

Clinico-pathological profile of colo-rectal cancer in Rajasthan

¹Dr Parang Aseri, Senior Resident, Department of Surgery, Dr. Sampurnanand Medical College, Jodhpur, Rajasthan

²Dr Gayatri Chitara, Senior Resident, Department of Anaesthesia, Dr. Sampurnanand Medical College, Jodhpur, Rajasthan

³Dr Lalit Kishore, Assistant Professor, Department of Surgery, Dr. Sampurnanand Medical College, Jodhpur, Rajasthan

⁴Dr Vinod Ghorela, Junior Resident, Department of Surgery, Sawai Man Singh Medical College, Jaipur, Rajasthan

⁵Dr Chandrashaker Sharma, Junior Resident Doctor, Department of Surgery, Sawai Man Singh Medical College, Jaipur, Rajasthan

Corresponding Author: Dr Parang Aseri, Senior Resident, Department of Surgery, Dr. Sampurnanand Medical College, Jodhpur, Rajasthan

Citation this Article: Dr Parang Aseri, Dr Gayatri Chitara, Dr Lalit Kishore, Dr Vinod Ghorela, Dr Chandrashaker Sharma, “Clinico-pathological profile of colo-rectal cancer in Rajasthan”, IJMSIR- May - 2021, Vol – 6, Issue - 3, P. No. 174 – 181.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: Colorectal cancer (CRC) is a formidable health problem worldwide. CRC is the 3rd most common cancer in men (663000 cases, 10.0% of all cancer cases) & 2nd most common cancer in women (571000 cases, 9.4% of all cancer cases) [1]. In India the age standard rates of CRCs are 4.2 and 3.2/lac for males and females respectively. It cost a major burden to patients and their family in terms of physically, mentally, socially and financially.

Objective: The aim of our study is to study clinic-pathological profile of colorectal cancer in Rajasthan.

Method: We conducted a 5 year study in Department of Surgery Sawai Man Singh medical college and attached group of hospitals, Jaipur, Rajasthan. We prospectively studied all patients of CRC from June 2017 to June 2020 and retrospectively studied all patients from June 2015 to June 2017. Parameters

included in the study were age, sex, site of lesion, clinical presentation and histology of the lesion.

Result: In our study we included 960 patients of colorectal cancer. In our sample population most commonly age group involved was 51-60yrs. 16.25% were below the age of 30yrs & 5% were above the age of 70yrs. In our study 65% patients were male patients & 35% patients were female patients. 80% patients were from rural sector and 20% patients were from urban sector. In our sample population 61% patients were non-vegetarian. In our study 16.25% patients belong to high socio-economic status, 33.75% belong to middle and 50% belong to low socio-economic status. 47.5% patients were smoker and 52.5% patients were non-smoker. In our study 53.75% were cases of rectal cancer and 46.25% cases were of colon cancer. Patients in in stage III (48 %), followed by stage IV (20 %) followed by stage II (18 %), followed by stage I (14

%) respectively. None of the patient presented in stage I. Well, moderately and poorly differentiated cases were 23.75%, 35% & 22.5% respectively. Pre-operatively CEA (>5.1 ngm/ml) was raised in 42% of patients.

Conclusion: CRC is a common malignancy in Rajasthan, majority of patients were cases of recto-sigmoid malignancy. Majority of patients in younger age group presented as locally advanced disease.

Keyword: Cancer; Colorectal; Colon; Rectum.

Introduction

Colorectal cancer is one of the common malignancies of gastrointestinal tract worldwide. It is the 3rd most common cancer in men and 2nd most common cancer in women. Colorectal cancer is a major health problem worldwide both in terms of morbidity and mortality [1]. Approximately 60% of cases are encountered in developed countries. The number of CRC related deaths is estimated to be approximately 608000 worldwide, accounting for 8% of all cancer deaths and making CRC the 4th most common cause of death due to cancer.

