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Clinicopathological Profile of Colorectal Cancers in a Tertiary Care Hospital of Central, Nepal

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ABSTRACT

Introduction

There is an increasing incidence of colorectal carcinoma (CRC) in developing countries like Nepal. The objective of this research is to study the CRC its demography, mode of presentation, type of surgery, complications and Histopathological evaluation (HPE) after surgery.

Methods

This was a retrospective descriptive observational study at College of Medical Sciences, Bharatpur, Nepal. Patients diagnosed with colorectal cancer admitted to gastrointestinal surgery department from July 2019 to June 2022 (3 years) were included. Data of patients were retrieved from hospital records. Pre-operative, intra-operative and post-operative diagnosis of CRC on HPE were also included in the study.

Results

Out of 52 CRC, males were 30 (57.7%) and females were 22 (42.3%), mean age was 52.7 years. Overall, left colon was affected in 33 (63.5%) and right in 19 (36.5%). More than one quarter of patients 14 (26.9%), had disease recurrence by 6 months follow-up. HPE revealed half of the disease condition as adenocarcinoma, moderately differentiated in (50%) cases.

Conclusions

Colorectal cancer is predominant in male patients and older age group. Incidence is high in younger people <40 years and low in extreme age group >80 years. Meticulous surgery is the only proven cure for malignancy.

Keywords: colorectal cancer; colorectal mass; adenocarcinoma.

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INTRODUCTION

Cancer is one of the leading cause of death worldwide in the past few years.[1] Colorectal cancer (CRC) accounted for 5th most common malignancy in Nepal. Therefore, CRC has become a major public health issue.[2] Most CRC patients present at an advanced stage in Nepal. Symptoms depend on cancer location, size, and presence of metastases.[3] Distal cancers cause gross rectal bleeding, but bleeding from proximal cancers tend to be occult, and may present with anemia. Left colon cancers are more likely to cause partial or complete intestinal obstruction. Colonoscopy with biopsy and contrast enhanced computed tomography (CT) scan are the standard investigations for colorectal cancers.[3] Oncologic resection for CRC include wide radial, proximal, and distal margins, and high ligation of the lymphovascular pedicle for extended lymphadenectomy (>12 nodes) supported by neoadjuvant or adjuvant chemotherapy.[4] Clinico-demographic study of CRC is scant in Nepal. Therefore, this study aims to provide an outlook of clinico-demographic profile of CRC at our institution.

METHODS

A retrospective cross-sectional study was conducted in the Department of Surgical Gastroenterology of College of Medical Sciences (COMS), Bharatpur, Nepal. Patients diagnosed with CRC admitted to gastrointestinal surgery department, during the period of three years from July 2019 to June 2022 were included after approval from institute review committee (COMSTH-IRC/2023-21). Data of patients were retrieved from hospital records. Preoperative diagnosis of CRC based on colonoscopy and HPE, intra operative diagnosis of CRC and post-operative diagnosis of CRC on HPE operated for benign looking Colorectal mass were also included in the study. Records with incomplete data and patients referred for upfront neoadjuvant chemotherapy were excluded from the study. Demographic profile (age, gender, religion, dietary and smoking habits), presenting symptoms, surgery (elective v/s emergency and types of operation), complications, mortality, detailed HPE and recurrence were recorded and analyzed accordingly. Descriptive variables were described using frequency and percentage, continuous variables were described using mean.

RESULTS

Records of 52 patients were included. The mean age was 52.65 ± 17.38 years (range 17 to 87 years) with male predominance (57.7%). The demographic profile of respondents is shown in (Table 1).

Table 1. Socio-demographic characteristics (n=52).

Demography	**n (%)**
Age (Years)	
≤ 20	2 (3.8)
21-40	14 (26.9)
41-60	17 (32.7)
61-80	17 (32.7)
81-100	2 (3.8)
Gender	
Male	30 (57.7)
Female	22 (42.3)
Religion	
Hindu	40 (76.9)
Buddhism	12 (23.1)
Geography	
Terai	34 (65.4)
Hill	18 (34.6)
Dietary habit	
Mixed food	36 (69.2)
Predominantly red meat	16 (30.8)
Smoking	
Yes	21 (40.4)

Bleeding per rectum was present in more than half of patients (59.6%), likewise altered bowel habit was present in 65.4%. Anemia was seen in 13.5%, abdominal pain and abdominal distension in 51.9%, around 2/5th of the participants (42.3%) came with features of tenesmus, likewise peritonitis was present in 19.2% of participants. Rectum and recto-sigmoid involvement was found in 31 (59.6%). Overall, left colon was affected in 33 (63.5%) and right in 19 (36.5%). Table 2 shows the clinical presentations and location of CRC patients (Table 2).

Table 2. Clinical presentation and location of CRC (n=52).

