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Colorectal Cancer in Sudan; Clinicopathology and Surgical Outcomes: A Single Centre Study

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Abstract | **Original Research Article**

Background: Colorectal cancer is one of common cancers and second cause of death worldwide. In Sudan unfortunately there is few statistical date regarding colorectal cancer and its geographical, ethnic distribution, and pattern of presentation because of lack of statistics or underreporting. ***Objective:*** To study pattern of presentations and surgical outcome of colorectal cancer in Sudanese patients. ***Patients and methods:*** This study is descriptive cross sectional between (2014-2019); a prospective and retrospective study of histological confirmed cases of colorectal cancer was conducted at SUH. All patients who met the inclusion criteria were involved in the study. ***Results:*** We studied (124) patients in the period between (2014–2019). Highest percentage of the patients 78 (62.9%) aged between 46 – 70 years. The mean age was 67±2.4 years. Male to female ratio1.3:1. Rectal bleeding and altered bowel habits were the most frequent presenting symptoms. Left side colonic carcinoma was 82.7% represented the majority of cases with rectal tumor account for 49.2% of all cases. In preoperative, stage B was reported in majority of patients 74(59.7%). The most common surgical managements done for the patients were low anterior resection with or without ileostomy or colostomy32 (36.8%), APR 24(19.3%), left hemicolectomy 15(12.1%), right hemicolectomy 18(14.5%), sigmoid colectomy 9(7.3 and total colectomy 4(3.2%). Final histopathology reports showed that the 65% of the sample were moderately differentiated adenocarcinoma 76(61.3 %). the most frequent reported postoperative complication was surgical site infection 8(6.5%) and anastigmatic leak 3(2.4). ***Conclusion:*** The mean age of patients in this study was 67±2.4 year, with male to female ratio of 3:1. Rectal bleeding altered bowel habits were the most frequent presenting symptoms and anemia more common in right site. The most common endoscopy findings were rectal tumor, followed by anal tumor, sigmoid colon, ceacal and rectosigmoid. Anterior resection with or without ileostomy was the most frequent conducted operation. Surgical site infection was the most frequent complication followed by anastomotic leak. The final histopathology reports showed that majority of samples were advance "Duke's stage C and D".

Keywords: colorectal cancer, PR bleeding.

INTRODUCTION

Colorectal Cancer is a major cause of morbidity and mortality in most of worldwide, but has a good outcome in the developed world. Unfortunately, huge numbers of patient with colorectal cancer die because they live in developing countries, and therefore have no limited access to hospital for early management or cannot even afford to pay for their management .the colorectal cancer is second common GI malignancy according to Registries result from 2009- 2010 in Khartoum, and fifth among all primary tumors in the Capital of Sudan [1]. Up to date, few studies about the clinical and pathological pattern and its geographical, racial distribution in Sudan.

PATIENTS AND METHODS

This study is descriptive cross sectional between (2014-2019); a prospective and retrospective studyofhistologicalconfirmedcasesofcolorectalcancerwa

sconductedatSUH.Allpatientswho met the inclusion criteria were involved in the study.

RESULTS

Highest percentage of the patients 78 (62.9%) aged between 45 – 70 years and lowest percentage 16(12.9%) age above 70 years. The mean age was 67±2.4 years. Highest percentage 80(64.5%) resident in central states and 5(4%) from southern states. Males were 72(58.1%) and females were 52(41.9%)**.**Elective presentation was reported in 120(96.8%) and emergency reported in 4(3.2%). The presenting symptoms were rectal bleeding 72(58.1%), followed by change in bowel habits 60(48.4%), abdominal pain 47(37.9%), weight loss 40(32.3%), mucousdis charge 38(30.6%), abdominal distention 18(14.5%) and tenesmus 17(13.7%) (Table 1).

