Retrospective Audit In Patients With Colorectal Cancer who Underwent Surgical Management in a Tertiary Care Centre: Our Experience

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Abstract

Worldwide colorectal cancer (CRC) is the third most frequently diagnosed cancer and ranks at the top amongst cancers affecting the gastrointestinal tract, representing 10% of all tumours with neoplastic etiology. CRC has a documented higher prevalence in women. This disease is most prevalent in those aged 65-74, is more commonly diagnosed in the younger population due to various risk factors. Our audit aimed to evaluate the demography and clinical presentation of CRC patients who have undergone surgical treatment over five years and to compare it with those of the available reports in Indian and Western literature.In the period 2017-2023 (with one year having zero elective surgeries being performed due to the COVID-19 pandemic), a total number of n=52 underwent surgical procedures for a diagnosed case of colorectal cancer in the Department of General Surgery of a tertiary hospital. Out of 52, 48 (92%) patients underwent resection of the tumour with curative intent in an elective program. In contrast, 2 to 3.3% underwent palliative surgeries in an elective program, and another 2 to 3.3% of patients were treated as emergency cases who were postoperatively confirmed as malignant.

Keywords: Colorectal cancer, GI tract, Palliative Surgeries

Introduction

Worldwide colorectal cancer (CRC) is the third most frequently diagnosed cancer and ranks at the top amongst cancers affecting the gastrointestinal tract, representing 10% of all tumours with neoplastic etiology [1]. CRC has a documented higher prevalence in women, with it being the second most commonly diagnosed cancer in females and the third most frequently diagnosed cancer in males. CRC, which is a disease most prevalent in those aged 65-74, is more commonly diagnosed in the younger population due to risk factors such as obesity, sedentarism, unhealthy nutritional habits, smoking and a progressively ageing population. The age-standardized rate (ASR) for CRC in Bharat is low at 7.2 per 100,000 population in men and 5.1 per 100,000 population in women. However, the absolute number of people suffering from CRC is still large as India has a population of a billion plus people [2].

Incidence rates, as determined by cancer registries all over the world, reveal that more than half of the cases of CRC occur in developed countries. However, mortality due to this disease is significantly higher in the lesser developed nations owing to limited resources and inadequate health infrastructure. In India, the five-year survival rate of CRC is one of the lowest at less than 40%, with studies showing a progressive decline in some cancer registries [3]. The cause for the poor survival is attributed to the inadequacies in the diagnostic and treatment pathways for CRC. To plan a strategic line of management for this disease in India, it is imperative to appraise the demographic and clinical profile of patients with CRC, and this study aims to take a preliminary step in that direction.

Aim

This audit aimed to evaluate the demography and clinical presentation of CRC patients who have undergone surgical treatment over five years and compare it with those of the available reports in Indian and Western literature.

Methods

We performed a five-year-long retrospective analysis of a database of patients who underwent surgical treatment for colorectal cancer in a tertiary referral centre in northern India. Materials used in this study included the patient's demographic details, clinical history including dietary history, serum CEA levels (wherever applicable), basic laboratory investigations, stage of

disease at presentation, operative and treatment protocols, and hospitalized patient protocols. All patients with a diagnosis of CRC , pre or post-chemo and/or radiation therapy, which were planned to undergo resection of the tumour with curative or palliative intent as part of routine elective procedures or in an emergency setting for obstructive features, were included.

Results

In the period 2017-2023 (with one year having zero elective surgeries being performed due to the COVID-19 pandemic), a total number of n=52 underwent surgical procedures for a diagnosed case of colorectal cancer in the Department of General Surgery of a tertiary hospital. Out of 52, 48 (92%) patients underwent resection of the tumour with curative intent in an elective program. In contrast, 2 to 3.3% underwent palliative surgeries in an elective program, and another 2 to 3.3% of patients were treated as emergency cases who were postoperatively confirmed as malignant.

