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Original Research Article

Rising Trends of Colorectal Cancer in Young Adults in a Tertiary Institution: Case Series

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Abstract:

Globally Colorectal cancer (CRC) ranks among the top three common cancers. Its incidence patterns have been changing over the last few decades. CRC rarely occurs in children and adolescents who are less than 20 years old. The incidence of CRC in young individuals has increased by 2% to 8% annually over the past two decades [1] .The aetiology is multifactorial, which may involve both genetic and environmental factors. We report nine cases of colorectal cancer in this case series and all cases were occurred among person aged 15-40 years old. Due to the rarity of CRC in patients from such young age groups, clinical management and treatment approaches are generally decided according to experiences from the management of adult patients. As young adults aged <50 years belong to the economically active population, an increase in CRC in this demographic will lead to future socioeconomic burdens. CRC diagnosis in young people is always difficult, early detection in young patients by extensive evaluation is important for early diagnosis and improves clinical management.

Keywords: Colorectal Cancer, Young Adults.

Introduction

CRC is generally thought of a disease of older persons, with more than 90% of patients being diagnosed after the age of 55 years [2,3,4]. In India, colorectal cancer cases are among top 5 most frequent cases reported being colon cancer 13th rank both incidence and mortality and rectal cancer 16th in incidence and 15th among causes of cancer-related death according to GLOBOCCAN 2020[5]. It has been reported that there has been a recent rise in colorectal cancer incidence and an increase incidence in younger people.

Recent studies suggested that as many as 7% of patients who developed CRC were under 40 years of age, and this incidence keeps increasing [6]. Moreover, based on current trends, they predicted that in 2030, the incidences of colon and rectal cancer will increase by 90% and 124%, respectively, for persons aged 20–34 years and by 28% and 46%, respectively, for those aged 35–49 years[7].

Although some of the cases may have a hereditary component, the majority appear to arise sporadically. Identifying these patients poses a difficult challenge to healthcare systems. Apart from a delay in diagnosis, there may be multifactorial genetic and environmental risk factors that have led to an increased incidence of CRC [7,8]. The most common etiological factors involved in the adult age group are smoking and diet. However, in younger patients, the etiological factors are quite different. Inflammatory bowel disease, hereditary non-polyposis colon cancer, and polyposis syndromes of the gastrointestinal tract are known to be risk factors. There is some evidence supporting that this temporal rise in the onset of CRC incidence among individuals under 50 years may be attributable to obesity and other lifestyle risk factors [9].

From a few published studies, most cases of CRC in India present at a younger age, with more advanced-stage disease, more signet ring morphology, and more anorectal as compared to colonic site of primary as compared to that reported worldwide. As like other cancer, geographic variation are present as a consequence of different social, economic, and civilization background mainly between developed and developing countries. Changing lifestyle, dietary habits, obesity, and lesser physical activity would only become additive risk factors to this subset of patients. CRC in patients from such young age groups, clinical management and treatment

approaches are generally decided according to experiences from the management of adult patients.

Herein we report a case series of a CRC in young patients with no evident established etiological factor or risk factors treated in a tertiary hospital.

