ORIGINAL ARTICLE

Clinicopathological Profile of Colorectal Cancer Patients Presented to Mayo Hospital Lahore

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ABSTRACT

Aim: To determine the frequency of Colorectal patients presented to Mayo Hospital, Lahore and to study their clinicopathological profile including their demographic features
Methods: A retrospective descriptive cross sectional study has been conducted at Department of Pathology, Mayo Hospital, Lahore after the approval from the ethical review committee. This retrospective study is conducted from the cases of colorectal cancer presented at Department of Pathology, Mayo Hospital, Lahore from January 2016 to December 2018.
Results: In this study, the mean age (years) of the patients was 44.04 ± 16.16 with most of the patients lying in the age group of 31-40 years (28.1%) followed by the patients lying in the age group of 41-50 years (19.3%) & 51-60 years (19.3%) out of which about 63.2% patients were male and 36.8% patients were female. Mostly, (54.4%) the cancer was located proximally (caecum, ascending colon and transverse colon) rather than distally (descending colon, rectum) and was usually uni-focal (78.9%). Most of the patients were suffering with stage 2 (38.6%) & stage 3 (28.1%) cancer which correlates with the absence of lympho-vascular invasion in 52.6% of the cases.
Conclusion: Colorectal cancer is prevalent in males in their 40s. The colorectal carcinomas are usually proximally located and are moderately differentiated (grade 2) adenocarcinomas of stage 2 or 3 with very low incidence of any additional organ involvement.
Keywords: Colorectal Cancer, Clinicopathological Profile, Staging of Cancer, Grading of Cancer,

INTRODUCTION

Colorectal cancer (CRC) is not a single disease. Rather, CRC is a heterogeneous group of diseases, and each patient has a unique presentation of the disease which is caused by distinctive genetic/epigenetic background.[1] In spite of the fact that each Colo-Rectal Cancer arises and behaves in a unique manner, still the tumors with similar characteristics are more likely to arise and behave in a similar way which gives rise to the need to classify them.

Tumor classification can be based on various clinical (e.g., proximal versus distal, stage of cancer) & pathological (e.g., mucinous versus non-mucinous; well-moderate versus poorly differentiated) features[2,3].

It is the most common malignancy of the gastrointestinal tract. The life time risk of developing CRC is 2,5 to 5% in the general population but two to three times higher in individuals who have a family history of first degree relative with colon cancer or an adenomatous polyp.[4] Colorectal carcinoma is one of the leading causes of cancer-related deaths in the United States of America. Pathologic examination of biopsy, polypectomy and resection specimens is important for patient management, prognosis assessment and family counseling[5].

Colorectal cancer (CRC) is an illness strongly influenced by sex and gender, with reported significant higher mortality rates in males than females[6]. The mean age of occurrence of CRC is reported to be 41.4±6.2 years. In addition to that, advanced stage CRC (Stage 3 or 4) was noted in more than half (53%) of the patients[7]. Colorectal cancers that need surgery as an emergency case generally show a more aggressive histopathologic profile and a more advanced stage than do elective cases.[8] This indicates the lack of awareness regarding the subject matter due to which most of the patients present themselves to hospitals in advanced stage which is resulting in a rapidly increasing mortality rate.

In 2018, it was reported that an estimated 145,600 adults in the United States were diagnosed with CRC. These numbers include 101,420 new cases of colon cancer (51,690 men and 49,730 women) and 44,180 new cases of rectal cancer (26,810 men and 17,370 women)[9].

In 2017, Colorectal cancer was reported to be the seventh most commonly diagnosed cancer in Pakistan, with an estimated 35,559 newly diagnosed cases which make up about 0.03% of the total population of Pakistan and fifth most fatal type of cancer with 8,662 reported deaths occurring in Pakistan[10].

The prevalence of this disease, its increasing rate of mortality and lack of awareness and knowledge regarding this subject matter is the reason of importance of this malaise.

