

A histopathological study of colorectal neoplasms in a tertiary care hospital

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Abstract

A wide variety of lesions affect the colon, including neoplastic and non-neoplastic. The clinical diagnosis is usually delayed due to vague symptoms. Colorectal cancer is the 3rd most common tumor type worldwide, and one of the leading causes of cancer related deaths. Pathological examination of biopsy and resected specimens are of crucial for determining the extent of disease, patient management and prognosis assessment. Our aim is to study the histomorphology of various neoplastic lesions of colorectum, to evaluate the incidence, age and sex ratio and classify them in to benign and malignant tumors. A cross-sectional study for 2 years from 1st June 2016 to 31st May 2018 and total of 44 cases were evaluated. The material for study comprised of both resected specimens and biopsies of neoplastic lesions of colorectum received in department of Pathology in J. J. M Medical College were subjected for detailed examination including gross and histopathological findings. Out of 44 specimen received, 17(38.7%) were resected specimens and 27(61.3%) were biopsy specimens and the lesions were further classified in to benign and malignant with 34% and 66% respectively. Most common histological variant of malignant tumor was moderately differentiated adenocarcinoma, and most common benign tumor was juvenile polyp. The majority of patients are between 61-70 years. Females were most commonly affected. Malignant lesions are more common than benign lesions in the colon. Adenocarcinoma is the most common malignant lesions of colon in our study.

Introduction

The colon is the site for broad array of both neoplastic and non-neoplastic diseases, which at times may lead to serious complications.¹ Colon is the most common site for gastrointestinal neoplasm in western population.² Colorectal cancer is one of the common malignancy encountered worldwide and is considered to be leading cause of deaths due to cancer. Colorectal epithelial tumors constitute a major cause of both morbidity and mortality worldwide.³ Approximately 1.2 million new cases of colorectal adenocarcinoma, and 6,00,000 associated deaths, occur each year worldwide. Colorectal cancer incidence peaks at 60-70 years of age, with less than 20% of cases occurring before age 50.²

Colorectal cancer exhibits geographic differences which can be attributed to changes in lifestyle and dietary habits. Non dietary causes include genetic predilection.⁴

Both gross as well as histological type along with clinical data correlation helps in definitive histological typing of the tumor, which helps for appropriate treatment and further management of the patient.

Polyps are most common in colorectal regions but may occur at other sites like esophagus, stomach and small intestine.² Adenomatous type is the most common type of

polyp. Juvenile polyp and hyperplastic polyp are other common types.

Our aim is to study the histomorphological spectrum of various colorectal neoplasms, evaluate relative frequency and classify them in to benign and malignant tumors.

Materials and Methods

This is a 2 years from 1st June 2016 to 31st May 2018 in the Department of Pathology J. J. M. Medical College, Davanagere. Colorectal neoplasms diagnosed on both resected specimens as well as biopsies were included in our study. All the specimens received were processed according to the standard protocols.

Results

During this 2 years study period, we received a total of 44 cases which includes 15 cases (34%) and 29 cases (66%) of benign and malignant tumors respectively, of which 17 (38.7%) of resected specimens and 27(61.3%) of biopsy specimens. (Graph 1). The age of the patient ranged from 2 to 80 years. Out of these 20(45.4%) were males and 24(54.6%) were females, with male to female ratio of 0.8: 1. (Table 1).