The demographic features are mentioned in Table 1. Gender representation of operated patients showed a male predominance, with 39(75%) males and 13 (25%) females. The mean age of patients with CRC was 51.65. The median duration of symptoms was 3.7 months. The commonest symptom was rectal bleeding followed by dull aching pain and altered bowel habits. 30 (58%) patients were vegetarian by diet, and 22 (42%) consumed meat, including red meat. Nutritional status assessment showed that 25 patients had SGA (Subjective Global Assessment score) of A (none or minimal malnutrition, 19 SGA B and 8 SGA C. Most patients had ECOG performance status of 1, and none had PS-4. Only 3 patients with CRC had a significant family history. However, further follow-up with other family members could not be carried out.
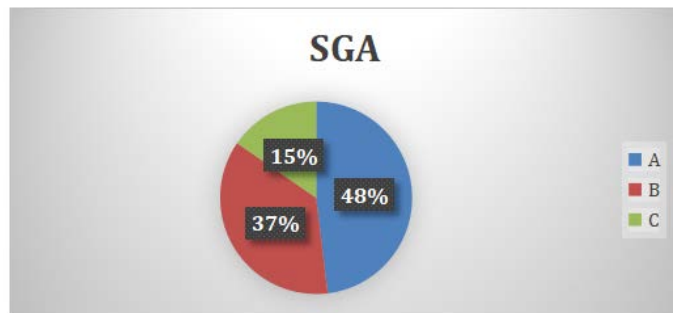
Left-sided tumours were more common than right, and amongst the localization was carcinoma rectum followed by rectosigmoid, colon, and ano rectum. Right-sided tumours included ascending colon followed by cecum and tumour growth at hepatic flexure.
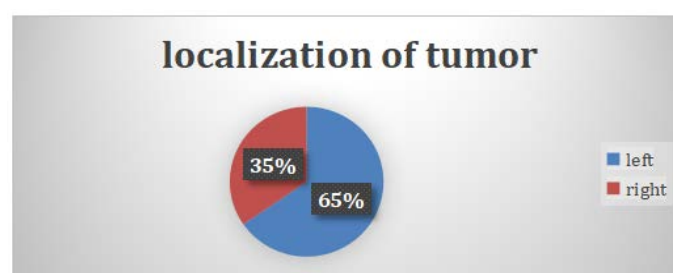
| AGE GROUP	N(RANGE/FREQUENCY)
<20 years	1 (1.9%)
20-39 years	13 (25%)
40-59 years	20 (38.4%)
60-79 years	17 (32.6%)
>80 years	1(1.9%)
MALE	39 (75%)
SUBSITE	
Anorectum	17 (32.6%)
Rectosigmoid	6 (11.5%)
Colon	24 (46.1%)
Left-sided tumours	34 (65%)
Right-sided tumours	18 (35%)
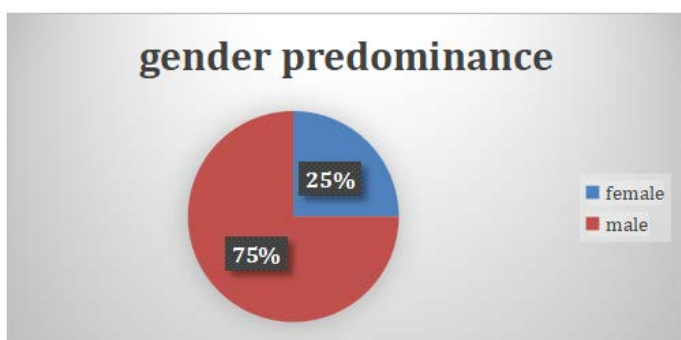
37 patients out of 52,71 % had adenocarcinoma. 3.8% had well-differentiated carcinoma, followed by 46 %moderately differentiated and 37.3 % poorly differentiated. 7 patients had signet ring carcinoma diagnosed, and 8 patients had mucinous carcinoma.

HISTOLOGICAL DIFFERENTIATION	
Well-differentiated	1 (3.8%)
Moderately differentiated	17(46%)
Poorly differentiated	14 (37.3%)
Differentiation not reported	5 (12.9%)
Signet ring tumours	7 (13.4%)
Mucinous adenocarcinoma	8 (15.3%)

The data on serum CEA levels was available for 28 patients, of which 4 patients had levels higher than 1000ng/ml. Higher baseline CEA levels were associated with an increased likelihood of stage 3 and above disease. 9 (33%) patients had CEA levels within 100 to 1000ng/ml, and Mean haemoglobin was 11.6 g/dl (range: 5.6-15.4g/dl) and mean albumin was 3.3g/dl.

