Original Article

ISSN (O): 2347-3398; ISSN (P): 2277-7253

Changing Trend in Colorectal Carcinoma in Central India

Kamal Bandhate[1], Ashok Kumar Diwan[2], Vijay Mahobia[3], Subeera Khan[4]

[1]Post Graduate 3rd Year, Department of Radiation Oncology, Govt. Medical College & Hospital, Nagpur, Maharashtra, India, [2]Professor & Head, Department of Radiation Oncology, Govt. Medical College & Hospital, Nagpur, Maharashtra, India, [3]Associate Professor, Department of Radiation Oncology, Govt. Medical College & Hospital, Nagpur, Maharashtra, India, [4]Assistant Professor, Department of Radiation Therapy and Oncology, Government Medical College and Hospital, Nagpur, Maharashtra, India.

Abstract

According to some data it has been seen that colorectal carcinoma has been showing some change in its trend of occurrence amongst young individuals. This is a retrospective study done on patients who were diagnosed with colorectal carcinoma between 2017 and 2020. The data was acquired from the Departmental record of the Department of Radiation Oncology, GMCH, Nagpur. A total of 330 patients were included in the final analysis.

Keywords: Colorectal carcinoma, young patients, the incidence.

Corresponding Author: Kamal Bandhate, Post Graduate 3rd Year, Department of Radiation Oncology, Govt. Medical College & Hospital, Nagpur, Maharashtra, India.
E-mail: kamalbandhate04@gmail.com

Received: 22 November 2020 **Revised: 31 December 2020** **Accepted: 17 January 2021** **Published: 27 March 2021**

Introduction

Colorectal carcinoma remains a major worldwide health problem. The incidence of colorectal carcinoma in India is lower than that in western countries, and it is the seventh leading cancer in India. According to Globocon data, it is the 4^{th} most common cancer in men. Age is the major risk factor for the development of colorectal carcinoma (CRC), with the median age of diagnosis in the seventh decade. The incidence rate increases dramatically between ages 40 and 50 years and each subsequent decade thereafter. The age-standardized rate (ASR) in India for CRC is less i.e. at 7.2 per 100,000 population for males and for females it is 5.1 per 100,000 population. In India, there is a common perception amongst oncologists that most of the cases of colorectal carcinoma in India present at a younger age and with more advanced-stage disease, more signet ring morphology, and the more anorectal site as compared to the colonic site of primary as compared to that reported worldwide.

There has been an increase in the incidence of colorectal carcinoma amongst young individuals by 2% to 8% annually over the last decade.[1] Between the ages of 20 and 49 years,[2] colorectal carcinoma is amongst the top 10 common causes of death. Some of the retrospective data have shown that younger patients usually have an increased risk of presenting to the hospital with an advanced stage disease when compared to elder patients.[3] There has been a decline in the rate of CRC amongst adult patients of >50 years of age and this is primarily because of the widespread application of screening guidelines.[4] Nearly all CRC's develop within benign precursor polyps, where gatekeeper mutation initiates epithelial overgrowth by constitutive activation of the Wnt signaling pathway and additional mutations combine to promote invasion and metastasis. Pedunculated polyp larger than 1 cm confers the highest risk, with approximately 15% progressing to invasive cancer over 10 years. The pattern of colorectal carcinoma varies globally and is strongly linked to the human development index level. In general, the incidence of colorectal carcinoma is increasing in low-income and middle-income countries but declining in developed countries, especially those that have applied for screening programmes.

Subjects and Methods

It is a retrospective observational study that comprises diagnosed cases of colorectal carcinoma above 20 years of age in the Department of Radiation Therapy and Oncology, Government Medical College and Hospital, Nagpur from Jan 2017 to Jan 2020.

Inclusion criteria:

- Adult individuals
- Histologically proven colorectal adenocarcinoma.