In India, the annual incidence rates (AAR) for colon and rectal cancer in men are 4.4 and 4.1 per lakh respectively. The AAR for colon cancer in women is 3.9 per lakh. The risk for development of invasive colorectal cancer increases with age, with more than 90% of new cases being diagnosed in patients older than 50 years. Among males and females incidence of rectal cancer is higher in men as compared to colon cancer which is higher in women. In countries with high incidence approximately 25% of CRC are located in rectum; with 21% among women and 30% among men [2]. Depending upon the race and ethnicity the risk of development of colorectal cancer differs e.g.: -There is increased risk of development of CRC among

Ashkenji Jews. [3] The incidence of colorectal cancer in USA is higher in African-American in both sexes as compared to with Caucasians which in turn are at higher risk than Asian American, Native American and Hispanic American [4]. The age standard rate of CRC in India is estimated to be 3.2 and 4.2 per lakh for females and males respectively [5]. The crude incidence rate in our region is 3.81 and 3.62 per lakh in females and males respectively. CRC is a multifocal disease process. Multiple factors such as Genetic, Environmental, Dietary, and Inflammatory condition of digestive tract are all involved in the development of CRC. There is a wide variation of presentation of CRC such as bleeding per rectum, altered bowel habit, anemia, generalized, obstruction, perforation and peritonitis. Around 15% to 30% of CRCs present as a surgical emergency like obstruction (78%), perforation (10%) or bleeding (4%).

Aims and objective: The aim of our study was to study clinic-pathological profile of CRC patients in Rajasthan at SMS hospital and medical college, a tertiary care institute.

Material and method: The study was conducted in department of general surgery SMS medical college and attached hospitals, Jaipur, Rajasthan. This retrospective as well as prospective study was conducted from 2015-2020. Prospectively all patients with CRC from June 2017 to June 2020 were included in the study, retrospectively the patients were included from June 2015 to June 2016 their records were reviewed from medical record department SMSMC. All patients were evaluated and examined with respect to detail history and physical examination; patients were investigated to confirm the diagnosis and stage of disease. Investigation done was routine blood test, CEA, USG, CECT, MRI colonoscopy and histo-

pathological analysis. Parameters studied were age, sex, site of lesion, clinical presentation, and histology of lesion.

Result: In our study of 960 patients conducted from June 2015- June 2020, data were collected both retrospective as well prospective. 15yrs was the minimum age and 89yrs was the maximum age observed in study. 25% (n=240) were of age group 51-60yrs followed by 20% (n=192) age group 61-70yrs, followed by 18.75% (n=180) 41-50yrs, 16.25% (n=156) <30yrs, 15% (n=144) 30-40yrs, 5% (n=48) >70yrs. 65% patients (n=624) were male and 35% patients (n=336) were female patients. 80% (n=768) belong to rural area and 20% (n=192) belong to urban area.

Most of the patients of CRC in our study were from lower socio-economic status 50 % (n=480), followed by middle (33.75 %; n=324), and higher (16.25 %; n=158). Non-smoker contributed to 52.5% (n=504) in our study and smoker 47.5% (n=456).

Family history of colorectal cancer was present in 203 (23.9%) of patients. Majority of patients in our study were non-vegetarian (61 %; n=585). Most of the patients in our study presented with altered bowel habit (72 %; n=691), followed by bleeding PR (65 %; n=624), abdominal pain (58 %; n=557), generalized weakness (48 %; n=288). Patients also presented as a surgical emergency in the form of intestinal obstruction in 16% of cases (n=154) and perforation peritonitis in (5 %; n=48).

In our study majority of patients were cases of rectal cancer (53.75%; n=516) followed by colon cancer (46.25 %; n=444). Right sided colon cancer (defined as tumours arising from the caecum, ascending colon and hepatic flexure) contributed to 12.5 % (n=120) and left sided colon cancer contributed 33.75 % (n=324). Most

of patients of rectal cancer in our study presented as ulcerative lesion (36 %; n=346), followed by proliferative (35 %; 336), followed by infiltrative (29 %; n=278). Most of the patients in our study of right sided malignancy presented as proliferative lesion (72 %; n=691). Regarding gross tumor morphology, in our study proliferative type was the most common type of tumor morphology (46 %; n=442) with P-value <0.0001 followed by infiltrative (36 %; n=346), ulcerative (16 %; n=154), ulcero-infiltrative (1.9 %; n=18). In our study patients with younger age group (<30 years; n=156) presented with infiltrative type of tumor morphology. Proliferative type was the most common type of tumor in both males and females, in both rural and urban patients, in both vegetarian and non-vegetarian and in both smokers and non-smokers. Histologically well-differentiated adenocarcinoma was present in 23.75 % (n= 228) of patients, moderately differentiated adenocarcinoma was present in 35 % (n=336) of patients, poorly differentiated adenocarcinoma in 22.5 % (n=216), signet ring adenocarcinoma in 8.75 % (n=84), mucinous type in 7.5 % (n=72). Villious type in 1.25 % (n=12), melanoma in 1.25 % (n=12).