All the patients who presented for surgical management were staged II or III. Amongst n=52 patients, 21 patients had received neo-adjuvant chemotherapy or had a recurrent tumour post-chemotherapy. Almost all patients underwent surgical treatment with curative intent. 27% of patients underwent APR, 4% underwent LAR, and 21% had right hemicolectomy. 50 operations were performed via open technique, and 2 procedures initially started laparoscopically but were converted to open. Out of 52 operated patients, 3 had to undergo re-exploration.
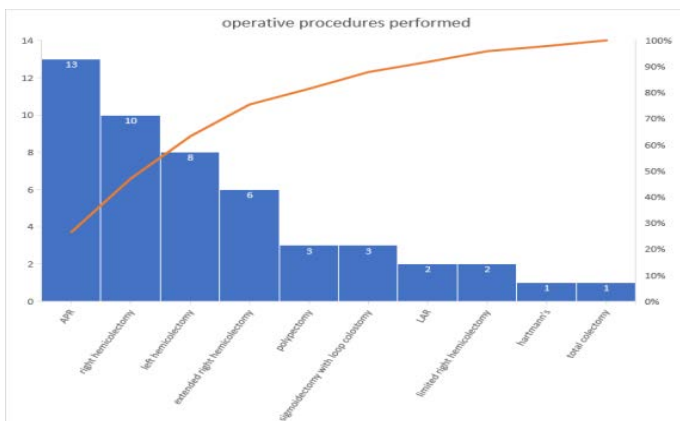
Mean hospital stay 17 days (including pre and post-operative period).

Upon telephonic follow-up of 36 out of 52 patients, 32 patients survived beyond 3 years and fatal post-operative outcomes occurred in 4.

Discussion

Colorectal cancer is a prevalent global malignancy, with a majority of cases concentrated in developed nations. The estimated five-year prevalence in India is 87 per 100,000 population, considerably lower than in developed countries. The variance is often attributed to differences in dietary habits, lifestyles, and the prevalence of obesity, a recognized risk factor for colorectal cancer. Additionally, the younger age of the Indian population may contribute to the observed lower incidence, as colorectal cancer is more prevalent among the elderly. However, it's important to note that India's population registries cover only 7.45% of the populace, potentially leading to underreporting4. Studies in-

volving Indian immigrants from countries with higher colorectal cancer prevalence, such as the USA and Singapore, indicate that though genetic factors may play a role in the lower incidence, environmental factors also contribute significantly [5,6]. In the United States, colorectal cancer rates have declined in individuals above 50 years due to screening programs, while an increase is noted in those under 50 [7-9].

Western countries exhibit variable trends, with some low-resource countries experiencing rising rates attributed to lifestyle factors [10]. In India, certain registries suggest a decreasing or stable trend in incidence, while others indicate an increase, particularly for rectal cancer [11]. India lacks a population-based screening program . Worldwide,the incidence of colorectal cancer is higher in male including India. However, potential referral bias should be considered, as the study's patient population was predominantly male.

The mean age of patients was 51.6 years, with a significant proportion below 60 years. Comparisons with studies from different regions of India reveal varying median ages at diagnosis, prompting questions about the possibility of a younger onset of colorectal cancer in India [12-14]. The contrast between India and Western countries becomes apparent in the population's age distribution. India has a larger proportion of young individuals, which may contribute to the increased incidence of colorectal cancer in younger subjects, potentially representing a demographic bias [15]. Studies from the US and Europe highlight an increasing incidence of right-sided colon cancer [16,17]. However, in the Indian context, left-sided tumours predominate, raising questions about referral bias or whether rectal cancer is genuinely more prevalent than colon cancer. The observed disparity in colorectal cancer (CRC) incidence between the left and right sides of the colon may be attributed, in part, to the screening methods employed. Screening sigmoidoscopies primarily target precursor lesions in the left colon, which is anatomically more accessible. Inadequate bowel preparations and incomplete evaluations during colonoscopies may disproportionately impact the detection of right-sided tumours.