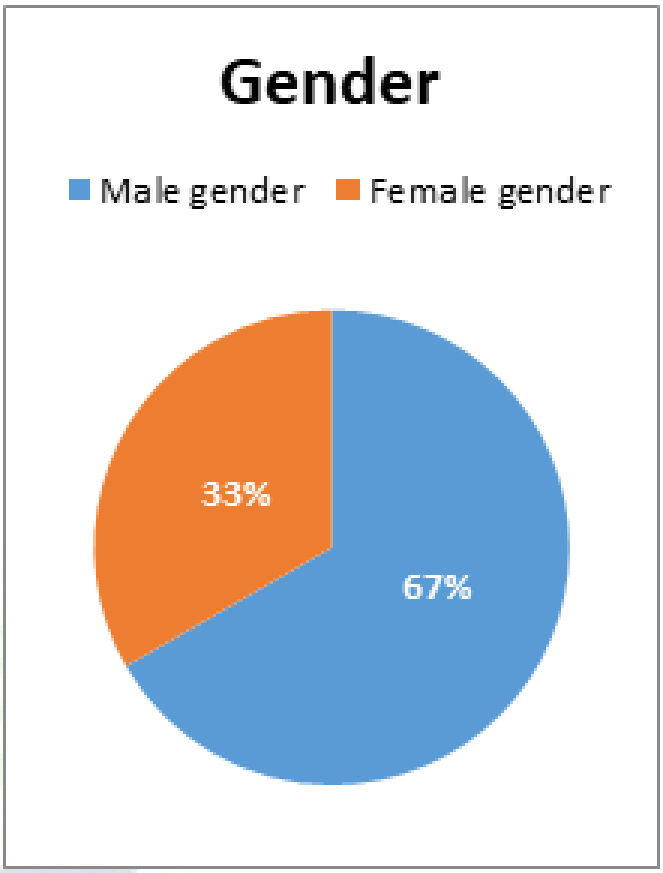
Exclusion Criteria:

- Any other histological variant.

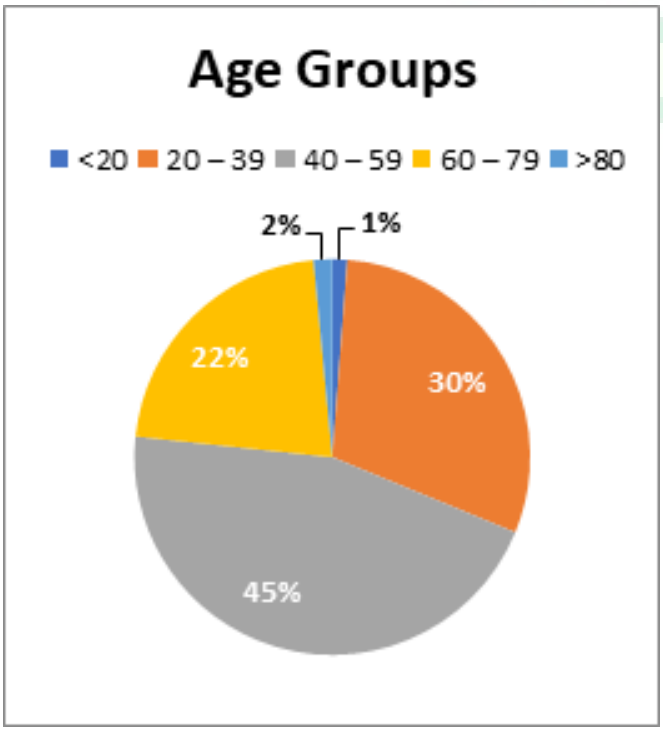
Collection of Data:

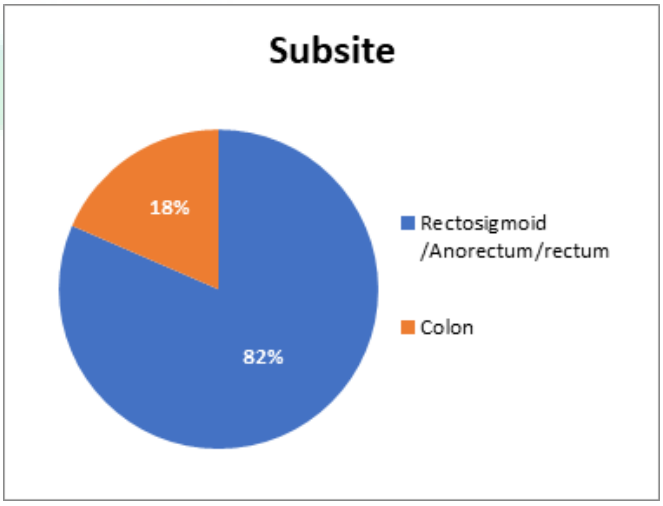
The data was collected from the Department of Radiation Therapy and Oncology, Government Medical College and Hospital, Nagpur.

Sample Size: 330 patients



Results





The most common primary site was rectum/recto-sigmoid/anorectum (274 patients, 83%) and colon (56 patients, 17%).

All 330 patients had tumour histology revealing an adenocarcinoma. 30 patients (9%) had well-differentiated tumours, 152 patients (46%) had moderately differentiated tumours, and 43

Table 1: Patient's demographic data and site of the primary tumor N (total number of the patient) =330

Age groups	Total No	Percentage
<20	4	1%
20 – 39	99	30%
40 – 59	150	45%
60 – 79	72	22%
>80	5	2
Gender	**Total No**	**Percentage**
Male gender	220	67%
Female gender	110	33%
Subsite	**Total No**	**Percentage**
Rectosigmoid/Anorectum/rectum	269	82%
Colon	61	18%

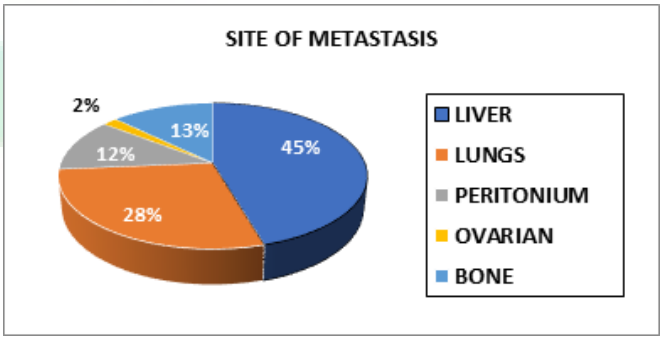
Table 2: Tumour characteristic on pathology

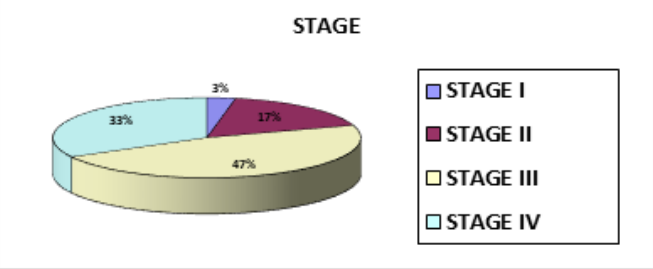
Histological Differentiation	Total No	Percentage
Well-differentiated	30	9%
Moderate differentiated	152	46%
Poorly differentiated	43	13%
Undifferentiated tumor	23	7%
Signet ring cell tumor	49	15%
Mucinous tumor	33	10%

patients (13%) had poorly differentiated tumours. Differentiation was not reported for 23 (7%) tumours. 49 patients (15%) had a signet ring cell carcinoma, while 33 patients (10%) had mucinous carcinoma.