METHODOLOGY

The study design is Retrospective Descriptive cross sectional Study which is set in Department of Pathology, Mayo Hospital, Lahore from January 201 to December 2018. The sampling technique used is Non Probability Purposive Sampling and the patients who were treated with chemotherapy and showed regression of symptoms on the biopsy were excluded from the study.

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Data Collection & Analysis: Data on a range of demographic, morphological and histo-pathological features will be captured using a structured pretested, standard performa at baseline. The variables in our study will be; Age of patient, Gender of patient, Site of tumor, Focality of Tumor, Lympho-vascular invasion of Tumor, Stage of Tumor, Grade of Tumor, Type of Bowel Carcinoma & Other Organs Involved. Data will be entered and analyzed using SPSS version 26. Data will be summarized using mean and standard deviation for quantitative variables like age of patient, and frequency and percentage for qualitative variables like stage and grade of the tumor.

RESULTS

A total of 57 cases of CRC were studied at Department of Pathology, Mayo Hospital, Lahore which took place over a span of three years (Jan 2016-Dec 2018). Out of these, 23 cases were from 2016, 22 cases were from 2017 and 12 cases were from 2018.

Table I depicts that most of the patients were in the age group of 31-40 years 16(28.1%) followed by the patients lying in the age group of 41-50 years 11(19.3%) & 51-60 years 11(19.3%) out of which about 36(63.2%) patients were male and 21(36.8%) patients were female i.e. the male to female ratio is 1.71 : 1. The mean age (years) of the patient was 44.04±16.16 years with minimum age being 13 years and maximum age being 85 years.

Table I : Cross-tabulation of Age (Group) and Gender of Patients of Colorectal Cancer.

		Gender		Total
		Male	Female	
Age Group	11-20	4	1	5
	21-30	6	1	7
	31-40	5	11	16
	41-50	6	5	11
	51-60	9	2	11
	61-70	3	1	4
	>70	3	0	3
Total		36	21	57

The colorectal region was divided into proximal part (including caecum, ascending colon and transverse colon i.e. the right side) & distal part (including descending colon and rectum i.e., the left side). In more than half of the cases 31(54.4%) the carcinoma was located in the proximal part and found to be uni-focal 45(78.9%) rather than the distal part 26(45.6%) of colon and being multi-focal 12(21.1%).

Figure I represents that most of the patients were suffering with stage 22(38.6%) cancer followed by stage 3 cancers 16(28.1%). Stage 1 carcinomas were present in 13 (22.8%) and Stage 4 carcinomas were seen in only 6 patients (10.5%). In more than half 30(52.6%) of the cases, the lympho-vascular invasion was absent whereas in rest of the cases there was presence of lympho-vascular invasion 27(47.4%).

Table II manifests that in most of the cases, the specimens showed moderate differentiation; grade 2 (45.6%, n = 26) followed by well differentiated specimens; grade 1 24(42.1%). In very few specimens, 7(12.3%) the specimens were poorly differentiated (grade 3).

Figure I: Representing Different stages of cancer.

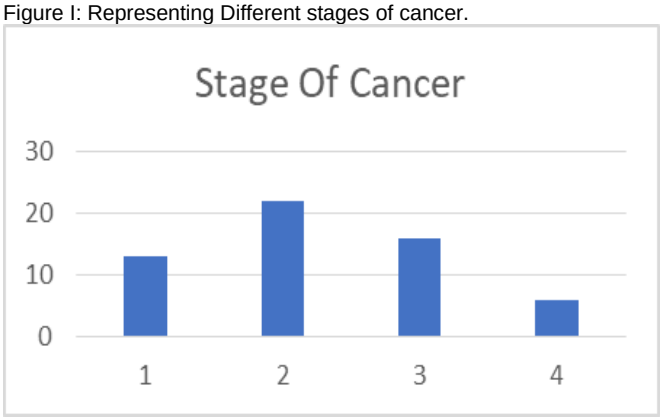

Table II: Representing Grades of Cancer (on the basis of differentiation of cells)