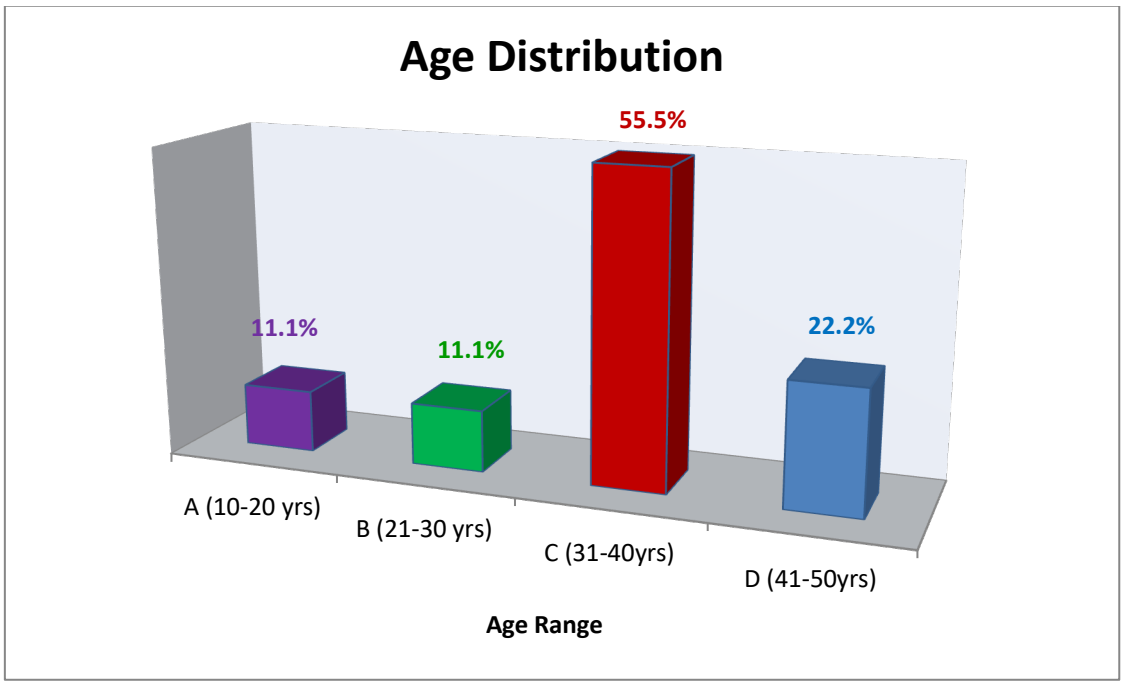

Figure 1: Graph showing Age-distribution

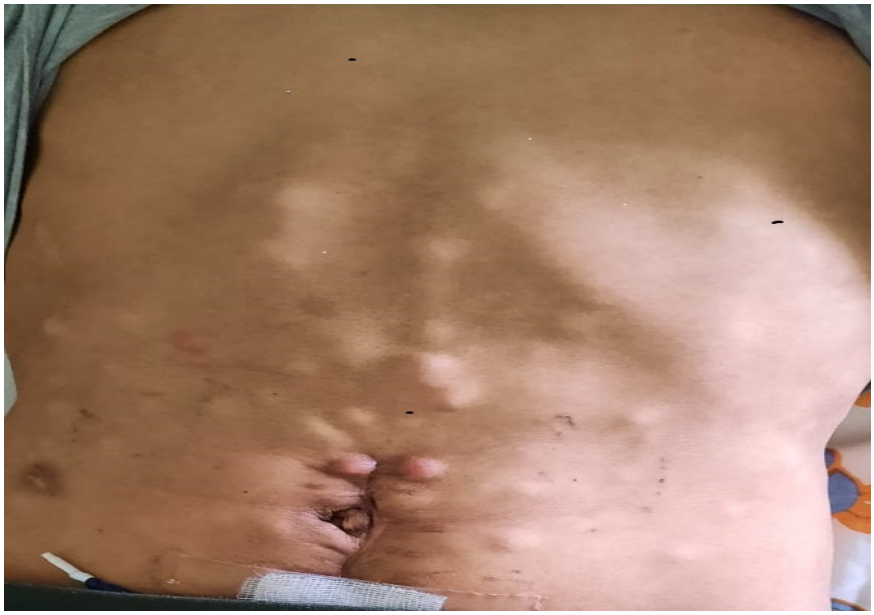

Figure 2: Metastatic subcutaneous nodules

Table 1: Table showing disease profile

S. No.	Diagnosis	HPE	S.CEA (ng/ml)	Stage	Symptoms
1	Ca Sigmoid colon	Signet ring Ca	15.3	pT4aN2bM0 IIIC	Anorexia, wt loss, altered bowel habit
2	Ca Rectum	Adenocarcinoma MD	5.1	pT4aNxM1c-IVc	Pain abdomen, constipation. Nausea vomiting, intestinal obstruction
3	Ca Rectum	Adenocarcinoma PD	16.2	cT4aN2aM1c IVc	Constipation with bleeding PR, abdominal distention
4	Ca Rectum	Adenocarcinoma MD, Gr 2	2.0	pT3N2aMx IIIb	Constipation, intestinal obstruction
5	Ca Ascending colon	Adenocarcinoma MD, Gr 2, NOS (focal neuroendocrine features)	2.8	pT3N1aM0 IIIb	Pain lower abdomen, anorexia, abdominal distension, vomiting, intestinal obstruction
6	Ca Rectum	Adenocarcinoma MD, Gr 2	1.5	ypT3N1bM0 IIIb	Malena, tennesmus,
7	Ca Colon	Medullary carcinoma with squamous differientation	1.8	pT3N2aM0 IIIB	Pain right upper abdomen , irregular bowel habits
8	Ca Rectosigmoid	Adenocarcinoma MD	1.8	pT3N0M0 IIa	Constipation, bleeding PR, pain abdomen
9	Ca Colon	Adenocarcinoma PD	2.12	pT3N1bM0 IIIb	Pain abdomen, constipation, abdominal distension

Discussion

Ccolorectal cancer (CRC) ranks third in terms of incidence and second in terms of mortality all over world according to GLOBOCAN 2020[5]. CRC is generally thought of as a disease of older persons, with more than 90% of patients being diagnosed after the age of 55 years [2,3,4]. CRC rarely occurs before the age of 20 years [10,11,4,12]. CRC incidence rates are higher for men in most regions of the world.

As per recent reports, the incidence of CRC is increasing 2- fold every 5 years till 50 years of age followed by a 30% increase every 5 years after 55 years of age and beyond[13]. There is a geographical variation in the incidence rates and median age at diagnosis with more than half of the cases of CRC occurring in developed countries. However, mortality is higher in the less developed countries who have limited resources and inadequate health infrastructure. The exact incidence and mortality of CRC in India are difficult to ascertain because of low coverage of population-based cancer registries, lack of uniformity in data acquisition and, limited availability of survival and follow-up data.

