remaining 5 cases, staging could not be offered as 4 cases were of colonic biopsies not including muscularis and serosal layer. Whereas, 1 case was reported as High grade spindle cell neoplasm with differentials as GIST and leiomyosarcoma, staging could not be done in this case. More than half of our cases belonged to advanced stages including Stage B2 (57.5%) followed by C1 (20%) and C2 (12.5%) suggesting the need for early diagnosis. Early diagnosis of colorectal carcinoma can be life saving and this could be done by widespread implementation of screening programs by Colonoscopy and Fecal occult blood testing. Gilbert's and Nelms in their study of 27000 patients found that sigmoidoscopy screening can successfully prevent distal colorectal cancer by 60–85%. And screening by fecal occult blood testing decreased the rate of colorectal cancer by 20%.^{20–26}

Conclusion

1. Incidence of Colorectal cancer increases with increasing age with peak between 41 and 60 years of age and is equally increasing in incidence amongst women.
2. Rectum is the commonest site for colorectal cancer commonly presenting with bleeding per rectum.
3. Histological grading and Staging of Colorectal cancer are important prognostic factors affecting the extent of surgery, postoperative and follow-up treatment and to avoid the risk of tumor recurrence.
4. We also conclude that Widespread

implementation of colonoscopy screening programs can subject suspected colonic lesions to biopsy providing early histopathological diagnosis.

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