		Frequency	Percent
Grade	1	24	42.1
	2	26	45.6
	3	7	12.3
	Total	57	100.0

Our study showed that more than two third of the cases 40(70.2%), there was no additional involvement of associated organs. The most commonly associated organ found to be involved was ileum which was also only present in 7(12.3%) of the cases. Other scarcely involved associated organs included Liver 3(5.3%), Appendix 2(3.5%), Mysentry 2(3.5%), Ovary/Uterus 2(3.5%) & Pancreas which was found to be involved in only 1 case (1.8%).

Figure II: Representing Different types of Colorectal Cancers.

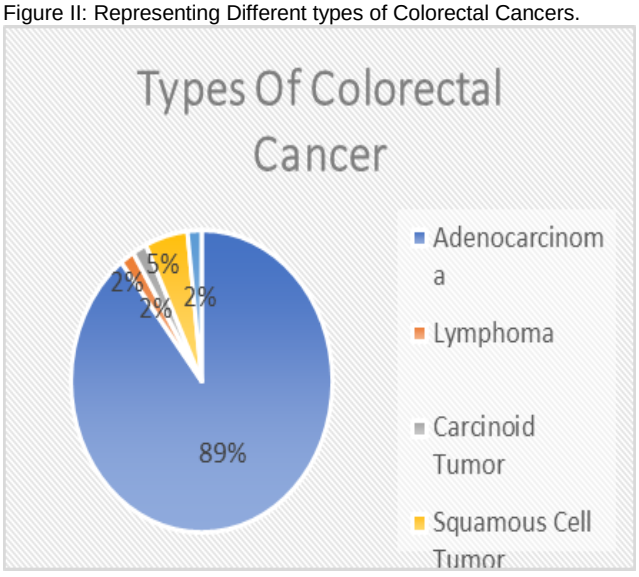

Figure II illustrates that the most common type of colorectal carcinoma was adenocarcinoma which was present in 51(89.5%) of the cases. Other types were present rarely in very few patients i.e., Squamous cell Tumor in 3(5.3%) of the cases whereas Carcinoid Tumor, Sarcoma and Lymphoma were present in only 1(1.8%) of the cases each.

DISCUSSION

Recently, there has been observed an increase in the incidences of colorectal cancer throughout the world giving rise to a great concern regarding this matter. According to a study conducted in England, the annual incidence rates of CRC among the young adults (20-29 years) fell slightly between 1971 and the early 1990s, but afterwards increased rapidly which can be seen by the reported Incidence Rates (IR) among adults of 20-29 years which rose from 0.8 per 100,000 in 1993 to 2.8 per 100,000 in 2014, an average annual increase of 8%. Similarly, An annual increase of 8.1% was observed for adults aged 30-39 years during 2005-2014[11]

The mean age (years) of the patients was 44.04 ± 16.16 with most of the patients lying in the age group of 31-50 years (47.4%). In a similar study conducted in Bangladesh, the mean age of the colorectal patients was 50.77 years.[12] A study in India among 373 subjects reported only 29 out of 373 patients (7.75%) who were ≤20 years.[13] This highlights the prevalence of this disease in people of ages greater than 30 years which correlates with the findings of our study.

The colorectal carcinoma has been found to be prevalent in males as compared to females with a male to female ratio of 1.71 : 1. Similar prevalence of colorectal in males were seen in a study conducted in Kashmir in which the male to female ratio was found out to be 1.5:1[14] A study in USA also reported 30% to 40% higher incidence of colorectal cancer in men than in women[15].