In our case, 5 patients were rectal cancer, 1 was sigmoid cancer and 3 were colon cancer. From the above cases, the mean age of patient is 17-42 years old and male: female is 1.3:1. Almost 90% of the patients were malnourished at presentation. Nutritional assessment in addition to baseline assessment of cancer patient is important to identify patients with malnutrition who can then receive adequate nutritional counselling and treatment

The main symptoms are altered bowel habits especially constipation, pain abdomen, intestinal obstruction bleeding per rectum, weight loss, and fatigue. The conventional etiological factors, which are found in adult patients, are not present in these patients. A family history of colon cancer is the strongest known risk factor for CRC and close to 23-39% of young-onset CRC patients have a family history of CRC [14-17]. Inflammatory bowel disease (IBD) is also a risk factor for CRC and is associated with mucinous or signet ring histology [18].

In few case series, young adult with CRC with no significant risk factor or family history were reported. Three (33.3%) patients have a history of malignancy among family. None of our patients have a history of smoking, chronic disease or dietary factor which could be implicated. Twenty-two percent of adolescent and young adult with CRC have a family history of the disease but most cases are sporadic [12].

Although most cases are sporadic, in young adults, there is a incidence of complex mutation and a genetic assessment is recommended for lynch syndrome by looking for microsatellite instability or immunohistochemistry to find the DNA repair proteins presence (MSH1, MSH2, MSH6, and

PMS2). However, this only represents about 2-5% of all colon and rectal cancers.

In a recent retrospective study in which colorectal cancers in young adults was studied, it was found that nearly 25% of the patients had a family history of colorectal cancer and a similar proportion of patients were obese. Nearly 50% of the patients had locally advanced or metastatic disease [19]. Histological findings were important as it would much influence the treatment and prognosis. [7]

The most common histological findings were adenocarcinoma (90-95%), mucinous adenocarcinoma (17%), signet ring cell carcinoma (2-4%) and sarcoma (0,1-3%)[20,21]. In our case series, most common histopathology was adenocarcinoma (77.7%), signet ring carcinoma (11.1%) and medullary carcinoma (11.1%). Most Western studies report a prevalence of 5–15% for mucinous tumors and 1% for signet ring tumors [22, 23] In most cases diagnosed was made from either colonoscopy or sigmoidoscopy. Out of 9 cases, 4 patients were diagnosed by colonoscopy and another 5 sigmoidoscopy. Carcinoembryonic antigen (CEA) is a tumor marker commonly evaluated in CRC and used for prognostication, for post-treatment follow-up, and for monitoring the response of metastatic disease to systemic therapy. However, it has a low diagnostic ability with a pooled sensitivity for diagnosis of CRC[24]. Out of 9 patients, only 2 patients have mildly elevated CEA.

The stage of malignancy in our patients was mostly of advanced stage. This is in concordance with other studies which have documented higher stages in younger patients [25,26]. Younger patients have more clinically advanced stages and biologically more aggressive diseases. .The delay in diagnosis, higher grade of tumor, and lower suspicion of malignancy in younger people due to assumed lack of incidence in these age group and symptoms similar to benign pathologies could be causative factors for an advanced presentation. Patient with obstruction or bowel perforation have a worse prognosis than patient without it.[27] In our case series, 3 patients (44.4%) presented with features of intestinal obstruction.

A multidisciplinary team decision is crucial because the majority of patients with early-onset CRC have locally advanced or metastatic disease. In this case series, 6 patients could undergo curative approach, 1 patient underwent neoadjuvant chemo radiation followed by surgery and 1 patient palliative surgery due to metastatic condition and in 1 case surgery was abandoned due to poor deteriorating condition.

After surgical resection, patients were planned to treat with adjuvant chemotherapy. 2 patients showed disease progression, 2 patient's partial response, 2 complete response and 1 stable disease while one patient was not fit for chemotherapy. Out of the four cases one patient had undergone chemo radiation as a sandwich therapy. There were several studies reporting a chemotherapy-resistant colorectal cancer case similar to cases.

This is why it becomes necessary to make clinicians well aware of symptoms in the younger population and diagnose the disease at the time of initial presentation. As this is a single-centred case study with a limited number of cases, this study is not representing the true population. Further studies to evaluate the underlying cause of CRC, identify the population at high risk and also benefits of performing screening in these groups.

Conclusion

CRC is a highly frequent cancer worldwide with increasing trends in young adult often under 50 yrs. Cancer in young adults tends to be in an advanced stage and is more aggressive as seen in our case series .There is serious need of awareness of both healthcare and public of symptoms in younger population and early diagnosis by screening and prompt treatment as it may lead to socioeconomic burden. Further study on demography and clinical presentation and genetic evaluation on large number of patients is recommended.

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