A Study on the Clinicopathological Profile of the Cases of Colorectal Carcinoma

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Aim: To assess the clinicopathological details of patients with colorectal cancer in a tertiary care centre in India and compare it other studies reported in the literature.
Study Design: This is a retrospective study conducted on all the patients who were admitted in the period of 2017 to 2020.
Place and Duration of Study: Department of Pathology, Saveetha Medical College, Thandalam, Chennai. The data was processed and the manuscript was prepared between June 2020 and January 2021.
Methodology: Patient details were collected from the histopathology records and the parameters studied were age, gender, tumour site, histological type, differentiation and tumour stage of the colorectal carcinoma. The sampling was done using the complete enumerate sampling method. The patients diagnosed histopathologically as colorectal carcinoma were included in our study.
Results: A total of 51 patients had been admitted in the years 2017, 2018, and 2019 in our institute. There was a female predominance among the patients. The mean age of the patients was lesser than the mean age of colorectal cancer cases in other studies which have been reported in the country. The most common tumour site was rectum in both the sexes and the most common histologic type was adenocarcinoma. The most common histological differentiation was moderate differentiation.

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Conclusion: The increased incidence in younger patients as compared to previous studies may be attributable to the lifestyle and dietary changes.

1. INTRODUCTION

Cancer is a dreaded disease with a worldwide burden on the individual and the healthcare system. The incidence of cancer has risen significantly for the past few decades. So having adequate demographic data about cancer patients and by applying appropriate measures, a great impact on reducing the global cancer burden can be achieved [1]. It has been estimated that India has 2.25 million cancer patients according to 2018 ICMR study [2]. Among all cancers Adenocarcinoma was found to be the most common histological type of cancer in both sexes and in all age groups [3].

Colorectal cancer is the most common cancer worldwide after lung cancer and breast cancer with 2/3 of all colorectal cancers occurring in the more developed regions of the world [4].

According to the American Institute for Cancer research there were 18 million new cases of colorectal carcinoma reported worldwide. .In India, the annual incidence rate of colon cancer in men is 4.4 per 1,00,000 population while that in Women is 3.9 per 1,00,000 population [5]. Men have shown a higher incidence of rectal cancer while women have shown a higher incidence of colon cancer. Approximately 25% of colorectal cancers are located in the rectum; with an incidence of 30% in men and 21% in women [6]. The incidence of colorectal carcinoma related deaths is estimated to be approximately 6,08,000 worldwide, accounting for 8% of all cancer deaths.

The development of colorectal cancer involves a multifactorial disease process. It is still unclear if this is due to changes in lifestyle and dietary habits, exposure to changes in environmental factors and inflammatory disease process of the gastrointestinal system. Many Asian countries have recorded an increase in incidents of colorectal cancer by 2 to 4 times in the past few decades [6].

Colorectal cancer has varied clinical presentation. Majority of the patients present with altered bowel habits, bleeding per rectum, anaemia and generalized weakness. Minority present with surgical emergency due to obstruction, severe bleeding per rectum or perforation with peritonitis. This study aims to study the clinical pathological profile of patients diagnosed with colorectal carcinoma who present at a tertiary care Centre over a three-year period. The objective is to study the pattern of demographic distribution of colorectal cancer and its correlation with size, site, grade and stage of the carcinoma. It also aims to study the grade and stage with age, gender and site of the carcinoma.

2. MATERIALS AND METHODS

This was a retrospective, descriptive, observational study conducted on patients diagnosed with colorectal carcinoma admitted in our institute over a period of three years from January 2017 to December 2019. Patient details were collected from the histopathology records of the Department of Pathology, Saveetha Medical College and Hospital. The parameters studied were age, gender, tumour site, histological type, differentiation and tumour stage of the colorectal carcinoma. The sampling was done using the complete enumerate sampling method. The patients diagnosed histopathologically as colorectal carcinoma were included in our study. The results were tabulated and analysed using statistical software SPSS version 26.