Table 4: Stage Distribution and Site of Metastasis

	STAGE
STAGE I	3%
STAGE II	17%
STAGE III	47%
STAGE IV	33%

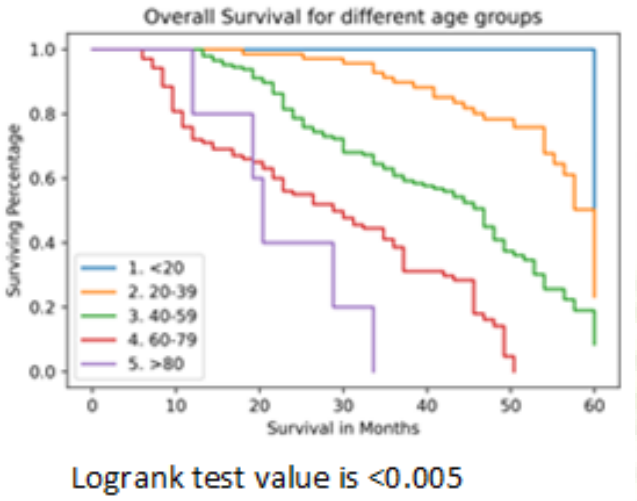


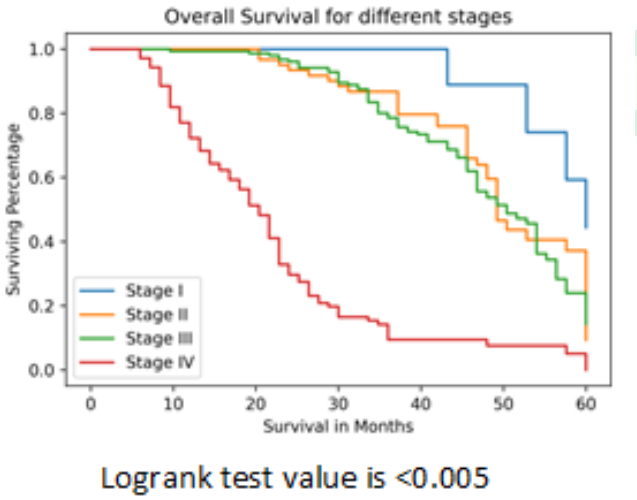


Most patients (155, 47%) had stage III disease, while 110 patients (33%) had stage IV (metastatic) disease out of which liver metastasis is most common followed by lung metastasis. Early tumours were very rare (10 patients—3% had stage I disease).

Table 3: Age and Stage Correlation

AGE GROUP	STAGE I	STAGE II	STAGE III	STAGE IV
<20	1	2	1	-
20-39	4	22	49	24
40-59	2	24	79	45
60-79	2	10	26	34
>80	-	1	3	1





Discussion

The result of our study shows that younger patients have a higher chance of presenting with an advanced state but with a better overall survival rate. The relationship between age and prognosis is not yet fully understood, although it has been established that there is an increase in the incidence of colorectal carcinoma in a young individual. The result of our study are more consistent with a retrospective cohort study that was done in the year 1991 to 1999 by using SEER data, which shows that patients with young age (age 20 to 40 years) with colorectal carcinoma were more likely to present with an advanced stage and higher-grade tumors than older patients (age 60 to 80 years).[5]

Younger patient with stage IV CRC shows better survival because they are treated with more aggressive management plans. Pertaining to any specific chemotherapy regimen there is no specific data available, younger patients with metastatic CRC can tolerate the toxic effects of the FOLFOX-4 (oxaliplatin, folinic acid, and fluorouracil) as compared to that of elderly.[6] After evaluating the data from the Central Cancer Registry of the United States Department of Defence Manjelievskaia et al. found that younger individuals(18 to 49 years) and middle-aged (50 to 64 years) patients were more likely to receive systemic postoperative chemotherapy two to eight times as compared to elder patients (65 to 75 years) across all stages.[7] However, there was no improvement in survival seen.

There are many evidences that show that better overall survival among young individuals is usually related to their ability to receive and tolerate adjuvant and neoadjuvant chemotherapy. Also, younger patients are more likely to undergo surgery than elderly patients, which contributes to prolonged overall survival and CSS.

After doing the evaluation of the relationship between age and CRC prognosis.[8] Chou et. Al has published his retrospective study recently. In Taiwan over 60,000 patients with colorectal carcinoma were divided into six age groups:

- <40 years
- 41 to 50 years,
- 51 to 60 years,
- 61 to 70 years,
- 71 to 80 years,
- < 80 years.