Moreover, whether guaiac- or immunochemical-based, faecal occult blood tests exhibit superior diagnostic performance for detecting CRC in the descending & sigmoid colon & rectum compared to the proximal colon [18]. As a result, the commonly employed screening tests demonstrate greater effectiveness in preventing left-sided CRCs. However, it is essential to consider the possibility of a genuine increase in the incidence of right-sided tumours, potentially characterized by different biological features. This could contribute to a noteworthy shift in the overall distribution of CRC cases. A thorough understanding of these factors is vital for refining screening strategies and adapting them to the nuanced characteristics of colorectal cancer development in different colon regions.

Colorectal cancer often presents asymptomatically in the early stages, and symptomatic patients typically exhibit bleeding, pain, or altered bowel habits. In the studied cohort, rectal bleeding was the most common symptom. The average duration of

symptoms was 4 months, aligning with findings in previous studies [19-21]. In addition, there exists the potential for delayed diagnosis, particularly in younger patients, owing to a lower suspicion of malignancy. The likelihood of misdiagnosis, such as attributing symptoms to haemorrhoids or fissures, could further contribute to delays in recognizing and treating colorectal cancer in this demographic. Raising awareness among healthcare providers about the diverse presentations of colorectal cancer, even in younger individuals, is imperative to ensure timely diagnosis and intervention, ultimately improving outcomes for this patient population.

Carcinoembryonic antigen (CEA) is frequently assessed in colorectal cancer, though its diagnostic ability is limited [22]. Raised CEA levels were associated with an increased likelihood of advanced disease in the studied cohort. However, the small sample size allows us to assess a genuine correlation.

Malnutrition was prevalent in almost 90% of patients, emphasizing the need for nutritional assessment in colorectal cancer patients for appropriate counselling and treatment.

The family history assessment for hereditary colorectal cancer cases in the cohort was limited, indicating the necessity for enhanced awareness among clinicians about the significance of detailed family histories in all colorectal cancer patients.

Conclusion

In comparison with literature from Western countries, patients with CRC in India present at a much later stage at a younger age and have more left-sided tumours. The population structure of the country may be a contributing factor towards a younger age at presentation. The lack of awareness, poverty, and inadequate set protocols towards screening due to low resource settings leading to delayed diagnosis could be a contributing factor towards a delayed presentation. The progression of the disease and survival may be associated with nutrition status; however, a larger sample size is required to make a strong and significant correlation. The importance of digitalizing medical records for patient follow-up and research, which can aid scientific projects, must be understood and practised. It is also imperative to conduct such audits on a larger scale so that the burden of this disease is well documented, which can help in training and standardizing clinical practice. The survival data is further compiled, which will give us a better picture of the ground reality of CRC in India.

Conflict of Interest

All authors declare that they have no conflict of interest.