3. RESULTS AND DISCUSSION

The present study involved a total of 51 patients comprising of 32, 5 and 14 patients admitted in 2019, 2018 and 2017 respectively. A wide age distribution ranging from 29 to 83 years was noted. Out of the total patients there were 25 males and 26 females. The commonest type of procedure done was rectal biopsy (37.25%) and the least common procedures were subtotal hemicolectomy, diversion colostomy and Hartmann procedure (each comprising of 1.96%). The tumor sites were noted and among all the patients, 13 males and 15 females had rectal carcinoma which totally came 54.9%. On histopathological examination, the histologic types of the colorectal cancers were noted and there were three – conventional

adenocarcinoma, mucinous adenocarcinoma and squamous cell carcinoma. Grossly, tumours were either ulcerative or ulceroproliferative in morphology. Based on the histopathological differentiation, there 11 well differentiated tumours, 11 poorly differentiated tumours and 29 moderately differentiated tumours. The tumours were classified based on their T, N and M staging. There were 37 cases with tumour stage T1, 3 cases with tumour stage T2, 10 cases with tumour stage T3, and one case with tumour stage T4. Among the total 51 cases only 6 cases had nodal involvement, with 3 cases showing N1 and N2 staging each. Only one case showed metastases with M1 stage.

Table 1. Year wise incidence of colorectal carcinoma

Year	No of cases	Percentage
2017	14	27.45
2018	5	12.2
2019	32	78.05

Table 2. Distribution of patients according to age and sex

Year	Male	Female	Total	Percentage
21-30	0	1	1	1.96
31-40	1	4	5	9.80
41-50	5	6	11	21.57
51-60	10	8	18	35.30
61-70	5	4	9	17.64
71-80	3	2	5	9.81
81-90	1	1	2	3.92

Table 3. Type of procedure performed

Procedure	No. of cases	Percentage
Rectal Biopsy	19	37.25%
Colonoscopic Biopsy	15	29.41%
Sigmoidoscopic Biopsy	3	5.88%
Hemicolectomy	7	13.83%
Subtotal Hemicolectomy	1	1.96%
Abdominal Perineal Resection	2	3.92%
Rectosigmoid Resection	2	3.92%
Diversion Colostomy	1	1.96%
Hartmans Procedure	1	1.96%

Table 4. Site and sexdistribution

Site	Male	Female	Total	Percentage
Rectum	13	15	28	54.90
Rectosigmoid	1	5	6	11.76
Colon	5	2	7	13.38
Ascending colon	4	2	6	11.76
Transverse colon	1	0	1	1.96
Descending colon	0	2	2	3.92
Sigmoid colon	1	0	1	1.96

Table 5. Site and histological type of colorectal carcinoma

Site/type	Rectum	Rectosigmoid	Colon	Ascendingcolon	Transverse colon	Descending colon	Sigmoid colon	Percentage
Adeno carcinoma	26	6	5	5	1	2	1	90.19
Mucinous adeno Carcinoma	1	-	2	1	-	-	-	7.85
Squamous cell carcinoma	1	-	-	-	-	-	-	1.96

Table 6. Tumour morphology

Tumour type	No. of cases	Percentage
Ulcerative	44	86.27%
Ulcero-Proliferative	7	13.83%

Table 7. Histological grade of carcinoma (N=51)

Differentiation	Grade	No. of cases	Percentage
Well Differentiated	G1	11	21.57%
Moderately Differentiated	G2	29	56.86%
Poorly Differentiated	G3	11	21.57%

Table 8. Tumour (T Stage) and Lymph Node (N) Status In CRC (N=51)