Presentation	**n (%)**
Bleeding PR	21 (40.4)
Altered bowel habit	18 (34.6)
Anaemia	7 (13.5)
Abdominal pain	27 (51.9)
Abdominal distension	21 (40.4)
Tenesmus	22 (42.3)
Peritonitis	10 (19.2)
Tumour location	
Caecum and ascending colon	19 (36.5)
Descending colon	2 (3.8)
Sigmoid colon	1 (1.9)
Rectum (rectum and rectosigmoid junction)	30 (57.7)

Elective surgery was done in 30 (57.7%) and emergency surgery was performed in 22 (42.3%) patients. Highest number of surgeries performed for CRC was right hemicolectomy (36.5%) followed by Low Anterior Resection (LAR) (21.2%) and anterior resection (13.5%). Table 3 shows the type of surgery performed among the participants (Table 3).

Table 3. Types of surgery performed.

Surgery	**n (%)**
Elective	30(57.7)
Emergency	22(42.4)
Intestinal obstruction	19 (86.4%)
Perforation	3 (13.6%)
Right hemicolectomy	19 (36.5)
Left hemicolectomy	3 (5.8)
Sigmoidectomy	1 (1.9)
Anterior resection	7 (13.5)
LAR	11 (21.2)
APR	4 (7.7)
Hartmans procedure	6 (11.5)
Total proctocolectomy with end ileostomy	1 (1.9)
Diverting ileostomy and colostomy	24(46.1)

HPE of 52 specimens following surgery for CRC revealed moderately differentiated adenocarcinoma in 50% followed by well differentiated in 36.5%. Lymphoma in 1 (1.9%) patient was observed. Table 4 shows the histo-pathological evaluation of patients (Table 4).

Table 4. HPE report of CRC patients (n = 52).

HPE	**n (%)**
Grade/histology	
Well differentiated adenocarcinoma	19 (36.5)
Moderately differentiated adenocarcinoma	26 (50.0)
Poorly differentiated adenocarcinoma	6 (11.5)
Lymphoma	1 (1.9)
Stage (AJCC-8th edition)	
I	7 (13.5)
II	19 (36.5)
III	25 (48.1)
Lymphnodes retrieved	
<12 lymphnodes	33 (63.46)
≥12 lymphnodes	19 (36.54)

Complications occurred in more than half of patients. Most common complications were surgical site infection in 7 (13.5%) followed by pneumonia in 6 (11.5%), sepsis in 4 (7.7%), anastomotic leaks in 4 (7.7%), burst abdomen in 3 (5.8%) and paralytic ileus in 3 (5.8%). Re-laparotomy was done in 2 cases in same hospital setting. In hospital mortality was observed in 3 (5.7%) patients. Overall mortality at 6 months follow up was seen in 5 (9.6%) cases. According to HPE report, adjuvant chemotherapy was deferred by 8 (15.4%) patients. After 6 months follow up, adjuvant chemotherapy was completed by 36 (69.2%) patients, partially completed by 1 (1.9%) patient. It was not taken by 7 (13.5%) patients. Distal margin was free in 50 (96.2%) cases and positive in 2 (3.8%) cases. More than one quarter of patients 14 (26.9%), had disease recurrence by 6 months follow-up.

DISCUSSION

In our study, out of 52 CRC, males were 30 (57.7%) and females were 22 (42.3%).Similar to our result, M: F ratio of 1.25:1 was observed in a study done by Paudyal et al.[5] Gender disparities likely reflect differences in exposure to risk factors (e.g., cigarette smoking, intake of alcohol) and hormones, as well as complex interactions between these influences.[6] The mean age of participants was 52.65 ± 17.38 years (range 17 to 87 years). Around one third i.e. 32.7% of the participants were of the age group (41-60) years and (61- 80) years, followed by (20-21) years age group representing 26.9 %. Hence, we observed the incidence rate of CRC increases with increase of age till the age of 80 years, thereafter incidence rate declines. The decline in incidence after the age of 80 is probably due to life expectancy of Nepalese population which is 70.9 year. Hence, very few people remain alive at that age group.[7] Similarly, large proportion of patients with CRC are younger than 40 years which is 32.7% in our study. This is probably because of increase in health access, heath awareness by younger generation of patients. In US, CRC patients are increasing in younger, shifting from a median age of 72 years at diagnoses in early 2000s to 66 years in 2020.[8] This is because incidence is increasing in younger adults and declining in older age groups.[9] Nearly two thirds CRC patients were Hindu by religion reflecting Hinduism as predominant religion in Nepal comprising 81.19 per cent of total population.[10] We observed specific dietary habits in CRC patients. 36 patients (69.2%) consumed mixed food and 16 (30.8%) consumed predominantly red meat diet. It has been observed that, CRC occurred in immigrants to US suggesting diet being linked to CRC occurrences.[11] The International Agency for Research on Cancer in 2015, classified processed meat as "carcinogenic to humans" and red meat as "probably carcinogenic to humans," which was based on the evidence related to CRC risk.[12] The reasons for this association remain unclear, but may be related to the constituents of meat and/or to carcinogens (cancer-causing substances) that form during high-temperature cooking, curing, and/ or smoking.[13] As shown in Table 2, CRC patients present with varied clinical presentation. The most common symptom was pain abdomen seen in 51.7% patients in our study which was similar to study of Ben-Ishay.[14] In our study, 30 (57.7%) underwent elective surgery and 22 (42.4%) underwent emergency surgery. Our result was similar to the study done by Bahattin Bayar et al where 230 (71.9%) underwent elective surgery and 90 (28.1%) underwent emergency surgery.[15] We, observed a greater number of CRC patients undergoing emergency surgery. This might be due to the lack of national screening protocol for CRC, ignorance and inaccessible health services. There are also instances of delayed diagnosis where patient seek alternative treatment believing symptoms are attributed to hemorrhoids. The most common location of CRC was rectum and

rectosigmoid in 30 patients (57.7%) followed by caecum and ascending colon in 19 (36.5%). CRC was left sided in 33 (63.5%) and right sided in 19 (36.5%) cases. For emergency surgery, the most common indication was perforation 3 (13.4%) and intestinal obstruction 19 (86.6%). Similarly, in a study done by Ghazi et al the indications for emergency operation were due to perforation in 16% (n = 21), obstruction in 73% (n = 94) and bleeding in 4% (n = 5). [16] Paudyal et al had similar results with left side predominance in 27 (75%) vs right side in 9 (25%).[5] Right hemicolectomy was done for all right sided CRC. For left sided CRC, most common operation performed was anterior resection [high type in 7(13.5%) and LAR in 11 (21.2%)] and left hemicolectomy was performed in 3 (5.8%) cases. Paudyal et al showed similar results.[5] Since 42.4% cases underwent emergency operation for obstruction or perforation, diverting ileostomy or colostomy was made in 24 (46.1%) cases and Hartmann's procedure was performed in 6 (11.5%) cases. Overall stoma was created in 31 (59.6%) cases. HPE of 52 specimens following surgery revealed well differentiated in 26 (50%), moderately differentiated in 19 (36.5%) and poorly differentiated in 6 (11.5%) cases. The above findings corroborate with the results of Fleming et al where most colorectal adenocarcinomas (~70%) were diagnosed as moderately differentiated. Well and poorly differentiated carcinomas accounted for 10% and 20%, respectively. [17,18] Few differences observed between our study and study done by Fleming Mathew et al was likely due to the varied presentation of patients with CRC. HPE revealed lymphoma in one patient who underwent right hemicolectomy with double barrel ileo-colostomy for acute intestinal obstruction. Colorectal lymphomas are rare and comprise 10–20% of all GI lymphomas and only 1% of all colorectal malignancies.[19] Adequate lymph node retrieval >12 LNs was seen in more than one third of patients. In 33 (63.5%) cases of CRC, lymph node retrieval was not adequate probably due to emergency presentation in 22 (42.4%) cases where central vascular ligation was not adequately done. The number of retrieved lymph nodes were associated with higher tumor stage, tumor size, and right-sided location. Low lymph node count indicated adverse outcome in patients with locally advanced (T3/T4) disease.[20] Complications occurred in more than half of the patients. Complications were surgical site infection in 7 (13.5%) cases, anastomotic leaks in 4 (7.7%) and burst abdomen in 3 (5.8%). In-hospital mortality was observed in 3 (5.7%) patients. Overall mortality till 6 months follow up was 5 (9.6%) cases. Longo et al identified a complication rate of 28% in patients undergoing colectomy for colon cancer in the National Veterans Affairs Surgical Quality Improvement Program database.[21] Surveillance, Epidemiology, and End Results Program (SEER) analysis found 21% wound complications in patients requiring reoperation after initial resection in CRC.[22] Anastomotic leak or organ space infection occurred in 3 to 10% of cases among whom 32% required reoperations.[22, 23] In a Cohort analysis of 26,638 patients with stage I-III colorectal cancer by SEER-Medicare database, 5.8% of patients required postoperative intervention, which was similar to our result.[24] More than one quarter of patients 14 (26.9%), had disease recurrence by 6 months follow-up. Despite increased initial cure rate, 20–30% of patients with stage I–III CRC developed recurrences in various studies.[25, 26]

CONCLUSIONS

CRC is predominant in male patients and older age group. Incidence was also high in younger age group <40 years and low in extreme older age group >80 years. Recurrence was observed even after R0 resection with abundant lymph nodes retrieval. Therefore, the findings of this study demonstrated the necessity of multimodality treatment of CRC. Due to presentation in late

advanced stage, screening protocol of CRC for early diagnosis and timely intervention could improve patient's outcome. This study also provides valuable information for hospital based cancer registry in Nepal.

Conflict of Interests: None

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