References

1. Ferlay J, Ervik M, Lam F, Laversanne M, Colombet M, et al. (2024) Global Cancer Observatory: Cancer Today. Lyon, France: International Agency for Research on Cancer. Available from: https://gco.iarc.who.int/today.
2. "Fact Sheets by Population-CRC India ASRs." [Online]. Available: http://globocan.iarc.fr/Pages/fact_sheets_population.aspx.
3. Claudia Allemani, Hannah K Weir, Helena Carreira, Rhea Harewood, Devon Spika, et al. (2015) Global surveillance of cancer survival 1995–2009: analysis of individual data for 25,676,887 patients from 279 population-based registries in 67 countries (CONCORD-2). Lancet 385:977-1010.
4. "Three year report of the population based cancer registries (2011) [Online]. Available: http://www.ncrpindia.org/ALL_NCRP_REPORTS/PBCR_REPORT_2009_2011/ALL_CONTENT/PDF_Printed_Version/Preliminary_Pages_Printed.pdf.
5. William B Goggins, Grace Wong (2009) Cancer among Asian Indians/Pakistanis living in the United States: low incidence and generally above average survival. Cancer Causes Control 20: 635-643. doi: 10.1007/s10552-008-9275-x
6. Singapore Cancer Registry (2014) Interim Annual Report Trends in Cancer Incidence in Singapore https://www.nrdo.gov.sg/docs/librariesprovider3/default-document-library/cancertrends-2010-2014_interim-annual-report_final-(public).pdf .
7. Brenda K Edwards, Anne-Michelle Noone, Angela B Mariotto, Edgar P Simard, Francis P Boscoe, et al. (2014) Annual report to the nation on the status of cancer, 1975–2010, featuring prevalence of comorbidity and impact on survival among persons with lung, colorectal, breast, or prostate cancer. Cancer 120: 1290-1314. doi: 10.1002/cncr.28509.
8. Davis DM, Marcet JE, Frattini JC, Prather AD, Mateka JJL, et al. (2011) Is it time to lower the recommended screening age for colorectal cancer? J Am Coll Surg 213: 352-361. doi: 10.1016/j.jamcollsurg.2011.04.033.
9. Siegel R, Desantis C, Jemal A (2014) Colorectal cancer statistics, 2014. CA Cancer J Clin 64: 104-117. doi: 10.3322/caac.21220.
10. Torre LA, Bray F, Siegel RL, Ferlay J, Lortet-tieulent J, et al. (2015) Global cancer statistics, 2012. CA a cancer J Clin 65: 87-108. doi: 10.3322/caac.21262.
11. Badwe RA, Dikshit R, Laversanne M, Bray F (2014) Cancer incidence trends in India. Jpn J Clin Oncol 44: 401-407. doi: 10.1093/jjco/hyu040.
12. Sarkar S, Mukherjee R, Paira SK, Roy B, Banerjee S, et al. (2012) Profile of colorectal cancer in Eastern India. J Indian Med Assoc 110: 901-903.
13. Musthafa Chalikandy Peedikayil, Prem Nair, S M Seena, Lakshmi Radhakrishnan, Shine Sadasivan, et al. (2009) Colorectal cancer distribution in 220 Indian patients undergoing colonoscopy. Indian J Gastroenterol 28: 212-215. doi: 10.1007/s12664-009-0087-z.
14. Hussain N, Gahine R, Mourya J, Sudarshan V (2013) Colorectal cancer in young adults in a tertiary care hospital in Chhattisgarh, Raipur. Indian J Cancer 50: 337-340. doi: 10.4103/0019-509X.123621.
15. Laskar RS, Talukdar FR, Mondal R, Kannan R, Ghosh SK (2014) High frequency of young age rectal cancer in a tertiary care centre of southern Assam, North East India. Indian J Med Res 139: 314-318.
16. Jessup JM, McGinnis LS, Steele GD, Menck HR, Winchester DP (1996) The National Cancer Data Base. Report on colon cancer. Cancer 78: 918-926. doi: 10.1002/(SICI)1097-0142(19960815)78:4<918::AID-CNCR32>3.0.CO;2-W.

17. Thörn M, Bergström R, Kressner U, Sparén P, Zack M, Ekbom A (1998) Trends in colorectal cancer incidence in Sweden 1959–93 by gender, localization, time period, and birth cohort. Cancer Causes Control 9: 145-152. doi: 10.1023/A:1008826109697.

18. H W Hirai, K K F Tsoi, J Y C Chan, S H Wong, J Y L Ching, et al. (2016) Systematic review with meta-analysis: faecal occult blood tests show lower colorectal cancer detection rates in the proximal colon in colonoscopy-verified diagnostic studies. Aliment Pharmacol Ther 43: 755-764. doi: 10.1111/apt.13556.

19. Mohandas KM, Desai DC (1999) Epidemiology of digestive tract cancers in India. V. Large and small bowel. Indian J Gastroenterol 18: 118-121.

20. Rupal Sinha, Dinesh Chandra Doval, Showket Hussain, Kapil Kumar, Shivendra Singh, et al. (2015) Lifestyle and sporadic colorectal cancer in India. Asian Pac J Cancer Prev 16: 7683-7688. doi: 10.7314/APJCP.2015.16.17.7683.

21. Majumdar SR, Fletcher RH, Evans AT (1999) How does colorectal cancer present? Symptoms, duration, and clues to location. Am J Gastroenterol 94: 3039-3045. doi: 10.1111/j.1572-0241.1999.01454.x.

22. Gershon Y Locker, Stanley Hamilton, Jules Harris, John M Jessup, Nancy Kemeny, et al. (2006) ASCO 2006 update of recommendations for the use of tumor markers in gastrointestinal cancer. J Clin Oncol 24: 5313-5327. doi: 10.1200/JCO.2006.08.2644.