Most common histological type in our study was moderately differentiated adenocarcinoma 35 % (n=336). Among patients with moderately differentiated adenocarcinoma 52 % had infiltrative lesion, 25.8 % had ulcerative lesion and 14.1 % had ulcero-infiltrative lesion and only 8.1% had proliferative tumour morphology.

Most common presentation was anemia in our sample population. 58% (n=557) presents with pallor and anemia. In our study patients presenting with pallor usually had ulcer-proliferative lesion. 64% of the patients with proliferative lesion had pallor, 42%

patients with ulcerative lesion and 38% patients with infiltrative lesion. Overall the most common type of tumor leading to pallor was proliferative followed by infiltrative and ulcerative.

Bleeding PR was present in 53.4 % (n=513) of patients. Most of the patients with bleeding PR had proliferative lesion (36%), infiltrative (32%), and ulcerative (28%). Almost all patients with ulcero-infiltrative lesion had bleeding PR and it was present in 91.1 % of ulcerative tumor which was statistically significant (P-value=0.017).

In our study we found raised pre-operative CEA level ≥ 5.1 ngm/ml) in 42 % (n=403) of patients, 28% of patients (n=269) had non-elevated level. In 32 % (n=307) CEA level was not known/not taken.

In our study of 960 patients most of the patients presented in stage III (48 %; n=461), followed by stage IV (20 %; n=192) followed by stage II (18 %; n=173), followed by stage I (14 %; n=134).

Discussion

Colorectal cancer is one of the common malignancy seen in population. CRC is the 3rd most common cancer in men and 2^{ed} most common cancer in women worldwide (6). CRC is mainly seen in developed countries and areas such as Asia, Middle east & South America & Africa report a lower incidence(7). Incidence of CRC is maximum in 7th decade followed by 5th decade & 3rd decade respectively.

More than 90% of cases of CRCs occur after 50 years of age. CRCs are also reported in young and adolescents. In our study the most common age group of CRCs was 51-60 (25%) followed by 61-70 (20 %) which was consistent with studies of Al-Samawi et al. [8] In our study we noticed higher incidence of CRC in males (65%) as compared to females (35%) which is consistent with the available data [9,10]. In our study

majority of the patients were from rural area (80%) as compared with urban area (20%), since CRC is more prevalent in urban area which is related to western dietary habits, paradoxically to this in our study most of the patients were from rural area which is explained by the fact that rural population in Rajasthan comprise more than 70 % of the population.

61% patients were non-vegetarian in our study Studies had shown that diet high in red meat and animal fat, low fiber diet and low overall intake of fruits and vegetables had increased risk of CRCs.

This is also consistent with studies of Chan et al. [10], Larson et al. [11], Sandhu et al. [12] and Cross et al. [13]. In our study 47.5% of the patients were smokers; this is also consistent with the various studies which life style choices such as alcohol and tobacco consumption, obesity and sedentary life style have been associated with increased risk for CRCs [14]. In our study Family history of colorectal cancer was present in 23.9 % of patients. Epidemiologic studies suggest that in around 10 to 15% of all colorectal cancer cases, a positive family history of Colorectal Cancer (CRC) is observed [15]. Dietary and other environmental risk factors, acting solely or in concert with genetic factors, influence the aggregation of the disease [16]. The risk associated with a family history of CRC depends on the number of affected relatives and the age at diagnosis [17].

In our study the most common histological type (98.75 %) was adenocarcinoma. Our results are in agreement with studies of Al-Samawi et al. [9] Kumar Halder et al. [18] and others. Adenocarcinoma is the most common type of colon and rectal cancer (98%). Other rare forms include small cell carcinoma, squamous cell carcinoma, carcinoid, lymphoma and sarcoma. Squamous cell carcinomas may develop in the

transition area from the rectum to the anal verge and are considered anal carcinomas. Very rare forms of squamous cell carcinomas of the rectum have been reported [19].

