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## Colorectal carcinoma: Surgical management, risk and prognostic factors: A retrospective study

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Article History:	ABSTRACT
Received on: 19.10.2018 Revised on: 24.12.2018 Accepted on: 28.12.2018	<p>Colorectal carcinoma (CRC), the most common malignant disease in industrialized societies; 875,000 new cases being reported every year and approximately 500,000 are dying to the CRC, and it is the commonest gastrointestinal tract cancer worldwide. The current study as aimed to address the patterns of clinical presentations, age, and gender distribution, methods of investigations and surgical management of colorectal cancer patients as well as identification of certain risk factors for the development of colorectal cancer and predictors of recurrence. This study was involving 45 patients with the new diagnosis of colorectal cancer admitted and treated at Al-Diwaniyah Teaching Hospital, Al-Qadisiyah province, Iraq in the period between January 2016 and January 2018. The most common postoperative morbidity was wound complications (5/45, 11%). Prognostic factors of recurrence included Clinical presentation: emergency cases had a risk of recurrence that it's twice the elective cases, Stage: patients with Duke's stage <math>\geq</math> C1 had a risk of recurrence that is 3 times more than those with stage <math>&lt;</math> C1. Grade: patients with poorly differentiated tumours had a risk of recurrence that is six times more than those with well and moderately tumours. Adjuvant chemoradiation: patients who did not receive and or complete adjuvant chemoradiation were 30 times riskier for recurrence than those who received and completed their courses. There is an increase in the incidence of colorectal carcinoma in young age patients with about equal gender distribution, as well as bleeding per rectum and change in the bowel habit are the common presenting features with the rectum being the most common site.</p>
<b>Keywords:</b>	
Colorectal carcinoma (CRC), Surgical management, Prognostic factors	



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### INTRODUCTION

Colorectal carcinoma (CRC), the most common malignant disease in industrialized societies; 875,000 new cases being reported every year and approximately 500,000 are dying to the CRC (Compton, 2003) and it is the commonest gastrointestinal

tract cancer worldwide. In women, is the third most common cancer after lung breast cancer, while in men; it is third cancer after lung and prostate cancer (Cho and Vogelstein, 1992; Hendren *et al.*, 2015). The Arab countries as part of the developing world had a greater number of cancer cases in comparison with the Number of the population, with 14.9 million cases and 8.2 million deaths as reported in 2013 (Fitzmaurice *et al.*, 2015).

In Iraq, according to the results of Iraq cancer registry (in the period between 1995-1997), it was the 12<sup>th</sup> most common cancer, with an incidence of about 1.1, 100000 persons (Iraqi cancer registry, 1997). Colorectal carcinoma is a disease mainly affecting elderly persons; however, 6-8% of cases occur in patients below 40 years of age. It is a slowly growing tumour, and it is of a favourable prognosis, but the delay in presentation and diagnosis adversely affects the outcome. Pathologically, the

normal colonic epithelium progress into a premalignant adenomatous polyp, which ultimately leads to frankly invasive cancer (the adenoma-carcinoma sequence) (Rice, 1988). The aetiology of colorectal cancer is unclear, but there's a group of patients regarded as high – risk patients and these include (Zarour *et al.*, 2017): A-Age above 50 years, B-patients with premalignant conditions like i. Ulcerative colitis for more than 10 years. ii. Crohn's disease. iii. Familial polyposis coli. iv. Colorectal Adenoma. v. Ureterosigmoidostomy. vi. Partial gastrectomy for a benign ulcer. C- Colorectal carcinoma in the family. Fifteen to twenty percent of cases present as emergency state either as intestinal obstruction (most commonly) or rarely perforation and Emergency surgery is usually required in these instances (Lee *et al.*, 2001), the remainder (80%) of cases presents as a subacute condition with symptoms and signs depends on the site of the tumor and its size and some of the patients present for the first time with metastatic lesions in the lung. Liver and peritoneum (Smith, 2002). Following suspicion of these tumours, per rectal examination and faecal occult blood testing remain important measures for detecting tumours and from all investigative procedures, endoscopy (sigmoidoscopy and colonoscopy) regarded as the most accurate method for diagnosis as well as to rule out any synchronous carcinoma or polyp that occur in 3-5% of cases. A barium enema is complementary to endoscopy, and it can demonstrate the tumour and any synchronous lesion (Keswani *et al.*, 2002).

The use of modern techniques for the detection of tumours will increase the diagnostic certainty at early stages. For example, the use of endoscopic ultrasound and transrectal ultrasound which gives diagnostic accuracy of about 90% In addition to computerised tomography (CT scan) and magnetic resonance imaging (MRI) which are of important value in assessing invasion of the tumour to other organs. Positron emission tomography is a very helpful method especially in detecting recurrence, and it depends on the difference in tissue metabolism between normal and diseased tissue where it is increased in cancer state. (Sadanandam *et al.*, 2013). The role of surgery in managing colorectal cancer could be either curative where all grossly detectable cancer has been removed, or non-curative where there is metastatic or residual disease believed to remain as in cases of locally invasive tumour. The objective of surgery is to remove the segment of bowel, the mesentery containing lymphatic drainage and any involved organs (Ames *et al.*, 1995). The use of self-expandable stents that is introduced endoscopically is a recent advance where it can be used either as a palliative measure or preoperatively to allow single stage operation to

be carried out later in cases of intestinal obstruction (Steinmetz *et al.*, 1994). The risk of recurrence after surgery vary from 20%-45%, this results from incomplete tumour excision, implantation of tumour cells along suture line or the development of new primary growth and this risk can be reduced by total mesorectal excision. Adjuvant therapy (chemo and radiotherapy) can be used following resection in patients with high risk of recurrence, and they can improve survival in patients with modified Duke Stage B and C tumours (Schwingshackl *et al.*, 2018).

Postoperative follow up is important in every case especially those regarded as high-risk group patients, and this can be done by colonoscopy and barium enema studies within 2-3 months and repeated annually. The level of carcinoembryonic antigen (CEA) as a tumour marker can also be used for follow up every 3 months then annually to detect early recurrence especially if there is a rising level at repeated follow up checking (Meyerhardt *et al.*, 2006). There is a place for prevention of the development of this cancer in patients with some of the polyposis syndromes and in some cases of ulcerative colitis by performing prophylactic colectomy. Also, many reports are showing that non-steroidal anti-inflammatory drugs can prevent the development of cancer through its action on inhibiting cyclo-oxygenase 2 enzyme, which overexpressed in cancer state (Lönnroth *et al.*, 2008; Vane and Botting, 1997).

## PATIENTS AND METHODS

In this prospective study, analysis of the data of 45 patients newly diagnosed to have colorectal carcinoma who were treated at Al-Diwaniyah Teaching Hospital, Al-Qadisiyah province, Iraq from January 2016 to January 2018. The data were collected by a special form, and the patients were admitted and treated at the surgical department where investigations carried out to prove the diagnosis and determine the site and the extent of the disease.

**Ethics:** Each patient included in this plan signed an informed consent form, detail of the method and agent used with the possible failure of this option and approved by the Ethics Committee of the Medical Research Institute (ECMRI).

Preoperative bowel preparation (mechanical using saline rectal enemas, chemical using erythromycin 500mg 6 hourly orally or both) was done for all patients presenting as an elective situation two days before surgery but not in case of emergency operations. Prophylactic antibiotics (Cefuroxime 1g plus Metronidazole 500mg intravenously) were given at induction of anaesthesia for both groups and continued for two days if no clinical features of

sepsis were present. The choice of operation depends on the site of the tumour, the condition of the bowel and the general condition of the patient. Clinical data from physical examination, investigations and operative findings were used for classification of the cases; the staging system used in this study was the modified Duke's staging system.

Body mass index calculated by the equation:

$$AMI = \text{Weight (Kg)} / (\text{Height (M)})^2$$

Obese patients had a BMI of more than 30.

In regard to alcohol intake; 1 unit of alcohol = 9-10mg = 1/2 pint of beer

Male complications occur when drinking > 21unit / week.

Female complications occur when drinking > 14 unit/week.

In addition, chronic heavy smoking was also included as a risk factor for the development of colorectal cancer.

**Statistical analysis**

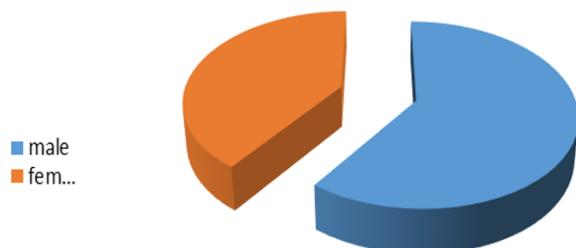
SPSS version 23 and Microsoft Office Excel 2019 were used in the analysis of these data, chi-square test and Fisher exact test were used to study the association between any two nominal variables. P-value of less than or equal to 0.05 was considered significant.

**RESULTS**

In regard to the age distribution in our sample of colorectal cancer, table (1) showed that (13/45, 29%) of patients were found in the (40-49 years) age group recording the highest occurrence. Also, we found that (11/45, 24.5%) of patients were below 40 years old.

**Table 1: Age distribution**

Age (years)	No.	%
20-29	4	9%
30-39	7	15.5%
40-49	13	29%
50-59	8	17%
60-69	7	15.5%
>70	6	13.3%
Total	45	100%



**Figure 1: Gender distribution**

Concerning gender distribution, figure (1) showed that (27/45, 60%) of patients were males and the remaining (18/45, 40%) were females.

**Table 2: Risk factors for colorectal carcinoma**

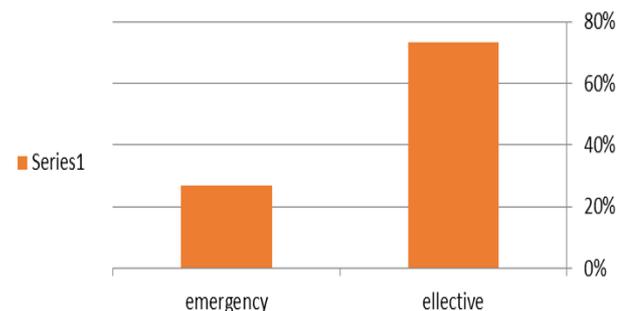
Risk factors		No.	%
Dietary	High fat and low fibre diet	39	87%
	Lack of physical acclivity and large BMI	29	64%
	Alcohol consumption	9	20%
	Cigarette smoking	30	66.6%
Non dietary	Hered- itary	2	4.4%
	Non-hered- itary	1	2.2%
	Ulcerative colitis	2	4.4%
	Family history	2	4.4%
	Polyps	2	4.4%

**Table 3: Clinical presentation**

Clinical presentation	No.	%
Bleeding per rectum	26	58%
Changeable bowel habit	23	51%
Abdominal pain	19	42%
Rectal mass	13	29%
Tenesmus	9	20%
Abdominal distension	13	29%
Anorexia	5	11%
Anaemia	4	9%

In respect to the risk factors for the development of colorectal cancer, table (2) showed that history of consumption of high fat and/or low fibre diet was present in (39/45, 87%) of cases, lack of physical activity and large body mass index in (29/45, 64%), alcohol consumption in (9/45, 30%) and cigarette smoking in (30/45, 66%) of cases.

Nondietary factors were recorded in the following percentages; familial adenomatous polyposis (FAP) in (2/45, 4.4%), ulcerative colitis in (31/45, 2.2%), family history of colorectal cancer in (2/45, 4.4%) and polyps in (2/45, 4.4%).



**Figure 2: Admission stat**

Considering the clinical presentation, table (3) estimated that the most common clinical presentative symptoms were bleeding per rectum (26/45, 58%) and a recent change in bowel habit (23/45, 51%). Regarding the admission stat, figure (2) showed that (33/45, 73%) of cases were electively admitted while the remaining (12/45, 26.6%) were admitted as emergency cases.

**Table 4: Investigative methods**

Investigation	Findings	No.	%
Endoscopy	Ulcerative lesion	16	35.5%
	Cauliflower lesion	7	15.5%
	Stricture	1	2.2%
	Incompleted	8	17.7%
	Not done (emergency)	12	26.6%
Double contrast	Irregular filling defect	4	8.8%
Barium enema	Stricture	3	6.6%
Abdominal ultrasound	Colonic mass	7	15.5%
	Ascites	5	11.1%
	Liver metastasis	6	13.3%
	Negative or inconclusive	15	33.3%
	Not done (emergency)	12	26.6%
CT scan with oral and IV contrast	Pelvic mass	2	4.4%
	Hydrotreated	3	6.6%
	Ascitis	5	11.1%
	Liver metastasis	6	13.3%
	Elective	16	35.5%
Plain x-ray	Not done	13	28.8%
	Emergency	13	28.8%
CXR	Distended large bowel	12	26.6%
	Normal	32	71.1%
CXR	Pulmonary metastasis	3	6.6%
	Normal	42	93.3%

Table (4) clarified the investigative modalities and this included endoscopy which revealed ulcerative lesions in (16/45, 35%), Endoscopy was in completed in (8/45, 17.7%) of cases because of the patient's in cooperation, and it was not done in (12/45, 26.6%) of our sample of patients who have been emergently admitted. For those who had incomplete endoscopy (8/45, 17.7%), double-contrast barium enema was done, and it showed an irregular filling defect in (4/45, 8.8%) and stricture in (3/45, 6.6%). Abdominal ultrasound shows a colonic mass, ascites, and liver metastases in (15.5%, 11.1 and 13.3% respectively). (15/45, 33.3%) Showed negative or inconclusive ultrasound findings. The remaining (12/45, 26.6%) was emergently admitted, and they were not submitted to ultrasound examination. In addition to ascites and liver metastases, CT scan with oral and intravenous contrast showed a pelvic mass in 4.4% and hydro ureter and hydronephrosis in 6.6% of cases. CT scan could not be employed to investigate the emergently admitted cases (13/45, 28.8%) and (16/45, 35.5%) of the elective cases either because of the long duration appointments or because of

the unavailability of this type of investigation, especially at night.

**Table 5: Site distribution of colorectal cancer**

Site	No.	%
Rectum	15	33.3%
Sigmoid	10	22.2%
Caecum	6	13%
Rectosigmoid	5	11.1%
Transverse colon	3	6.6%
Ascending colon	2	4.4%
Descending colon	2	4.4%
Hepatic flexure	1	2.2%
Splenic flexure	1	2.2%
Total	45	100%

**Table 6: Modality of surgical treatment**

Site	Operation	No	%
Rectum	Abdominal	12	26.6%
	perineal resection		
	Anterior resection	1	2.2%
Sigmoid	Palliative colostomy	1	2.2%
	Resection + EEA	7	15.5%
	Resection + Hartman's	2	4.4%
	Resection + double barrel colostomy	1	2.2%
	Palliative colostomy	2	4.4%
Caecum	Right hemicolectomy	5	11.1%
	Recto sigmoid junction		
	Resection + EEA	1	2.2%
Transverse colon	Palliative colostomy	3	6.6%
	Extended right hemicolectomy	1	3%
	Resection + EEA	1	1%
	Resection + colostomy & mucous Fistula	1	2%
	Right hemicolectomy	2	6%
Ascending colon	Left hemicolectomy	1	1%
	Extended right hemicolectomy	1	2%
Hepatic flexure	Resection + EEA	1	2%
	Splenic flexure	1	2%
FAP and ulcerative colitis	Total colectomy + ileoanal pouch	2	6%
	Total	45	100%

\*EEA= End to end anastomosis

Regarding site distribution of colorectal cancer, table (5) showed that the most commonly encountered site was the rectum (15/45, 33.3%), next to it was the sigmoid colon (10/45, 22.3%) of cases.

**Table 9: Prognostic factors of recurrence**

Variables	No.	Recurrence				Odds Ratio	
		positive		Negative			
		No.	%	No.	%		
Age	≥ 40	34	5	15%	29	85%	1
	< 40	11	2	18%	9	81.8%	
Clinical presentation	Emergency	12	2	16%	10	83.2%	2
	Elective	33	3	9%	30	91%	
Stage	≥ <i>Cl</i>	29	5	17.2%	24	82.7%	3
	< <i>Cl</i>	16	1	6.2%	15	93%	
Grade	Poorly differentiated	6	2	34.3%	4	66%	6
	Well & moderately differentiated	39	3	7.9%	36	92.3%	
Adjuvant cheme-radiation	Positive	33	3	9%	30	91%	30
	Negative	4	3	75%	1	25%	

However, hepatic and splenic flexures recorded the least incidence (2.2%) in each of them.

Concerning the modality of surgical treatment, table (6) outlined abdominoperineal resection as the most popular used procedure (12/45, 26.6%). The other procedures varied from local resection with 5cm safe margin in (10/45, 22%) to the right hemicolectomy in (5/45, 11.1%), anterior resection in (1/45, 2, 2%) and total colectomy with ileo – an anal pouch in (2/45, 4.4%) of cases. Other respective procedures but without restoring the continuity of the gastrointestinal tract included Hartmann's procedure in (1/45, 2.2%), resection with double barrel colostomy in (1/45, 2.2%) and resection with colostomy and mucous fistula in (1/45, 2.2%) of cases. Palliative colostomy for locally advanced and obstructive Ca was done in (2/45, 4.4%).

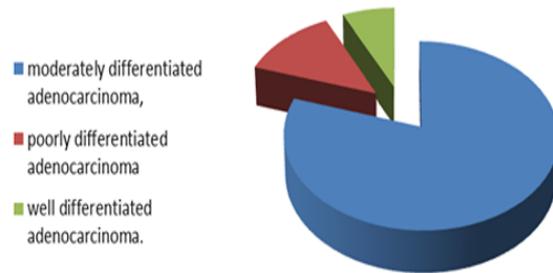
**Table 7: Stages of colorectal cancer**

Duke's stage	No.	%
A	1	2.2%
B1	6	13.3%
B2	9	20%
C1	11	24.4%
C2	8	17.7%
D	10	22%
Total	45	100%

In respect to the stage of the disease according to the modified Duke's staging system, table (7) showed that stage A was found in (1/45, 2.2%), stage B1 in (6/45, 13.3%), stage B2 in (9/45, 20%), stage C1 in (11/45, 24.4%) and stage C2 in (8/45, 17.7%) while distant metastases representing Duke Stage D was reported in (19/45, 22%) of cases.

I was considering the histological grading figure (3) clarified that (36/45, 80%) had moderately differentiated adenocarcinoma, (6/45, 13%) had poorly differentiated adenocarcinoma while the

remaining (3/45, 7%) of cases had well-differentiated adenocarcinoma.



**Figure 3: Grades of colorectal cancer**

**Table 8: Postoperative morbidity and mortality**

Complication	Elective surgery		Emergency surgery	
	No.33	73%	No.12	27%
Wound complication	2	6%	3	25%
Cardio pulmonary	1	3%	2	16.6%
Fistula	1	3%	1	8.3%
Intra-abdominal sepsis	1	3%	2	16.6%
Renal failure	0	0%	1	8.3%
Mortality	0	0%	1	8.3%

Regarding the correlation between postoperative morbidity and mortality with the type of surgery being elective or emergent, table (8) showed that wound complications were seen in (2/33, 6%) of elective cases and (3/45, 25%) of emergency cases, cardiopulmonary complications in (1/45, 3%) of elective cases and (2/33, 16.6%) of emergency cases and fistula complicated (0/45, 0%) of elective cases and (1/12, 8.3%) of emergency cases. Intraabdominal sepsis was found in (0/33, 0%) of elective cases and (2/12, 16.6%) of emergency cases. Renal failure was reported in one case under emergency surgery. Two cases died from intraabdominal sepsis and renal failure, the two were emergency cases.

Table (9) highlighted the association between certain variables and the recurrence of colorectal cancer; it is showing that regarding the age; patients  $\geq 40$  years old developed recurrence in (5/34, 15%) of them, the same percentage was noted in patients  $< 40$  years old. This result gives an Odd's ratio of 1. Considering the clinical presentation, recurrence was recorded in (2/12, 16%) of emergency cases and (3/33, 9%) of elective cases. This gives an Odd's ratio of 2. Regarding the pathological stage of the disease, patients who had Duke's stage  $\geq$  CI demonstrated recurrence in 5 of them (5/29, 17.2%) while patients with a stage  $<$  CI had a recurrence in (1/16, 6.2%). This gives an Odd's ratio of 3. In respect to the histological grade, it is shown that patients with poorly differentiated adenocarcinoma have developed recurrence in (2/6, 34.3%) of them while patients with moderately or well differentiate adenocarcinoma had a recurrence in (3/39, 7.9%). This gives an Odd's ratio of 6. In regard to postoperative adjuvant chemoradiation, patients who did not receive and/ or complete their course (denoted for by negative) had recurrence in (3/4, 75%) while those who received and completed the chemoradiation course (denoted for by positive) have developed recurrence in 6 of them (3/33, 9%). This gives Odd's ratio of 30.

## DISCUSSION

In this prospective review of 45 cases with colorectal cancer, (11/45, 24.5%) of patients were found to have ages  $< 40$  years old. This result concedes with other studies done in the Middle East: - Kakil *et al.* (2001) who also conducted 20% of colorectal cancer patients to be less than 40 years. On the contrary, western society studies showed a lower incidence of colorectal cancer in young age groups: Keswani *et al.*, (2002) who conducted a percentage of 4.8% of colorectal cancer in patients less than 40 years old. This result highlights the fact that there is an increase in the incidence of colorectal cancer in young age patients in our country and the Middle East.

Regarding the gender distribution of the patients, there was no very significant difference between males and females (60% versus 40%). This result is in accord with that of Sadanandam *et al.*, (2013) who found that female to male ratio is about equal. In respect to the risk factors of colorectal cancer, the current study recorded the following dietary factors: High fat and/or low fibre diet and this is in agreement with that of Schwingshackl *et al.*, (2018); Steinmetz *et al.*, (1994) who also found high fat and/or low fibre diet as a risk factor for colorectal cancer. Lack of physical activity and large body mass index and this is in accordance with that of Giovannucci *et al.*, (1995); Meyerhardt

*et al.*, (2006): who also reported a correlation between lack of physical activity, large body mass index, and colorectal cancer. Alcoholism and this concedes with that of Bongaerts and Weijenberg, (2010); Hagggar and Boushey, (2009) who also found a higher incidence of colorectal cancer among alcoholic patients. Cigarette smoking and this goes with that of (Maasland *et al.*, 2014) who also conducted a relationship between cigarette smoking and colorectal cancer.

Nondietary factors included hereditary risk which was found in two cases with familial adenomatous polyposis, and this is in accord with that of Rice, (1988) who also considered FAP as a risk factor for colorectal cancer. The nonhereditary risk was in the form of ulcerative colitis, family history of colorectal cancer and polyps. This result is in agreement with that of Guire, (2016) who also reported ulcerative colitis, family history of colorectal cancer and colorectal polyps as risk factors for colorectal cancer. Considering the clinical presentation, bleeding per rectum and change in the bowel habit were the most common presenting features in (58% and 51% of cases respectively). This result concedes with that of Nishihara *et al.*, (2013) who also reported bleeding per rectum and change in bowel habit as the most common presentative symptom of colorectal cancer. In respect to the admission state, (33/45, 73%) of patients were electively admitted while the remaining (12/45, 26%) were emergency cases. This result is in accordance with that of Hassan and Ameen (2002) who found that about (30%) of cases of colorectal cancer were emergently admitted.

Regarding the diagnostic modalities, endoscopy was done for visualisation, localisation and taking a biopsy from the lesion and the most common finding was an ulcerative lesion in (16/45, 35%). This result is in accordance with that of Cuschieri and Hanna (2015) who stated that most of the lesions of colorectal cancer are ulcerative and subsequently they spread circumferentially and advances to become annular or tubular lesions. Other investigative modalities were used to assess the presence or absence of regional and distant metastases, and these included an abdominal ultrasound and CT scan with oral and intravenous contrast and chest x-ray. Double contrast barium enema played a complementary investigative role to endoscopy. Concerning the site distribution of colorectal cancer, the three most common sites in descending order of frequency were the rectum (33.3%), sigmoid colon (22.6%) and the caecum (13%). This result is in agreement with that of peter Sunnis, and Karen Nugent (2012) who also found that the most commonly involved site was the rectum, next to it was the sigmoid colon, fol-

lowed by the caecum. In respect to the surgical procedures used to treat our patients, abdominoperineal resection was the most commonly used modality (12/45, 26.6%) next to it was right hemicolectomy (standard and extended) which was employed in (9/45, 20%) of cases. This result is in agreement with that of O'Connell *et al.*, (2004) who also reported abdominoperineal resection and right hemicolectomy to be the most commonly employed procedures and in about the same percentages (25% and 23.5% respectively). Regarding the pathological stage of the disease, most of the patients were found to have Duke's stage C (19/45, 42%) followed by Duke Stage B (15/45, 33%). A similar result was found by Kakil *et al.*, (2001) who also conducted that most of the patients with colorectal cancer were found in the category of Duke stage B and C (about 70%). The histological grade was found to be the most commonly a moderately differentiated adenocarcinoma (36/45, 80%). This is in accord with that of Sadanandam *et al.*, (2013) who also reported moderately differentiated adenocarcinoma in 79% of their colorectal cancer cases. Concerning postoperative morbidities and mortality, complications were recorded mostly in emergency cancer more than elective ones. This is in agreement with Chalya *et al.*, (2013) who also found a higher incidence of postoperative complications in emergency cases. This may be attributed to the fact that emergency cases were more likely to be presented with intestinal obstruction, distended bowel with maximal faecal, bacterial and septic load, together with bacterial translocation and cardiovascular upset and biochemical abnormalities from dehydration and fluid sequestration. Also, there was no chance for bowel preparation before emergency surgery. All these factors contributed separately and together in the higher incidence of postoperative complications in cases of emergently admitted colorectal cancer patients. In regard to the association between recurrent cases and certain variables, we have found that in regard to the age, there was no statistical significance (Odd's ratio 1). Clinically wise, emergency cases carried twice the risk of recurrence of elective cases (Odd's ratio 2). This may be due to the more advanced of the tumour, incomplete resection or clearance and eventually more likelihood of recurrence.

Patients with Duke stage  $\geq$  CI had a recurrence that is 3 times more than patients with Duke stage  $<$  (Odd's ratio 3). This could be attributed to the more locoregional extension of the tumour as the stage of the disease escalated and thus more probability of recurrence. Poorly differentiated tumours were having a risk of recurrence that 6 times more than well and moderately differentiated tumours (Odd's ratio 6). This could be due to

the more aggressiveness of the tumour when it became poorly differentiated and subsequently more likely to recur. In respect to the postoperative adjuvant chemoradiation, patients who have not received and completed their courses were carrying the risk of recurrence that was 30 times more than those who received and completed their chemoradiation courses (Odd's ratio 30). This could be due to failure to combat local and regional micrometastases in patients who have not received and completed adjuvant chemoradiation sessions.

These results are in accordance with that of Sternberg *et al.*, (1999) who reported the factors as mentioned above (clinical presentation, stage, and grade of colorectal cancer and chemoradiation) as prognostic factors in colorectal carcinoma.

### CONCLUSION

There is an increase in the incidence of colorectal carcinoma in young age patients with about equal gender distribution. Bleeding per rectum and change in the bowel habit are the common presenting features with the rectum being the most common site. Dietary and non-dietary risk factors for colorectal carcinoma included mostly high for and low fibre diet in the former category and family history and colonic polyps in the latter one. Clinical presentation (whether elective or emergent), pathological stage, histological grade and the intake and adequacy of postoperative adjuvant chemoradiation are very important prognostic factors in terms of the determination of the risk of recurrence.

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