Individuals present in the young age cohort (<40 years) had poor overall survival as compared to those in middle-aged patients (41 to 50 years) and old age patients (61 to 70 years) and are more likely to present with aggressive histopathology. Some Investigators says that due to late detection of CRC on young individuals leads to poor overall survival. Young patients with CRC are usually diagnosed only after it has become symptomatic as screening for colorectal carcinomas is started only after 50 years of age. Patients with young age show a better overall survival in comparison to those patients in the older age group (71 to 80 years and over 80 years) in spite of having aggressive tumor such as signet ring cell carcinoma and mucinous carcinoma. AJCC tumor staging and the absence of surgical treatment data are the limitations of this study. Data from our study signifies that the patients present in both the middle-aged and elderly cohorts had poorer overall survival as in comparison to young patients for all histologic type of CRC as well as shorter CSS for signet-ring cell carcinoma and adenocarcinoma not otherwise specified.

Our study shows that young individuals usually have an increased risk of metastasis at the time of initial presentation. However, in comparison to other cohorts, patients in the young age cohort show a longer overall survival and CRC-specific survival. Rodriguez et al. has published a study by reviewing data from the Ontario Cancer Registry and he found that patients under 40 years of age have shown improved overall survival for more advanced and aggressive disease as compared to older patients.[9]

Reasons explaining why young people are more likely to present with metastatic disease are given below. First, the screening for colorectal usually begins after 50 years of age. While the American Society for Gastrointestinal Endoscopy and the American College of Physicians has recommended that an average risk individual should begin screening for colorectal carcinoma at the age of 50 year.[10,11] However, in 2017, the new guidelines published by American Cancer Society (ACS) suggest that screening for CRC should start at the age of 45 years. The ACS cited a landmark study by Siegel et al. in which investigators had analyzed data from nearly half a million patients and noted a marked increase in the annual incidence of CRC in young individuals since the mid-1980s.[12] The Siegel et al. has found that the incidence rates of colorectal carcinoma had consistently increased among age group of 20 to 39 years by 1% to 2.4% annually.

Second reason is that the younger patients usually does not seek any medical attention until the symptoms get worsen.[13] Also, as compared to middle-aged and older adults, young patients can tolerate chemotherapy regimens well. As described by Kneuertz et al., young patients will have a low Charlson-Deyo Comorbidity Index- -when compared to individuals of older age,[14] [which is a weighted score calculated based on the number of pre-existing comorbid conditions]. All the above factors have contributed to better survival of the patients in this age category. Third, signet-ring cell carcinoma - disproportionately affects young individuals which is an aggressive subtype of CRC that spreads rapidly and is characterized by late manifestation of symptoms.[15]

Conclusion

Our study also shows a wide variation in the histological as well as demographic features. All these raises the possibility that as compared to the West CRC in India being a different disease (more signet ring tumours, younger age, more left-sided tumours, more malnourished patients and advanced stage at presentation). The younger population of India might contribute to more numbers of young patients. Furthermore, investigation to be done to find out the cause for a greater number of signet ring cell carcinoma. Since a greater population of young patients are presenting with CRC, clinicians should be trained to take detailed family history. Assessments of nutrition should also be included in the management plan, as most of the CRC patients are malnourished.

