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Original Article:

Colorectal Cancer Profile in a Tertiary Care Centre, Bangalore, India.

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Abstract: Introduction: Colorectal cancers are a common disease of oncological practice. A raising incidence is seen in Asian population. It is one of the cancers where screening and early diagnosis are possible. Very few articles are there about the cancer scenario in India. A study of the disease profile helps in screening, early diagnosis and management of the disease in developing countries. Aim: To study the cancer presentation in our population which can help in developing strategies for better control of disease. **Material and Methods:** Medical records of 171 patients registered at Kidwai Hospital from 2010 to 2012 were retrospectively reviewed. Data including age at presentation, sex, location of the cancer and stage at presentation were analyzed. **Results:** The male to female ratio was 1.26:1 in rectal cancer. In colon cancer the ratio was 1:1.3. The mean age at presentation was 47 years in males and 51 years in females in colorectal cancers together. Thirty eight percent of the patients were less than 45 years old. Eighty percent of the cases were rectal cancers. In 71% of rectal cancers the growth was located within 5cm from anal verge (AV). Stage III was the commonest stage of presentation. Abdominoperineal resection (APR) was the commonest surgical procedure done. Inoperability was highest with lower rectal cancer. **Conclusion:** Younger age at presentation, low lying rectal cancers and advanced stage at presentation were observed in our study group which includes predominantly rural population. Rectal cancers are the most common cancers referred among colorectal cancers. Screening for colorectal cancers and early evaluation of symptomatic cases need to be encouraged. Patients should be educated regarding this. Screening strategies, etiopathogenesis and genetic abnormalities in colorectal cancer patients need to be defined in developing countries.

Key Words: Early age at presentation; Advanced stage; Lower rectal cancers

Background:

Worldwide, colorectal cancers are the third most common cancers and the third leading cause of cancer related death in both males and females.(1,2) They constitute 10% of all cancers.(1,2) Globally the highest incidence rates are seen in Australia, New Zealand, Europe and North America, and the lowest rates in Africa and Asia.(3,4) Overall, 60% of the cancers are from developed countries. In Indian population it is the 10th most common cancer, and constitutes 4% of cancer deaths (Mumbai, Chennai and Karnataka cancer registry).(5-7) The geographical variation is attributed to differences in diet, particularly consumption of red and processed meat, fiber, alcohol, body weight and physical activity.(8,9) The incidence of sporadic cancer increase dramatically above the age of 50 years in the western population.(7) Age standardized incidence rate is less for women than for men in almost all the countries.(10) A decreasing trend is seen in the United States because of the regular screening and detection of the cases at an earlier stage(11-13), while an increasing tendency is seen in Asian countries due to westernization of the diet.(14,15) However it is not clear whether there are any differences in anatomical distribution and stage of presentation in between developed and developing countries.

The purpose of our study was to analyze colorectal cancers according to age, sex, site, and stage. This may help in understanding the disease and helps in adopting strategies to reduce the burden, morbidity and mortality of the disease in developing countries.

Methods:

Study design and population

Medical records of histologically proven colorectal cancer patients registered at Kidwai Cancer Institute from January 2010 to December 2012, a period of 3 years were analyzed.

Metastatic lesions to colon and rectum and anal cancers were excluded from our study. Kidwai cancer institute is one of the 11 regional cancer centres in India. It is a 500 bedded tertiary level multidisciplinary cancer centre. Eighty percent of our patients come from rural places. More than two third of them will not come for follow up.

Information regarding age, sex, clinical presentation, anatomical site, histopathological type, stage of the disease and including metastasis, treatment modalities were recorded. Descriptive data on the type of treatment, patterns of recurrence and metastasis, survival, and the coexistence of disease were not the focus of our study.

The age of the patients were categorized into three different age groups, less than 45 years, between 45 and 64 years and greater than 65 years. The stratification was arbitrary to simplify the analysis. The anatomical location of the malignancy was classified as lower rectum (1-5cm from anal verge [AV]), middle rectum (6-10cm from AV), upper rectum (11-14cm from AV), right colon (cecum to hepatic flexure), and left colon (splenic flexure to sigmoid colon). The carcinoma was staged according to the Tumor-Node-Metastases (TNM) staging system of the International Union against Cancer.