According to our study, 54.4% of the cases were of proximal (right sided) colorectal carcinomas & 45.6% of the cases were of distal (left sided) colorectal carcinomas. This shows a slight prevalence of proximal carcinomas. A study in USA showed marked prevalence of right sided carcinomas and reported that out of 53,801 patients, 67% had right-sided colon cancer[16]. The proximal carcinomas are prevalent and also associated with negative prognostic variable. This association has been reported by a study conducted in University of Southern California, which confirmed right-sided location as a negative prognostic variable and also exhibited favorable outcomes in patients who have left-sided tumors[17]. But, the distal carcinomas have been reported to have more association with lung metastasis in stage IV carcinomas. A study conducted regarding this topic in University of Washington reported that patients with rectal primary tumors are more likely than patients with colon primary tumors to present with synchronous lung metastases[8].

Our sample pool showed a prevalence of Stage 2 and Stage 3 carcinomas and an absence of lympho-vascular invasion in more than half of the cases. The stage and presence of absence of lympho-vascular invasion are important prognostic factors. Although a study conducted regarding this matter in Saudi Arabia reported 32.4% of the patients with stage 4 and 28.9% with stage 3 carcinomas; with the predominant lympho-vascular invasion in these stages, it highlighted the importance of these aspects as a prognostic factors[19].

Our study displayed a predominance of grade 2 and grade 1 tumors. The grade of tumor is also an important prognostic feature of colorectal carcinomas. A study in Japan concluded that patients classified as grade I showed a very favorable prognosis, with a 99.3% cancer-related 5-year survival rate. On the other hand, the survival was 86.0% for grade II and 68.9% for grade III[20].

In our study we inferred that in 70% cases, there was no incidence of additional organ involvement. Among the remaining 30% of the cases, the predominant organs involved were ileum and liver with scarce involvement of other organs.

Our study showed that the most frequent pathological variant of colorectal carcinoma was adenocarcinoma which was present in 89.5% of the cases. A study in Nepal also achieved similar conclusions reporting that the most common histological type of colorectal carcinoma was moderately differentiated adenocarcinoma and seen in 74% cases[21]. Adenocarcinomas are linked with decreased disease recurrence, improved 5 year survival and better prognosis as reported by a study conducted in Italy[22].

A plethora of studies are being conducted throughout the world on the analysis and evaluation of colorectal cancer risk factors. The studies so far have associated increased risk of colorectal cancer with inflammatory bowel disease, history of CRC in first-degree relatives, increased BMI, red meat intake, cigarette smoking, low physical activity, low vegetable consumption and low fruit consumption[23]. But still enormous efforts are needed for further identifying and preventing the risk factors for this disease.

Timely screening of colorectal cancer can effectively reduce the mortality rate. Guidelines recommend initiation of screening for CRC at ages 40-45 years for people with family history. In reality, at the age of 40-45 years, many people do not have a family history of CRC yet, and almost half of persons who are 40-54 years old with a family history of CRC have not yet received a screening.[24] In Taiwan, the nationwide screening program reported an effectively reduced colorectal cancer mortality rate and reported that regarding the percent changes, reductions of 7.49% between 1991-2003 and between 2014-2017 reductions of 14.76% between the control and screening groups were observed[25].

RECOMMENDATIONS

The masses should be educated about the risk factors of colorectal cancer which include inflammatory bowel disease, history of CRC in first-degree relatives, increased BMI, red meat intake, cigarette smoking, low physical activity, low vegetable consumption and low fruit consumption. Moreover, efforts should be made to implement nationwide screening especially of male in their 40s and have a first-relative suffering from CRC to decrease its mortality rate. Moreover, healthy lifestyle and diets rich in fruits and vegetable should be adopted to prevent incidences of CRC.

CONCLUSIONS

Colorectal cancer is prevalent in males (63.2%) particularly in their 40s (31-50 years; 47.4%). The colorectal carcinomas are usually proximally located (54.4%) and are moderately differentiated (grade 2; 45.6%)

adenocarcinomas (89.5%) and are of stage 2 or 3 (66.7%) with absence of any additional organ involvement (70.2%).

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