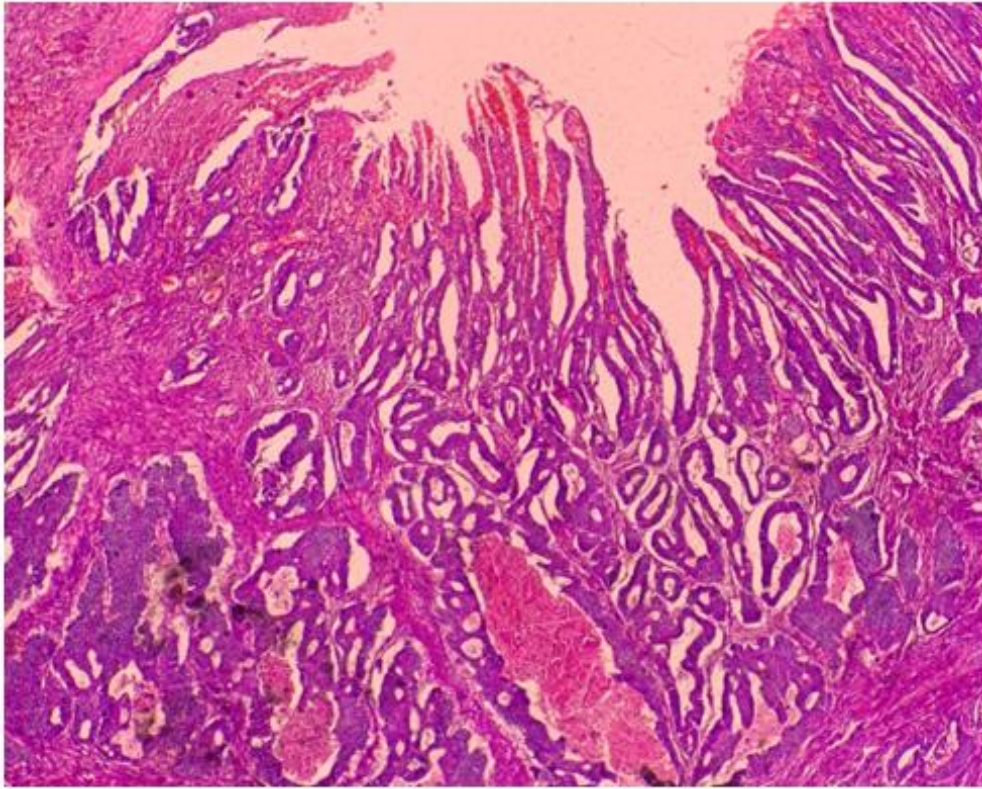| Tumour stage		No. of cases	Percentage
	T1	37	72.54%
T Stage	T2	3	5.88%
	T3	10	19.60%
	T4	1	1.96%
	N1	3	5.88%
N Stage	N2	3	5.88%
M Stage	M1	1	1.96%

Fig. 1. Well differentiated colorectal carcinoma (H&E, 40X)
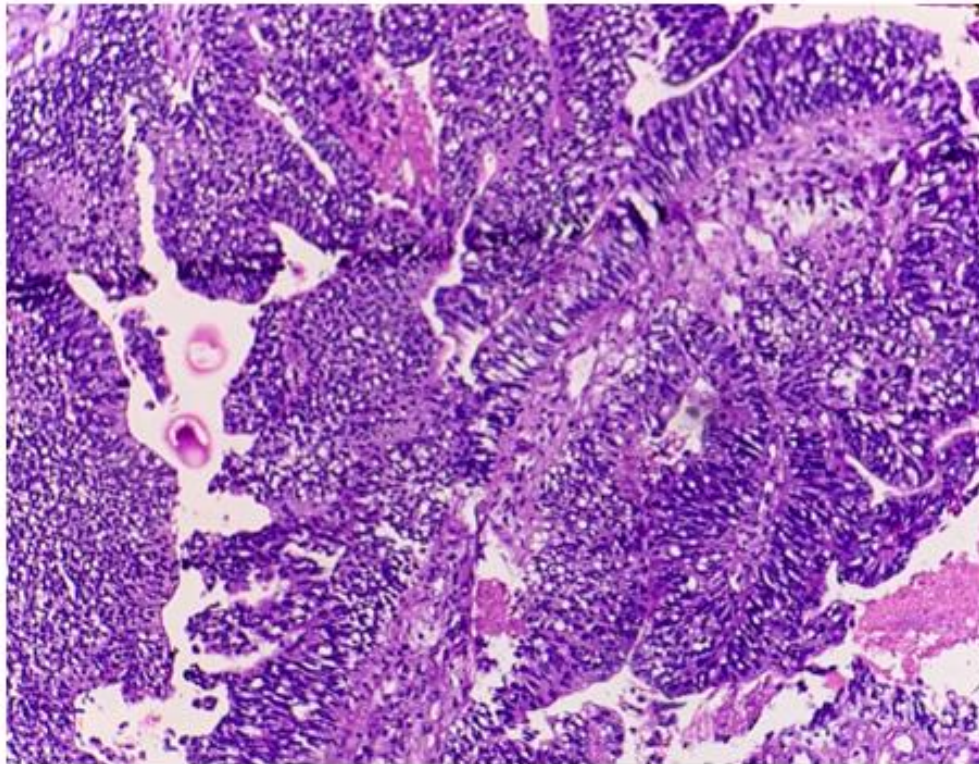