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Table 1: Age incidence of neoplastic lesions of colorectum

| S. No | Age in years | No. of cases (%) |
|-------|--------------|------------------|
| 1 | 0-10 | 8(18.1) |
| 2 | 11-20 | 2(4.6) |
| 3 | 21-30 | 4(9.1) |
| 4 | 31-40 | 3(6.9) |
| 5 | 41-50 | 8(18.2) |
| 6 | 51-60 | 4(9) |
| 7 | 61-70 | 10(22.8) |
| 8 | 71-80 | 5(11.3) |
| 9 | >80 | 0(0) |
| 10 | Total | 44(100) |

Malignant tumors of Colorectum

A total of 29 malignant lesions were encountered in colorectum. Of the total 29 lesions, biopsy and resected specimens constituted 13 and 16 cases respectively. Maximum incidence of colorectal carcinoma was seen in 7th decade with the mean age of 54.5 years. Youngest and eldest age was 20 and 80 years respectively. Majority of patients with colorectal carcinoma were non-vegetarian. (Graph 2)

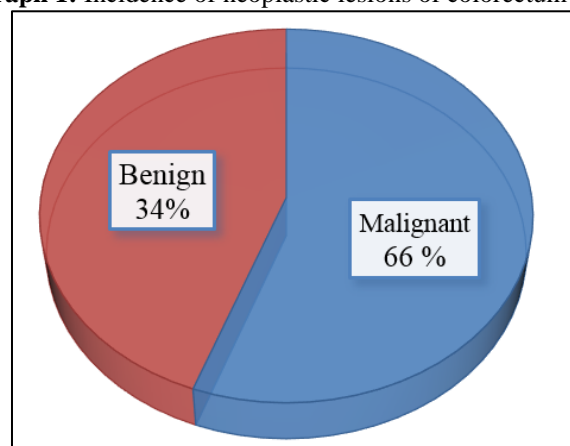
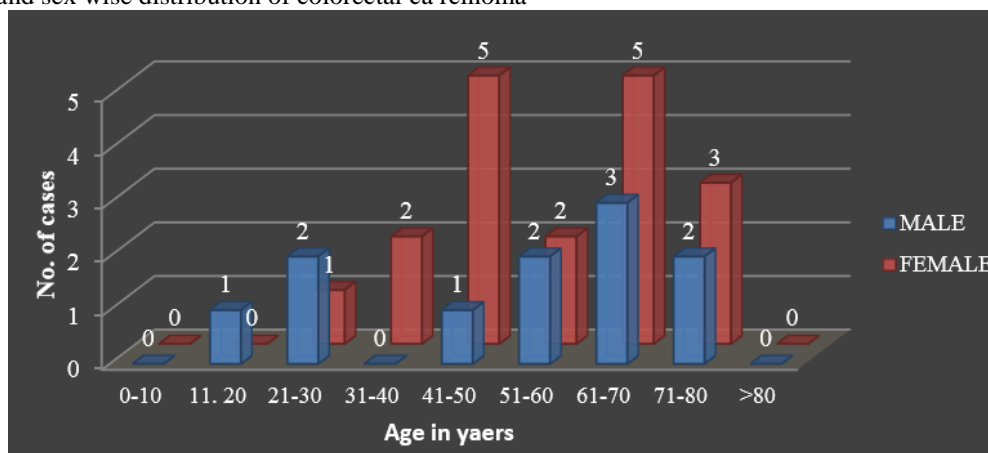
The anatomical site involved frequently was rectum with 16 cases (55.2%), sigmoid colon was 2nd most common with 6 cases (20.7%). (Graph 3)

Patients presented with different clinical manifestations depending on the anatomical site involved by tumor. Most of patient presented with pain abdomen, mass per abdomen, other symptoms includes diarrhea, constipation, tenismus and altered bowel habits. Rectal lesions most commonly presented as bleeding per rectum or mass per rectum.