The diagnosis of colorectal cancer was performed by colonoscopy, CT abdomen and pelvis, and confirmed by biopsy of the tumor. Baseline investigations were done to assess the patient's fitness for surgery. Treatment modalities included surgery, neoadjuvant or adjuvant chemotherapy and radiotherapy.

Results:

Study population age and sex distribution (Table 1)

Total of 171 patients with histopathologically confirmed as colorectal cancers formed the study population. Rectal cancers constituted 136 patients and colon cancers constituted 35 patients. The male to female ratio in rectal cancers was 1.26:1. In colon cancers male to female ratio was 1:1.3. The age group varied from 16 to 82 years with a mean age of 47 years for males and 51 years for females in both groups. The commonest age group is 45-64 years, followed by less than 45 years in our study. Less than 45 years age group constituted 38% of the cases (65 patients). (Table-1)

Table 1: Distribution according to age in colorectal cancers

Site	Total	Sex	Total patients		<45 years		45-64 years		>65 years	
			n	%	n	%	n	%	n	%
Rectum	136 (80%)	Male	76	44	24	14	35	20	17	10
		Female	60	35	26	15	22	13	12	7
Colon	35 (20%)	Male	15	9	9	5	3	2	3	2
		Female	20	11	6	4	11	6	3	2
Total	171 (100%)		171	100	65	38	71	41	35	20

Clinical presentation, anatomical sites, histological patterns and tumor stage

The duration of symptoms at presentation ranged from 2 weeks to 1 year with mean duration of 6 months. In rectal cancers bleeding per rectum was the chief complaints in 52% of the patients, followed by altered bowel habits in 40% of the patients and difficulty in passing the stools in 27% of the patients. Pain and mass per abdomen was the presenting symptom in colon cancer group.

There were 136 cases of carcinoma rectum, of these 94(71%) cases are within 5cm. The distance measured is arbitrary measured by clinical digital examination and colonoscopy. In colon cancers right colon constituted 18 cases and left colon 17 cases and one case is multiple polyposis with right colon growth.

Pathologically adenocarcinoma was observed in 97% of the cases, lymphoma in 3 cases, melanoma in two cases and gastrointestinal stromal tumor in one case.

According to TNM staging in rectal cancers 69 cases (51%) are in stage III, 39 cases(28%) are in stage II, 15 cases (11%) are in stage IV and 13 cases(10%) are stage I.(Table- 2)

In colon cancers 18(51%) cases are in stage III, 9(26%) cases in stage II, 7 (20%) cases in stage IV and 1(3%) cases in stage I. (Table-3)

Table 2: Distribution of stage according to subsite in rectal cancer

Site	Total		Sex	Total		Stage I		Stage II		Stage III		Stage IV	
	n	%		n	%	n	%	n	%	n	%	n	%
Lower third 1-5cm	94	71	Male	53	39	5	4	10	7	30	22	8	6
			Female	41	31	5	4	11	8	20	15	5	4
Middle third 6-10cm	32	23	Male	18	13	1	1	7	5	9	7	1	<1
			Female	14	10	-		6	4	7	5	1	<1
Upper third 11-14cm	10	6	Male	7	5	2	1	3	2	2	2		
			Female	3	2	-		2	1	1	<1	-	
Total	136	100		136	100	13	10	39	28	69	51	15	11

Table 3: Distribution of stage according to subsite in colon cancer

STAGE	Total		Sex	I		II		III		IV	
	n	%		n	%	n	%	n	%	n	%
Right colon	18		Male	-		-		4	11%	3	9%
			Female	-		3	9%	1	3%	3	9%
Left colon	17		Male	1	3%	2	6%	4	11%	-	
			Female	-		4	11%	9	26%	1	3%
Total	35	100%		1	3%	9	26%	18	51%	7	20%

Treatment modalities

Treatment plan was made according to the stage of presentation assessed by clinical examination, radiological findings. Operability and type of surgery was assessed by the operating surgeon by clinical examination and examination under anaesthesia. Neoadjuvant, adjuvant chemotherapy and radiotherapy was given according to protocols. Total of 116 patients underwent surgery, 18 patients were found locally advanced and inoperable (Table-4); 15 patients refused surgery and 22 patients were in stage IV.

Discussion

Incidence of colorectal cancer varies throughout the world. Colorectal cancer (CRC) is the third most cancer in men (6663,000 case, 10% of total cancers) and the second in women(570,000 cases, 9.4% of the total case) worldwide, and lowest in Africa and South- central Asia.(1,2) The trend is increasing in developed Asian countries like Japan, South Korea and Singapore. But still the age adjusted rates of CRC in Indian registries are very close to the lowest rates in the world.(1,2) And there is a trend of increased colorectal cancers in Indian immigrants to United Kingdom and USA suggesting that life style and dietary habits are important in the causation of the CRC.(16)

The mean age of presentation was 69 years in the western population, whereas in our study population the mean age is around 48 years. About 38% of colorectal cancers are younger than 45 years. Similar younger age of presentation was found in African and Chinese populations.(17,18) The aetiopathogenesis and genetic causes for this presentation need to be studied The male predominance is seen in accordance with the previous studies.(10)

Table 4: Type of surgery performed in carcinoma rectum and colon						
Site	**Sex**	**APR**	**AR**	**Rt Hemicolectomy**	**Lt Hemicolectomy**	**Inoperable**
Rectum Lower third 1-5cm	Male	32	9	-	-	8
	Female	16	9	-	-	4
Middle third 6-10cm	Male	1	12	-	-	2
	Female	-	7	-	-	2
Upper third 11-14cm	Male	-	5	-	-	-
	Female	-	2	-	-	-
Right colon	Male	-	-	5	-	2
	Female	-	-	5	-	-
Left colon	Male	-	-	-	3	-
	Female	-	-	-	10	-
Total		49	44	10	13	18
APR: abdominoperineal resection; AR: anterior resection						

High incidence of colorectal cancer under 45 years of age group resulted in a diagnostic problem, being treated as benign disease and are referred with a delay of around 3-6 months. Hence these patients presentedÂ at an advanced stage, and also disease was found to be aggressive in this population.

Bleeding per rectum is the commonest presentation, which is in agreement with other studies reported in developing countries.(19,20)

Regarding anatomical location of the tumor, rectal cancers predominate in our study group due to referral bias but some studies have shown predominance of rectal cancer in Indian population (21) in contrast to the West, where right sided colonic tumors predominate. Exact cause is not known for the predominance of rectal cancers further studies need to be done.

In accordance with other studies (22, 23), in our study 98% of the colorectal malignancies are adenocarcinomas. Other colorectal malignant pathologies observed in our study group are two cases of lymphoma, two malignant melanoma of the anorectum, andÂ one case of gastrointestinal stromal tumor.

Seventy percent of the patients presented at an advanced stage. Advanced stage of presentation results in increased morbidity and mortality. Studies have shown decreased incidence and survival of colorectal cancers in India.(24) Early diagnosis is only possible by routine screening and early evaluation of bleeding per rectum.

In our study the commonest surgery done for rectal cancer was APR, as majority of patients presented in a locally advanced stage and low location of the tumor in the rectum. About 10% of the patients did not undergo complete resection because of locally advanced disease.

The limitations of our study are, more often the patients in advanced stages are referred to our center, and patients with rectal cancer are referred more frequently than colon cancer. Hence, our study group may not exactly reflect the prevalence of colorectal cancer in the whole population in this region. Despite these limitations, our institution being a major oncological centre in this region, it may reflect the nature of the disease in this population and emphasizes the significance of early diagnosis by proper and timely evaluation, and management of the disease. It also indicates the differences in the presentation of the malignancy in our population, which needs to be evaluated for the possible etiological factors which may differ from the western population. Proper accumulation of data through cancer registries need to be encouraged in developing countries to know the actual burden of the disease.

Conclusion

A significant number of CRC patients in India present with advanced stage of disease and probably due to referral bias majority had rectal cancers in our centre. Among rectal cancers most of them are palpable by per digital examination indicating the importance of DRE(digital rectal examination). Colorectal cancers are observed at an earlier age group in contrast to the West. People should be educated for an early consultation for symptoms and high risk individuals should be encouraged for screening.

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