In our study majority of patients were cases of rectal cancer (53.75%) followed by colon cancer (46.25 %). Right sided colon cancer contributed to 12.5 % and left sided colon cancer contributed 33.75 %. This is consistent with tumour distribution in colon and rectum in the studies of Morson and Dawson [20] Halder et al. [18] and other studies [9]. Our results are slightly different as compared to results of Giovannucci et al. [21]. Who had documented approximately 20% Of colon cancers in caecum, another 20% in rectum, and an additional 20% in recto sigmoid junction. Kumar et al. [22] revealed that rectum was involved in 29.6%, sigmoid colon in 26.5%, ascending Colon in 21%, descending Colon in 17.9% and transverse Colon in 4.9%. In a study by Eisenhardt et al. [23] rectum was involved in 34.6% and colon in 65.4%. Waldron et al. [24] found that 23% of CRCs were right sided (defined as tumours arising from the caecum, ascending colon and hepatic flexure) during their 10 year study period in Birmingham. A 30 year study in Dublin by Crenad et al. [25] revealed that approximately 28% of colorectal cancers were right sided which is comparable to our study.

In our study the most common tumour in young age group (<30 years) is infiltrative whereas it is proliferative in older age group (> 30 years). Regarding gross tumor morphology, in our study proliferative type was the most common type of tumor morphology (46 %). Our findings are consistent with the study by Falterman KW et al. [26]. The most common type of tumour in both males and females is proliferative followed by infiltrative and ulcerative. Most of the

patients with bleeding PR had proliferative lesion (36%), infiltrative (32%), and ulcerative (28%). Almost all patients with ulcero-infiltrative lesion had bleeding PR and it was present in 91.1 % of ulcerative tumor. This corresponds to the study by Posner MC et al. [27]. Presentation of patients of CRC depends on the site of presentation. Weight loss, anaemia, faecal occult blood loss and mass in right iliac fossa are the common presentation of right sided colon cancer, and the disease more likely to be advanced at presentation. Left colon cancers present with rectal bleeding, change in bowel habits, bowel obstruction, colicky pain and relatively lesser advanced disease at presentation. Overall, the most common presenting symptoms are bleeding PR and change in bowel habits. It is believed that increased detection of earlier stage colorectal cancer can only be achieved by screening asymptomatic individuals. In our study most of the patients in our study presented with altered bowel habit, followed by bleeding PR, abdominal pain and generalized weakness. Our results were consistent with the study of Smith et al. [28]. However our results were slightly different as compared to results of Lynch et al. [29] in which most common mode of presentation of CRC was bleeding PR followed by change in bowel habits and pain abdomen.

Most common histological type in our study was moderately differentiated adenocarcinoma 35 %, followed by well-differentiated adenocarcinoma was present in 23.75 %, followed by poorly differentiated adenocarcinoma in 22.5 %. These results are consistent with the study of Halder et al. [18] and Eisenhardt et al. [23] in which the most common pathology was moderately differentiated adenocarcinoma followed by well differentiated adenocarcinoma and poorly differentiated adenocarcinoma. These results are

different from the study of Al-Samawi et al. [9] and Yoshida et al. [30].

In our study of 960 patients most of the patients presented in stage III (48 %), followed by stage IV (20 %) followed by stage II (18 %), followed by stage I (14 %). These results were different from studies of Kumar et al. [22]. In which 5.3% of patients presented in stage I, 14.9% in stage II, 40.4% in stage III and 36.8% in stage IV in case of colon cancers while in case of rectal cancers 6.3% presented in stage I, 22.9% in stage II, 47.9% in stage III and 22.9% in stage IV. Eisenhardt et al. [23] reported 40% of patients presented in stage IV, 24.6% in stage III and 32.4% in stage II. Amin et al. [31] found 36% of patients presented in stage IV, 23% in stage III, 30% in stage II, and 11% in stage I. In a study by Chalya et al. [32] 3.3% of cases presented in stage I, 41.6% in stage II, 30.4% in stage III and 24.7% in stage IV.

In our study we found raised pre-operative CEA level (≥ 5.1 ng/ml) in 42 % of patients, 28% of patients had non-elevated level. In 32 % CEA level was not known/not taken. These results were consistent with the study of Eisenhardt MF [23].

Conclusion

Colorectal cancer is a common malignancy in Rajasthan. Majority of the patients present in advanced stage. Incidence of CRCs is increasing in younger age groups and they present in advanced stage. Due to the lack of awareness and lack of screening programme is the reason responsible for advanced stage of CRC at presentation. Public awareness through mass-media, screening of high-risk populations, early diagnosis, cost-effective multi-modality treatment and regular follow-up is the call of the time for limiting the morbidity and mortality associated with colorectal cancer.

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