References

1. O'connell JB, Maggard MA, Liu JH, Etzioni DA, Livingston EH, Ko CY. Rates of colon and rectal cancers are increasing in young adults. Am Surg. 2003;69(10):866–872.
2. Fairley TL, Cardinez CJ, Martin J, Alley L, Friedman C, Edwards B, et al. Colorectal cancer in U.S. adults younger than 50 years of age. Cancer. 1998;107(5):1153–1161.
3. Zbuk K, Sidebotham EL, Bleyer A, Quaglia MPL. Colorectal Cancer in Young Adults. Semin Oncol. 2009;36(5):439–450. Available from: https://dx.doi.org/10.1053/j.seminoncol.2009.07.008.
4. Wang R, Wang MJ, Ping J. Clinicopathological Features and Survival Outcomes of Colorectal Cancer in Young Versus Elderly: A Population-Based Cohort Study of SEER 9 Registries Data. Medicine (Baltimore). 2015;94(35):1402. Available from: https://doi.org/10.1097/md.0000000000001402.
5. O'Connell JB, Maggard MA, Liu JH, Etzioni DA, Livingston EH, Ko CY. Do Young Colon Cancer Patients Have Worse Outcomes? World J Surg. 2004;28(6):558–562. Available from: https://dx.doi.org/10.1007/s00268-004-7306-7.
6. Wiela-Hojeńska A, Kowalska T, z EFC, Łapiński Ł, Nartowski K. Evaluation of the Toxicity of AnticancerChemotherapy in Patients with Colon Cancer. Adv Clin Exp Med. 2015;24(1):103–111. Available from: https://dx.doi.org/10.17219/acem/38154.
7. Manjelievskaia J, Brown D, McGlynn KA, Anderson W, Shriver CD, Zhu K. Chemotherapy Use and Survival Among Young and Middle-Aged Patients With Colon Cancer. JAMA Surg. 2017;152(5):452. Available from: https://dx.doi.org/10.1001/jamasurg.2016.5050.
8. Chou CL, Tseng CJ, Shiue YL. The impact of young age on the prognosis for colorectal cancer: a population-based study in

Taiwan. Jpn J Clin Oncol. 2017;47(11):1010–1018. Available from: https://dx.doi.org/10.1093/jjco/hyx110.
9. Rodriguez L, Brennan K, Karim S, Nanji S, Patel SV, Booth CM. Disease Characteristics, Clinical Management, and Outcomes of Young Patients With Colon Cancer: A Population-based Study. Clin Colorectal Cancer. 2018;17(4):651–661. Available from: https://dx.doi.org/10.1016/j.clcc.2018.06.007.
10. Lin JS, Piper MA, Perdue LA, Rutter CM, Webber EM, Connor E, et al. Screening for Colorectal Cancer: Updated Evidence Report and Systematic Review for the US Preventive Services Task Force. JAMA. 2016;315:2576–2594. Available from: https://doi.org/10.1001/jama.2016.3332.
11. Wilt TJ, Harris RP, and AQ. Screening for Cancer: Advice for High-Value Care From the American College of Physicians. Ann Intern Med. 2015;162(10):718. Available from: https://dx.doi.org/10.7326/m14-2326.
12. Siegel RL, Fedewa SA, Anderson WF, Miller KD, Ma J, Rosenberg PS, et al. Colorectal Cancer Incidence Patterns in the United States, 1974–2013. J Natl Cancer Inst. 2017;109(8):322. Available from: https://dx.doi.org/10.1093/jnci/djw322.
13. Scott RB, Rangel LE, Osler TM, Hyman NH. Rectal cancer in patients under the age of 50 years: the delayed diagnosis. Am J Surg. 2016;211(6):1014–1018. Available from: https://dx.doi.org/10.1016/j.amjsurg.2015.08.031.
14. Kneuertz PJ, Chang GJ, Hu CY, Rodriguez-Bigas MA, Eng C, Vilar E, et al. Overtreatment of young adults with colon cancer: More intense treatments with unmatched survival gains. JAMA Surg. 2015;150(5):402–409. Available from: https://doi.org/10.1001/jamasurg.2014.3572.
15. Gopalan V, Smith RA, Ho YH, Lam AKY. Signet-ring cell carcinoma of colorectum—current perspectives and molecular biology. Int J Colorectal Dis. 2011;26(2):127–133. Available from: https://dx.doi.org/10.1007/s00384-010-1037-z.

How to cite this article: Bandhate K, Diwan AK, Mahobia V, Khan S. Changing Trend in Colorectal Carcinoma in Central India. Asian J. Med. Res. 2021;10(1):5-10.

DOI: dx.doi.org/10.47009/ajmr.2021.10.1.RO2

Source of Support: Nil, **Conflict of Interest:** None declared.