Table-1: Distribution of the patients according to symptoms:

	Yes			**No**
Symptoms	N	%	N	%
Abdominal distention	18	14.5	106	85.5
Rectal bleeding	72	58.1	52	41.9
Change in bowel habits	60	48.4	64	51.6
Weight loss	40	32.3	84	67.7
Tenesmus	17	13.7	107	86.3
Abdominal pain	47	37.9	77	62.1
Mucous discharge	38	30.6	86	69.4

The duration of symptoms among the patients was 2-4 years in 48(38.8%), and lowest percentage 4(3.2%) experienced symptoms for 5-6 years with mean duration 3.2±0.8 years**.** on physical examination, 75(60.4%) of the patients showed anemia, 20(16.1%) rectal mass, 12(9.6%) abdominal mass, 9(7.2%) anal mass, 9(7.2%) abdominal distention, 8(6.4%) unremarkable and 6(4.8%) right iliac fossa mass (Table 2).

Table-2: Distribution of the patients according to physical examination

Findings	**N**	**%**
Anemia	75	60.4
Abdominal mass	12	9.6
Rectal mass	20	16.1
Anal mass	9	7.2
Rt. Iliac fossa mass	6	4.8
Abd. Distension	9	7.2
Unremarkable	8	6.4
Total	124	100.0

At presentation metastasis were absent in 116(93.6%) of the patients, present in 8 patients of them 4(3.2%) liver metastasis, 3(2.4%) lung metastasis and 1(0.8%) had both liver and lung metastasis**.** The reported family history of others cancers included breast cancer 7(5.6%) and colorectal cancer 1st degree relative 4(3.2%). Preoperative CEA was more than 2.5 in 110(88.7%) of the patients and less than 2.5 in 14(11.3%).The most common endoscopy findings were rectal tumor 61(49.2%), followed by anal tumor 16(12.9%), sigmoid colon 9(7.3%), ceacal 8(6.5%) and rectosigmoid 6(4.8%), rest of findings are shown in (Table 3).

Table-3: Distribution of the patients according to endoscopy finding

Findings	**N**	**%**
Cecal	8	6.5
Ascending colon	2	1.6
Hepatic flexure	2	1.6
Transverse colon	4	3.2
Splenic flexure	3	2.4
Descending colon	5	4.0
Sigmoid colon	9	7.3
Rectosigmoid	6	4.8
Rectum	61	49.2
Anal	16	12.9
Cecum and Ascending colon	2	1.6

Findings	N	%
Cecum and Hepatic flexure	1	.8
Ascending colon and Hepatic flexure	1	.8
Transverse colon and Descending colon	1	.8
Transverse colon and Sigmoid colon	1	.8
Hepatic flexure and Sigmoid colon	1	.8
Splenic flexure and Sigmoid colon	1	.8
Total	124	100.0

The distance from anal verge (cm) was 5-12cm in 46(37.1%) of the patients, >26cmin 28(22.6%), 13-25 cm 25(20.2%) and 1-4 cm 25(20.2%)**.** In microscopic appearance ulceration was manifested in 60(48.4%), polypoid 34(27.4%), annular 17(13.7%) and infiltrative 13(10.5%). In preoperative, stage B was reported in 74(59.7%) of the patients, stage C 30 (24.2%), stage A 12(9.7%) and stage D 8(6.5%)**.** Neoadjuvant therapy in form of chemotherapy was given to 31(25%) of the patients, radiotherapy 23(18.6%) and combination of chemotherapy and radiotherapy was given to 22(17.7%) of the patients**.** Partial response to neoadjuvant therapy was reported by 58(46.8%) of the patients and complete response1 (0.8%). No response was the case of 65(52.4%) of the patients.

The most common surgical managements done for the patients were low anterior resection with or without ileostomy or colostomy 32(36.8%), APR 24(19.3%), left hemicolectomy 15(12.1%), right hemicolectomy 18(14.5%), colostomy 14(11.3%), sigmoid colectomy 9(7.3%), high anterior resection8 (6.5%) and total colectomy4 (3.2%). Curative surgery was performed for 93(75%) of the patients and palliative surgery for 31(25%). Highest percentage of the patients 79(63.7%) did not need blood transfusion peri-operatively, 28(22.6%) needed 1-2 units, 15(12.1%) needed 3-4 units and 2(1.6%) needed more than 5 units**.** In adjuvant therapy, chemotherapy was given to 53(42.7%) and radiotherapy to 22(17.7%)**.** In palliative therapy chemotherapy was given to 27(21.7%) and radiotherapy to 5(4%). The reported postoperative complication were surgical site infection 8(6.5%), wound infection, atelectasis 2(1.6%), anastigmatic leak 3(2.6%) and parastomal hernia 1(0.8) (Table 4).

Table-4: Distribution of the patients according to postoperative complications

Complications	N	%
No	107	76.1
Atelectasis	2	1.6
SSI	11	8.98
Anastomotic leak	3	2.4
Parastomal hernia	1	.8
Total	124	100.0

At postoperative, the most common histopathological findings were moderately differential adenocarcinoma 76(61.3%), well differentiated adenocarcinoma 22(17.7%) and poorly differentiated adenocarcinoma 14(11.3%). Other findings are shown in. Postoperatively, lymphatic invasion was presented in 49(39.5%), venous invasion in 23(18.5%) and none of the patients reported involvement of surgical margin. In follow up, 62(50%) uptodate, 38(30.6%) 1 year follow up, 18(14.5%) 2 years follow up, 4(3.2%) 3 years follow up and 2(1.6%) were dead. Local recurrence occurred to 6(4.8%), distant metastasis in lung 7(5.6%), liver 4(3.2%) and in both lung and liver (0.8).

Significant association found between age of the patient and abdominal pain (P value = 0.032 < 0.05), which was common among patients aged 41-70 years, while no significant difference between gender and abdominal pain (P value = 0.069 > 0.05) (Table 14). On the other hand significant association found between left site of tumor and abdominal pain which reported in 30(63.8%) of the patients their tumor at left site (P value=0.016<0.05) (Table3-5). No significant stage of cancer at preoperative time and CEA (P value=0.497>0.05). Also there was no significant association between site of tumor and change in bowel habits (P value = 0.291 >0.05).

Table-5: Distribution of the patients according to correlation between site of tumor and abdominal pain:

			Abdominal pain			
		Yes			No	
Site of tumor	N		%	N		%
Right	12		25.5	5		6.5
Left	30		63.8	71		92.2
Bilateral	5		10.6	1		1.3
Total	47		100.0	77		100.0
P value = 0.01						

DISCUSSION

This study aimed to investigate the surgical outcome and pattern of colorectal cancer in Sudanese patients. Our study showed that highest percentage of the patients 78 (62.9%) aged between 45–70 years. The mean age was 67±2.4 years. Highest percentage 80(64.5%) resident in central states and 5(4%) from southern states. This may be attributed to high population density of center of Sudan. Males were 72(58.1%) and females were 52(41.9%). not Similar to Mirghani, *et al*. [2] reported that among Sudanese patients attending an endoscopy unit in Omdurman Teaching Hospital with a mean of 51.1 years (ages ranged from 18-76 years) . Ahmed A Abdalla, [3] *et al*. who reported that in Sudanese patients with colorectal cancer in Khartoum Teaching Hospital the male to female ratio was 1.5:1. Gado *et al*. [4] determine the prevalence of CRC among patients undergoing colonoscopy in Egypt. CRC was diagnosed in 57 patients (14% of all colonoscopies). Fifty-six percent were female. The mean age was 51 ± 15 years (age range: 16–80years).

The clinical features of patients with colorectal cancer enrolled in this study showed that presenting symptoms were rectal bleeding 72(58.1%), followed by change in bowel habits 60(48.4%), abdominal pain 47(37.9%), weight loss 40(32.3%), mucous discharge 38(30.6%), abdominal distention 18(14.5%) and tenesmus 17(13.7%). Comparable to Mirghani, *et al*. [2] assessed the pattern of colorectal cancer among Sudanese patients attending an endoscopy unit in Omdurman Teaching Hospital, reported that the commonest presentations were rectal bleeding, change in the bowel habits, and constipation in 90%, 80%, and 60% respectively. Gado *et al*. [4] in Egypt found that the most frequent indication for colonoscopy was rectal bleeding (39%). In Phillipo L Chalya *et al*. study from Tanzania and Mohammed I. Ayyub from Saudi Arabia both reported a lower frequency rates, but with agreement with our study in rectal bleeding and alteration of bowel habit being the most frequent presentation[5, 6].

At presentation metastasis were absent in 116(93.6%) of the patients, present in 8 patients. 4(3.2%) liver metastasis, 3(2.4%) lung metastasis and 1(0.8%) had both liver and lung metastasis. other study reported by Albalawi, *et al*. [7] in Saudi Arabia who reported that advanced presentation with metastasis was noted in 40% of the patients presenting acutely among patients with colorectal cancer. Postoperatively, local recurrence occurred to 6(4.8%), distant metastasis in lung 7(5.6%), metastasis in liver 4(3.2%) and in both lung and liver 1(0.8%). On examination 75(60.4%) of the patients showed anemia, 20(16.1%) rectal mass, 12(9.6%) abdominal mass, 9(7.2%) anal mass, 9 (7.2%) abdominal distention, 8(6.4%) unremarkable and 6(4.8%) right iliac fossa mass.

Preoperative CEA was more than 2.5 in 110(88.7%) of the patients and less than 2.5 in 14 (11.3%). Comparable to Mohammed *et al*. [8] who reported that among Sudanese patients with colorectal cancer the CEA was found positive in 85.3%. In macroscopic appearance was ulcerative manifested in 60(48.4%), polypoid in 34(27.4%), annular 17(13.7%) and infiltrative 13(10.5%) of patients. The most common histopathological findings were moderately differential adenocarcinoma 76(61.3%), well differentiated adenocarcinoma 22(17.7%) and poorly differentiated adenocarcinoma 14(11.3%). This is comparable to Gado *et al*. [4] in Egypt who reported that sixty- eight percent of CRC were located in the left colon and rectum. Ninety-one percent of CRC were adenocarcinoma.

Standard preoperative evaluation done to all patients to assess their preoperative stage either by CT scan or MRI or both, stage B was reported in 74(59.7%) of the patients, stage C 30(24.2%),stage A 12(9.7%) and stage D 8(6.5%). And Postoperative pathological staging showed figure near the imaging stage ,that stage B reported in 65(52.4%) of the patients, stage C 37(29.8%) stage A 9(7.3%) and stage D 8(6.5%). in five patients pathological staging was not reported. Unlike Mohammed *et al*. [8] showed that the 65% of the sample were advance tumor (Dukes stage C 46.7% and D 18.3).

The most common endoscopy findings were rectal tumor 61(49.2%), followed by anal tumor 16(12.9%), sigmoid colon 9(7.3%), ceacal 8(6.5%) and rectosigmoid 6(4.8%). This is similar to Mohammed *et al*. [8] found among patients Ibn Sina hospital left-side colonic carcinoma was 81% represented the majority of cases with rectosigmoid cancer account for 74% of all cases. In China Lee *et al*. [9] found that more frequently located in the left colon, had more micro satellite instability- high status, and showed more advanced stage than single cancer.

The surgical modalities used in management of colorectal cancer patients were low anterior resection with or without ileostomy or colostomy 32(36.8%), APR24(19.3%), left hemicolectomy 15(12.1%), right hemicolectomy 18(14.5%), colostomy 14(11.3%), sigmoid colectomy 9(7.3%), high anterior resection 8(6.5%) and total colectomy 4(3.2%). instead of increasing proportion of sphincter-saving operations is used in modern rectal cancer surgery APR operation still high as mention in our study.

Despite refinements in surgical techniques, bowel preparation methods, prophylactic antibiotics, and postoperative care, in recent decade colorectal surgery still associated with serious complications. Our study showed that the immediate and late complications of the surgical management were surgical site infection 11(8.9%), anastomotic leak 3(2.4%), atelectasis

2(1.6%), and parastomal hernia 1(0.8). lower than previous study done in Soba hospital previously by Suleiman SH *et al*. showed clinically apparent anastigmatic leakage 9% [10] .

CONCLUSION

Our study showed that highest percentage of the patients 78 (62.9%) aged between 45 – 70 years. The mean age was 67±2.4 years. Male to female ratio 1.3:1.the clinical features of patients with colorectal cancer enrolled in this study showed that most presenting symptoms were rectal bleeding, followed by change in bowel habits, abdominal pain, weight loss, mucous discharge, abdominal distention and tenesmus. In preoperative, stage B was reported in 74(59.7%) of the patients, stage C 30 (24.2%).The most common endoscopy findings were left side colonic tumor mainly rectal tumor, followed by anal tumor, sigmoid colon, caecum and rectosigmoid. In microscopic appearance ulcerative was manifested in 60 (48.4%), polypoid, annular and infiltrative. the most common histopathological findings were moderately differential adenocarcinoma, followed by well-differentiated adenocarcinoma and poorly differentiated adenocarcinoma. Immediate and late complications of the surgical management were surgical site infection, followed by, anastomaticleak.

REFERENCES

1. Elamin, A., Ibrahim, M. E., Abuidris, D., Mohamed, K. E. H., & Mohammed, S. I. (2015). Part I: cancer in Sudan—burden, distribution, and trends breast, gynecological, and prostate cancers. Cancer medicine, 4(3), 447-456.
2. Mirghani, H. O., Elhadi, A. A., & Albalawi, I. A. (2016). The Trend Towards the Right (Proximal) Shift of Colorectal Cancer: Is Not Observed in Sudanese Patients. American Journal of Clinical and Experimental Medicine, 4(5), 156-159.
3. Abdalla, A. A., Musa, M. T., & Khair, R. Z. A. M. (2007). Presentation of colorectal cancer in Khartoum teaching hospital. Sudan Journal of Medical Sciences, 2(4), 263-265.
4. Gado, A., Ebeid, B., Abdelmohsen, A., & Axon, A. (2014). Colorectal cancer in Egypt is commoner in young people: is this cause for alarm?. Alexandria Journal of Medicine, 50(3), 197-201.
5. Chalya, P. L., Mchembe, M. D., Mabula, J. B., Rambau, P. F., Jaka, H., Koy, M., ... & Masalu, N. (2013). Clinicopathological patterns and challenges of management of colorectal cancer in a resource-limited setting: a Tanzanian experience. World journal of surgical oncology, 11(1), 1-9.
6. Ayyub, M. I., Al-Radi, A. O., Khazeindar, A. M., Nagi, A. H., & Maniyar, I. A. (2002). Clinicopathological trends in colorectal cancer in a tertiary care hospital. Saudi medical journal, 23(2), 160-163.
7. Albalawi, I. A. Abdullah, A. A. Mohammed, M. E. (2017). Emergency presentation of colorectal cancer in Northwestern Saudi Arabia. Saudi Med J, 38(5):527-532.
8. Mohammed, M. M., Musaad, A., Eltayeb, E., Abdelaziz, M. (2015). Colorectal carcinoma in Sudanese patients. International Journal of Medicine, 3(2): 98-102.
9. Lee, B. C., Yu, C. S., Kim, J., Lee, J. L., Kim, C. W., Yoon, Y. S., ... & Kim, J. C. (2017). Clinicopathological features and surgical options for synchronous colorectal cancer. Medicine, 96(9).
10. Suleiman, S. H., Salim, H., Yousif, D. O., Eltahir, M. A., Elzaki, K., Ibrahim, S. Z., ... & Xynos, E. (2008). Abstracts Colorectal Games, Rethymnom, Crete, Greece, May 2008. Techniques in Coloproctology, 12(3), 267.