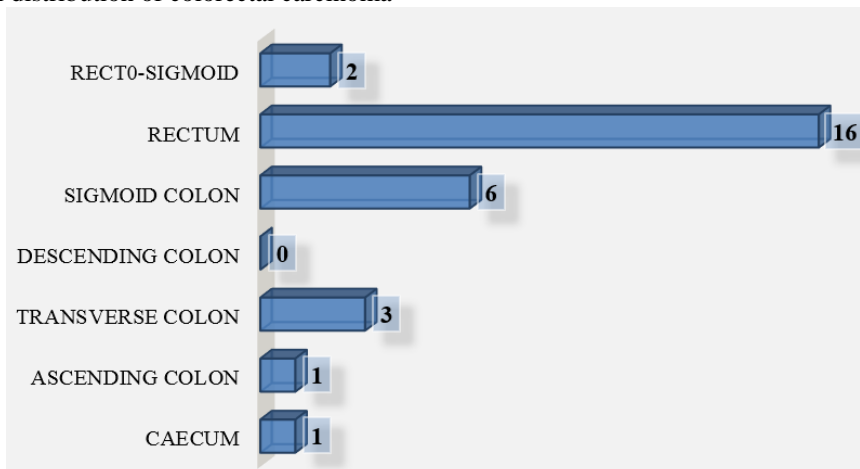
Ulceroproliferative type was the most common morphology of tumor followed by polypoidal and ulcerative type.

Of the total 29 cases of adenocarcinoma were divided into mucinous (13.8%) and non-mucinous adenocarcinomas (86.2%). Adenocarcinomas were also graded into well differentiated (34.6%), moderately differentiated (48.1%) (Fig. 1&2) and poorly differentiated adenocarcinomas (17.3%).

A total of 4 cases showed metastasis. Lymph node involvements were seen in 2 cases whereas other two cases showed distant metastasis to liver and myometrium respectively. Duke's staging was done on resected colonic specimens which showed Duke's stage B as the most common stage of adenocarcinoma of colon (75%). (Graph 4)

Graph 1: Incidence of neoplastic lesions of colorectum**Graph 2:** Age and sex wise distribution of colorectal carcinoma

Graph 3: Anatomical distribution of colorectal carcinoma



Graph 4: Duke’s staging of adenocarcinoma

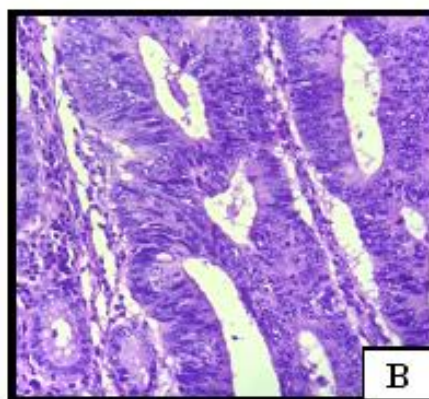
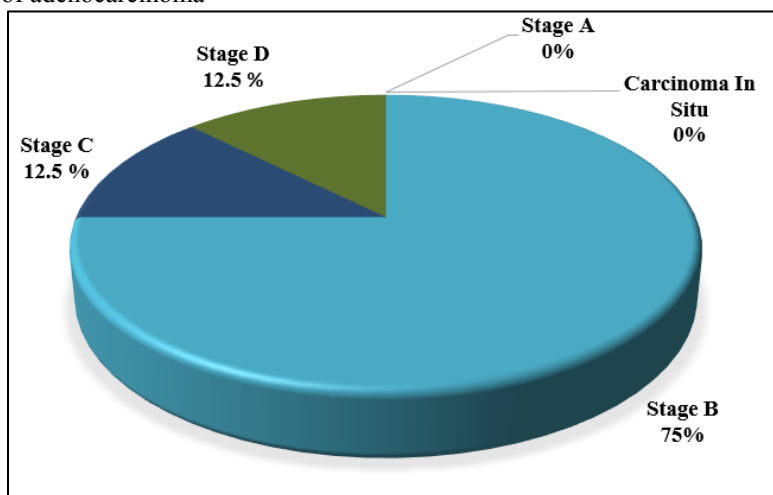


Fig. 1: Gross appearance of well differentiated adenocarcinoma of colon showing ulcero-proliferative growth (A) and microscopy (B): Showing glandular pattern. (H & E stain, x100)

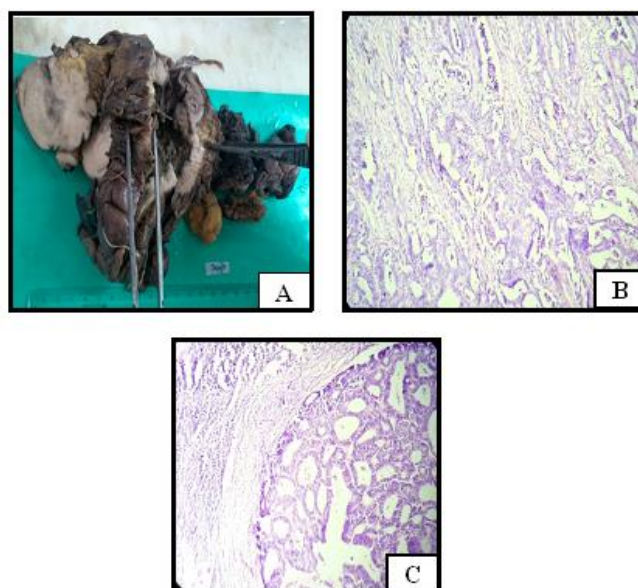


Fig. 2: Gross appearance of moderately differentiated adenocarcinoma of colon (A): and microscopy (B): Showing glandular pattern with lymph node metastasis (C): (H & E stain x400, x100)

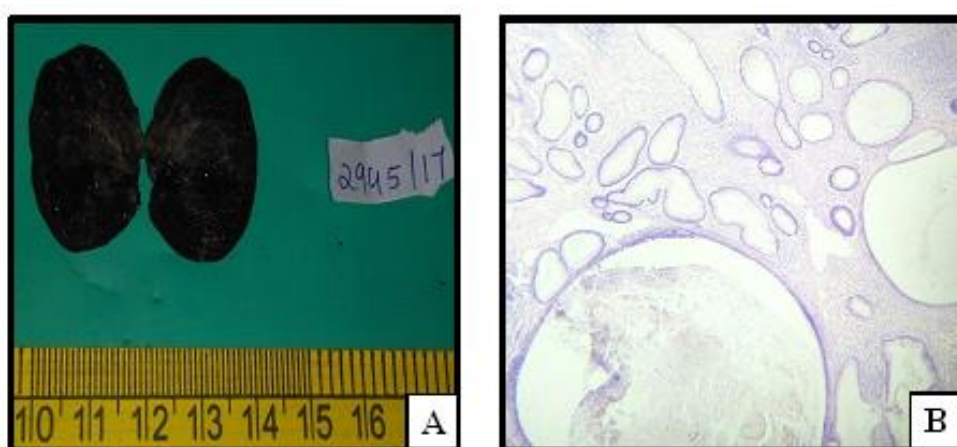


Fig. 3: Juvenile polyp involving rectum. (A): gross and (B): Microscopy showing cystically dilated glands of varying sized with mucoid material, cellular debris and inflammatory exudate. (H & E stain x100)

Table 2: Comparison of staging of adenocarcinoma according to duke's stage (Astler-Coller modification)

| Duke's Staging | Laishram RS et al ⁴ (2010) | | Nanavati MG et al ¹¹ (2014) | | Sharma P et al ³ (2015) | | Present study(2018) | |
|----------------|---------------------------------------|-------|--|------|------------------------------------|------|---------------------|------|
| | No. | % | No. | % | No. | % | No. | % |
| Stage A | 14 | 25.92 | 0 | 0 | 20 | 34.4 | 0 | 0 |
| Stage B | 19 | 35.2 | 18 | 66.7 | 22 | 38 | 12 | 75 |
| Stage E C | 14 | 25.96 | 9 | 33.3 | 12 | 20.6 | 2 | 12.5 |
| Stage D | 7 | 12.96 | 0 | 0 | 4 | 7 | 2 | 12.5 |
| Total | 54 | 100 | 27 | 100 | 58 | 100 | 16 | 100 |

Benign Tumors of Colorectum

A total of 15 benign lesions were encountered in our study of which juvenile polyps (Fig. 3) constituted the most common (11 cases) followed by hyperplastic polyp (2 cases) and one case each of adenomatous polyp and pedunculated lipoma. A single case of adenocarcinoma of ascending colon with caecal hyperplastic polyp was noted in our study.

Majority of cases were seen in first decade. Most of them presented with rectal bleeding. Majority of polyps were located in rectum 11(78.7%), sigmoid colon being 2nd most common site with 2(14.2%).

Discussion

Adenocarcinomas constitute more than 95% of colorectal cancers. Colorectal cancer ranks third as most common

cancer worldwide. Our study showed most common specimen type for colonic lesions was biopsy (61.3%), whereas other studies like Uploankar et al⁵ and Sharma P et al³ had resected specimens as the most common type of specimen. This disparity can be attributed to inclusion of both neoplastic and non-neoplastic lesions of colon by Uploankar et al.⁵

Our study showed higher incidence of malignant lesions compared to benign lesions. Highest incidence of colorectal carcinomas was found between the age group 61-70 years with 27.6%, which is comparable to the study conducted by Sharma P et al³ with 33.8% of cases. Around 41.2% cases of colorectal cancers were seen before the age of 50 years.

A highest proportion of cases were seen in females with male to female ratio of 0.6: 1, which was comparable to study conducted by Kudale SS et al,⁶ which also borderline female preponderance with male to female ratio of 1:1.04. Whereas males were commonly affected in other studies.

Rectum constituted the commonest anatomical site for colorectal carcinomas, sigmoid colon being the next common site. Other similar studies by Rasool M et al,⁷ Sharma P et al³ and Laishram RS et al⁴ which also showed rectum was the most common site for colorectal carcinomas. Adenocarcinoma was the most common histological variant in our study, which was consistent with finding of other similar studies like Kudale SS et al,⁶ Shah N et al⁸ and

Goswami S et al.⁹ Disparity in histological grading of adenocarcinoma was noted in different studies. High incidence of well differentiated adenocarcinoma was observed in studies like Hamid et al,¹⁰ Sharma P et al³ and Kudale SS et al⁶ where as other similar study like Laishram RS et al,⁴ as well as in this present most were moderately differentiated adenocarcinomas.

Duke's B stage was the most common stage of adenocarcinoma which is comparable with study conducted by Laishram P et al,⁴ Nannavati MG et al¹¹ and Sharma P et al³ which showed Duke's stage B as the most common stage of adenocarcinoma with 35.2%, 66.67% and 38% respectively. (Table 2)

Juvenile polyp was the commonest benign lesion encountered in the study followed by hyperplastic polyp and adenomatous polyp. Other studies showed adenomatous polyp as the most common type.

Hyperplastic polyps generally not thought to undergo malignant change. Recent research suggests that loss of deoxyribonucleic acid (DNA) mismatch repair proficiency may occur in hyperplastic polyps and lead to neoplastic change. A single case of adenocarcinoma caecum with caecal hyperplastic polyp was encountered in our study and is comparable with study conducted by Abeyasundara H et al¹² which showed a case of hyperplastic polyp with adenocarcinoma of colon.

Conclusion

We concluded that the malignant lesions are more common in colorectal region with rectum being the most common

site for both benign as well as malignant lesions. Both benign and malignant lesions showed higher incidence in females. The most common malignant lesion was the colonic adenocarcinoma. Patients >50 years are more commonly affected with peak age incidence was seen in 7th decade. Juvenile polyp was commonest type of polyp followed by hyperplastic and adenomatous polyp.

The present study showed an increasing incidence of intestinal malignancies in young age group. Diagnosis usually delayed due to vague presentation thus may herald the onset of colorectal cancer.

Histopathological examination remains the gold standard for diagnosis and helps in determining further management strategies.

Conflict of Interest: None.

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