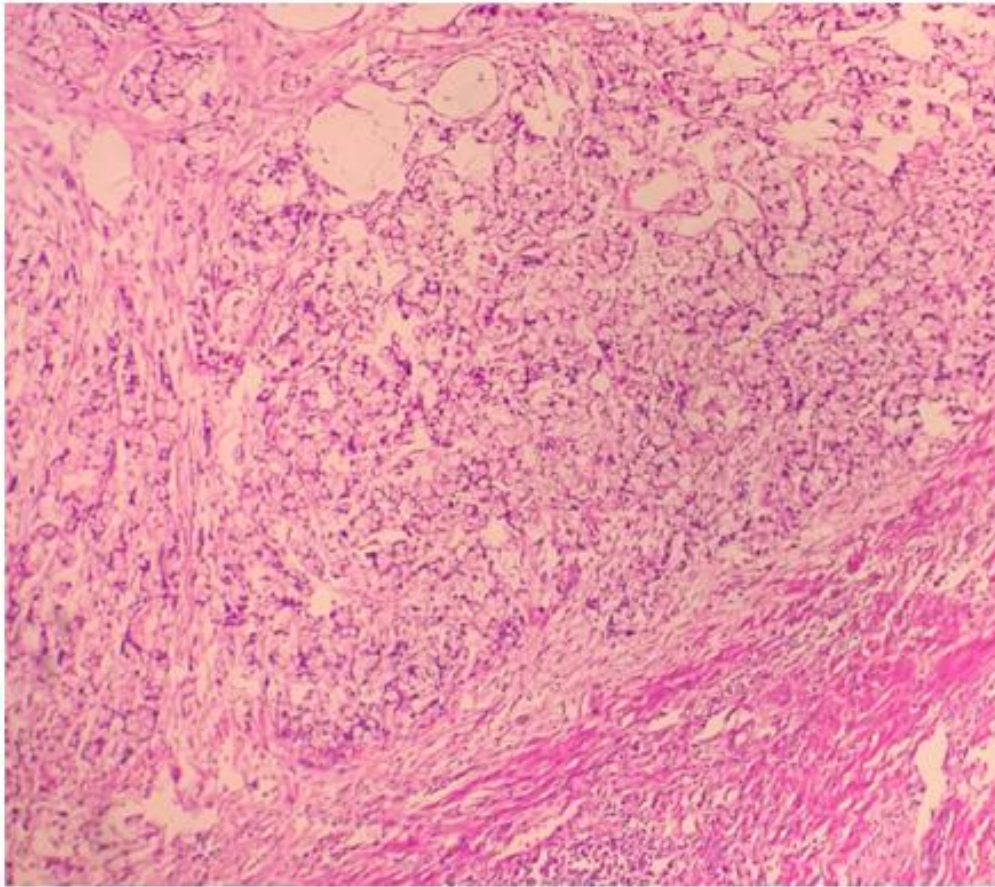**Fig. 2. Moderately differentiated colorectal carcinoma (H&E, 20x)**

Fig. 3. Poorly differentiated colorectal carcinoma (H&E, 10X)

