SAS Journal of Surgery
Abbreviated Key Title: SAS J Surg
ISSN 2454-5104
Journal homepage: https://www.saspublishers.com

OPEN ACCESS

Visceral Surgery

Colon Cancers: Epidemiological, Diagnostic, and Therapeutic Aspects at the Visceral Surgery Department of CNHU-HKM of Cotonou

Attolou SGR[1*], Laleye CM[1,2], de Souza CFE[1], Gbessi G[1], Dossou F[3], Mehinto DK[1]

[1]Visceral Surgery Department, Hubert Koutoukou Maga National University Hospital of Cotonou
[2]Human Anatomy Laboratory, Health Sciences Faculty of Cotonou
[3]Departmental University Hospital of Oueme

DOI: 10.36347/sasjs.2022.v08i05.012 | **Received:** 27.03.2022 | **Accepted:** 05.05.2022 | **Published:** 15.05.2022

***Corresponding author:** Attolou Sètondji Gilles Roger
Visceral Surgery Department, Hubert Koutoukou Maga National University Hospital of Cotonou

Abstract **Original Research Article**

Introduction: In Benin colon cancer is the 3rd most common cancer in men after that of the prostate and liver and the 5th in women. The latest work on colon cancer in Benin goes back more than 10 years. It is therefore a question of updating information on colon cancer in Benin by describing them in their epidemiological, diagnostic and therapeutic aspects. ***Method:*** This is a retrospective study of colon cancers diagnosed in the Visceral Surgery department of the CNHU-HKM in Cotonou over a period of 7 years. ***Result:*** Cancers of the left colon with a predilection for the sigmoid colon are the most diagnosed in Benin. It is a pathology of the relatively young subject living in an urban environment. The main histological form is lieberkuhnian adenocarcinoma. 76% of these cancers are received at the stage of complications. Surgery is the cornerstone of treatment but is often palliative in our context of late consultation. Nevertheless, hospital mortality remains low and survival at 04 years is 60%.

Keywords: Colon, adenocarcinoma, palliative surgery.

INTRODUCTION

Colon cancer is the third most common type of cancer worldwide. Each year about 1.4 million people develop colon cancer, and about 700,000 die from the disease [1]. In Benin (Cotonou Cancer Registry 2014-2016) colon cancer was the 3rd most common cancer in men after prostate and liver cancer and the 5th in women [2]. Colon cancers were previously considered a western pathology in Africa, due to their low incidence, but new data seem to point to an increase in incidence, especially in urban centers [3]. This is probably due to an increasingly westernized lifestyle [4].

The treatment of patients with colon cancer is an interdisciplinary challenge. The keystone of this treatment is surgery [1]. Colon cancer and its treatment is a great diagnostic and therapeutic challenge in resource-limited countries.

1.METHOD

This is a descriptive and analytical cross-sectional study with retrospective data collection on colon cancers diagnosed at the Visceral Surgery Department of Cotonou National University Hospital over a period of 7 years (January 1st, 2015 to December 31st, 2021).

This study involved patients in whom the diagnosis of colon cancer was suspected based on clinical arguments and confirmed on histological examina

2.RESULTS

2.1. Epidemiological aspect

During these 7 years, 48 cases of suspected colon cancer were exhaustively recorded, 30 of which were confirmed histologically. This study, therefore, focused on 30 cases.

The mean age of the study population at the time of diagnosis was 54.6+/-12.86 years, ranging from 16 to 78 years. Men were the most affected 70% (n=21) with a sex ratio of 2.33. Other sociodemographic characteristics are shown in Table 1.

Table-1

Socio-demographic data		Number	Percentages
Profession	Civil servant	18	60,00%
	Craftsman/worker/	2	6,67%
	Trader	3	10,00%
	Pupil/Students	1	3,33%
	Private worker	6	20,00%
Residence	Rural	4	13,33%
	Urban	26	86,67%
Marital status	Single	1	3,33%
	Married	29	96,67%
Total		**30**	**100,00%**

2.2. Clinical aspect

The majority of patients, 76.67%, were admitted in an emergency context with an average delay of 127.37 days+/-194.57 (ranging from 4 to 700 days).

We note that the majority of patients had bowel movement disorders (76.67%), abdominal pain (73.33%) and altered general condition (70%). