

**Original Article**

# Histopathological Evaluation of Colorectal Carcinomas Status in Manipur, India

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**Objective:** To study the distribution of colorectal carcinomas (CRC) with special emphasis on age, sex, site and histological grading.

**Study Design:** Retrospective study.

**Place & Duration:** Department of Pathology, Regional Institute of Medical Sciences (RIMS), Imphal, Manipur, India, from January 2004 to December 2009.

**Materials & Methods:** Materials were collected from subjects first diagnosed as colorectal carcinomas in histopathology section and then the medical files were reviewed. Variables like age, sex, religion, relevant past / family history, tumor location, disease stage (Dukes' staging) were assessed. The findings were then analysed.

**Results:** There were 54 patients with colorectal carcinomas during this 6 year period. 29 cases (53.71%) were males while 25 cases (46.29%) were females with a male to female ratio of 1.16:1. The disease was most commonly seen between 60-69 years age group. The rectum was the most common affected site contributing to 53.71% (29 cases) followed by ascending colon with 12 cases (22.22%). 38.88% of lesions (21 cases) were stage C and above i.e. involvement of local lymph nodes and distant metastasis. When we compared patients above 50 years of age to those under 50 years of age, we found that the disease usually presented with poorer grades of differentiation and more advanced stage in those below 50 years compared to those above 50 years.

**Conclusions:** This study showed that bowel cancers are not rare as previously believed. Routine screening for bowel cancer in all risk patients should be carried out regularly so as to detect cancer early.

**Key Words:** *Colorectal cancers, Dukes staging, metastasis*

## Introduction

Colorectal cancer is a global oncologic problem faced by medical fraternity. It is the 3<sup>rd</sup> most common cancer in the world.<sup>1</sup> Incidence of varies widely with higher incidence rates in North America, Australia and Europe. Developing countries have lower rates; particularly Africa and Asia.<sup>2</sup> However, with westernization of lifestyle, the incidence of colorectal cancer is increasing in many developing countries. Surgery still remains the primary treatment modality and pathological examination of resected specimen is a powerful tool for assessing the prognosis.<sup>3</sup>

Geographic differences for colorectal cancers are probably explained by dietary and other environmental exposures.<sup>4</sup> A higher risk of colorectal cancers was found in subjects consuming a diet poor in fiber<sup>5</sup> and rich in meat.<sup>6</sup> Non dietary causes include genetic predisposition.<sup>7</sup>

Data relating to colorectal carcinomas (CRC) in this part of the country is still scarce and aim of this study was to project the distribution of this disease with special emphasis on age, sex, site and histopathology.

## Materials and Methods

All patients diagnosed to have CRC at RIMS hospital over a 6 year period from 2004-2009 were selected from this study. Variables like age, sex, religion, relevant past and family history were assessed. Histology slides of cases within the study period were reviewed and tumor location along with disease stage (Dukes' Classification) were noted. TNM staging was not incorporated in the study as more emphasis was given to microscopic features. All the slides had been routinely stained with H & E. In addition, histopathology records of all malignancies during the study period were reviewed to determine

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the relative frequency of colorectal carcinomas. Precautions were taken to avoid double entry by checking name of the patients and their CR number. Ethical approval was taken for this study from the institutional ethical committee. RIMS hospital is one of the major referral hospitals in North-eastern India and the only referral centre in Manipur.

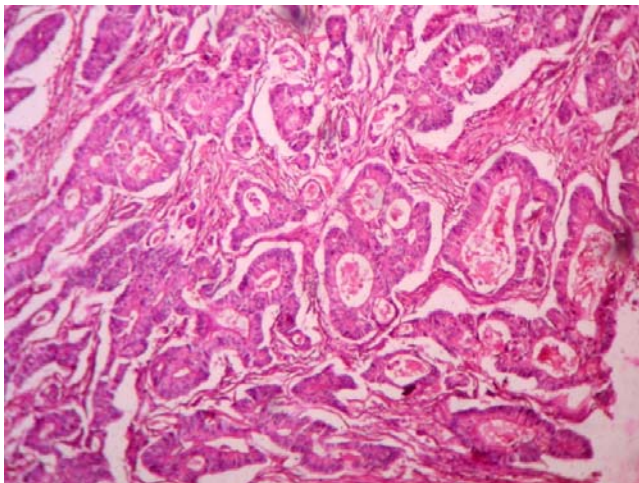
All the cases included were full blown carcinomas. The location of the tumor was categorized as ascending, transverse, descending and rectum. The findings were then analyzed. Genetic analysis is not yet available in our institute and thus not done in our study

## Results

There were 54 patients with colorectal cancer in this 6 year review. 29 cases (53.71%) were male while 25 cases (46.29%) were females with a male to female ratio of 1.16:1.

**Table-I: Age Profile Of Patients With Colorectal Carcinoma.**

Age in Years	Male	Female	Total	%
20-29	2	1	3	5.56
30-39	2	2	4	7.41
40-49	7	4	11	20.37
50-59	4	7	11	20.37
60-69	7	6	13	24.07
70-79	4	3	7	12.96
Above 80	3	2	5	9.26
Total	29	25	54	100



**Figure-I: Moderately differentiated adenocarcinoma of colon. (H&E X 100)**

**Table-II: Site Of Primary Tumor**

Site of primary tumor	Number	%
Ascending colon	12	22.22
Transverse colon	7	12.96
Descending colon	6	11.11
Rectum	29	53.71
Total	54	100

When we compared patients who were above 50 years of age to those who were under 50 years of age, we found no significant statistical difference between the two groups in terms of sex and site of the primary tumor. But we found that the disease usually presents with poorer grades of differentiation and more advanced stage in those below 50 years compared to those above 50 years. Table III

**Table-III: Comparison of Colorectal Carcinoma Patients Below and above 50 years of age**

Particulars	Patients under 50years (n=18)		Patients above 50years (n=36)		Total	%
	#	%	#	%		
Sex(male)	11	61%	20	55.5		
<b>Site of primary tumor</b>						
Rectum	8	27.58 %	21	72.4 1%	29	53.71
Ascending colon	7	58.33 %	5	41.6 6%	12	22.22
Transverse colon	3	42.85 %	4	57.1 4%	7	12.96
Descending colon	0	-	6	100 %	6	11.11
<b>Staging (Dukes')</b>						
Stage A	2	14.28 %	12	85.7 1%	14	25.92
Stage B	4	21.05 %	15	78.9 4%	19	35.2
Stage C	8	57.14 %	6	42.8 5%	14	25.92
Distant metastasis	4	57.14 %	3	42.8 5%	7	12.96
<b>Tumor differentiation</b>						
Well differentiated	3	17.64 %	14	82.3 5%	17	31.48
Moderately differentiated	8	40%	12	60%	20	37.04
Poorly differentiated	7	41.17 %	10	58.8 2%	17	31.48

The ages of the patients ranged from 20-84 years with a mean of 47.5 years. The youngest patient was a 20 year old male. 18 patients were below 50 years of age. Distribution of CRC according to age

profile of the patient is shown in Table I. The disease was commonly seen between the ages 40-70 years with maximum cases between 60-69 years age group. The distribution of the disease according to age category shows that large bowel cancer occurred more in men than women.

Rectum was the most common affected site contributing to 53.71% (29 cases) followed by ascending colon with 12 cases (22.22%) and transverse colon with 7 cases (12.96%). Descending colon accounted for 11.11% with 6 cases [Table-II].

Fifteen cases (27.7%) were found to have synchronous polyp. 38.88% of lesions (21 cases) were stage C and above i.e. involvement of local lymph nodes and distant metastasis .

There were 14 cases (25.92%) in stage A and 19 cases 35.2%) in stage B. Histopathology showed that 37.04% (20 cases) were moderately differentiated (Fig-I), 31.48% (17 cases) showed both well differentiated and poorly differentiated areas.

## Discussion

The incidence of cancers of colon and rectum is low in India being 5.9 and 5.3 per 100,000 in males and females respectively compared to 32.9 and 24.4 per 100,000 in US.<sup>8,9</sup> Among the Asian population, Singaporeans have higher incidence of colorectal carcinoma than the Malays and Indians.<sup>10</sup>

In Manipur, CRC constitute about 5.6% of all newly diagnosed cancers compared to a slightly lower figure of 3.09% in the present study.<sup>11</sup> In this series, male: female ratio was 1.16: 1 comparable to other parts of India.<sup>12</sup> The mean age presentation for this study was 47.5 years, a lower figure compared to other parts of Asia like Saudi Arabia<sup>13</sup> and Thailand.<sup>14</sup> An important finding of the present study was that 33.33% (18 out of 54) of our patients were younger than 50 years. This suggests a possible hidden risk factor for colon cancer and warrants the need for a mass screening program in Manipur. However this aspect could be better studied and prospectively validated in a controlled study. CRC thus occurs earlier in Manipur and a screening program should be considered. The current recommendations for screening include the following for an asymptomatic individual with an average risk for CRC: annual digital rectal examination starting at the age of 40 years, fecal occult blood testing every year starting at the age of 50 years and flexible sigmoidoscopy every 3-5 years from 50 years onwards.<sup>15</sup>

The anatomic distribution shows that rectum accounted for 53.71% of the total cases which was similar to other studies.<sup>16</sup> A study by Eltinay et al<sup>17</sup>, showed that 13 cases (30.2%) presented with

advanced disease (C & D) and out of those, 10 cases (76.9%) were in a younger age group (<50 years) which was similar to our study. At the same time, these tumors were more poorly differentiated, which could be attributed to a higher growth rate of colorectal cancer in young patients. Pal M<sup>18</sup> also reported a proportionate increase in incidence of colorectal cancer at an age below 40 years. Al-Jaberi et al<sup>19</sup> also reported that 68% of the patients, who presented with colorectal cancers younger than 40 years, already had an advanced stage (C or D) of CRC compared to only 40% of those who were above 40 years of age.

It has been shown that CRC arise through at least two distinct genetic pathways: one involving chromosomal instability and the other involving microsatellite instability (MSI).<sup>21,22,24</sup> According to international convention<sup>23</sup>, CRC are classified as high frequency MSI(MSI-H) when the instability is seen in at least 30% of the loci examined and as low frequency (MSI-L) when less than 30% are involved. Tumors not showing alterations in the length of the DNA sequences studied are grouped as micro satellite stable (MSS). The importance for recognition of MSI in CRC is to detect cases associated with hereditary non polyposis colorectal cancer and sporadic CRC cases which is associated in 10-15%.<sup>24</sup> It has been found that a favourable outcome is associated with MSI as compared to MSS of resected CRC.<sup>25,26</sup>

## Conclusion

We found that patients present with CRC at a more advanced stage of disease at younger ages. We believe this data supports the case for a general population-based screening program in Manipur. Additional studies are required to determine the appropriate age for screening.

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