Table 9. AJCC stage wise distribution of cases

AJCC stage	No of patients	Percentage
0	0	0
1	40	78.43
2B	5	12.2
2B	0	0
3A	1	1.96
3B	4	7.84
3C	0	0
4	1	1.96

Colorectal cancer is a major cause of health concern due to its increased association with cancer related morbidity and mortality. According to reports, one death in every 9 minutes attributes to colorectal cancer [7]. The incidence of colorectal cancers is higher in the industrialized and western countries and during the past few decades an increase of almost 2 to 4 times has been noticed in the Asian countries, including China, Japan, South Korea, and Singapore. The rising trend in the incidence and mortality attributable to colorectal cancer is more striking among the affluent than the poorer societies. Although the reason underlying the increase are mostly related to the changes in dietary habits and lifestyle are, the interaction between these factors and genetic characteristics of the Asian populations might also have an important role in the same [6]. Although India is relatively low on the incidence rates when compared to the western countries, a rise in colorectal cancer incidence among young adults has been noticed in various studies [8].

In our study, among the three years the most number of cases were received in the year 2019 (78.05%). There was a significant decrease in the patients from 2017 to 2018 and a drastic increase in 2019.

The mean age of the patients with colorectal cancers in our study was found to be 39.8 years. The mean age of the patients admitted in 2017 was 60.2, in 2018 it was 47.3 and in 2019 it was 54.6 years showing a decrease in the mean age in 2018 and 2019 when compared to 2017. In a previous study the mean age of patients affected by colorectal cancer was compared and in 1970-1980 the mean age was 63 years whereas between 1990 and 2000 it was 52.3 years. This shows a trend of decrease in the mean age of the affected patients with time which is a matter of concern [9]. Most of the cases (35.30%) were in the age group of 51 to 60 years while the least were in the age group of 21 to 30 years, similar to the study by Patil et al. [10] Among the patients with colorectal cancer in the age group of 51 to 60 years, there were 10 males and 7 females with adenocarcinoma and one female patient with mucinous adenocarcinoma.

There was a predominance in female patients in our study which was not in concordance with most other studies [11].

In both males and females the most common site of colorectal cancer was the rectum which was similar to the results obtained from the study by Patra et al. [12]. The cause of the increased incidence of rectal cancers is thought to be the changes in metabolism such as excess bile salt production or intake of low fiber diets [13].

There were 3 histological types of colorectal cancers in our study in which adenocarcinoma (90.19%) was the most common followed by mucinous adenocarcinoma (7.85%) and squamous cell carcinoma (1.96%). This was in concordance with the study by Kumar et al. [14] and Mosli et al. [15]. Adenocarcinoma cases were most common in the rectum, followed by rectosigmoid, colon, ascending colon, descending colon, transverse colon and sigmoid colon in the descending colon in the descending order of presence. Mucinous adenocarcinomas were more common in the colon than the rectum and there was only one case of squamous cell carcinoma which was in the rectum.

Most of the tumours were grossly ulcerative (86.27%) which was similar to the results of the study by Poornakala et al. [16].

In our study, most of the tumours were moderately differentiated (56.86%) and this is in concordance with the study by Narang et al. [17].

The most common tumour stage was T4 stage with 37 cases (72.54%) followed by T3 stage, T2 and T4 stage in the decreasing order of frequency , nodal involvement shown by 6 cases and metastases was shown only by one case.

4. CONCLUSION

The present study showed an increasing trend in the number of colorectal cancer patients admitted in our institution with the most common site being the rectum and the most common type being adenocarcinoma. The commonest tumour stage of patients received in our institution was T1 which is most probably due tio the increase in screening techniques using colonoscopy. However, inspite of the reduced incidence of colorectal cancers among the older individuals in India, when compared to the western countries, the increased incidence among the younger individuals is a matter of concern. Hence, not only the older age group, but the younger individuals presenting with rectal bleeding and other symptoms related to colorectal carcinoma should be also be evaluated with the help of endoscopy to rule out colorectal carcinoma.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL CLEARANCE

Institutional Human ethical committee were obtained from Saveetha Medical College and Hospital - SMC/IEC/2019/01.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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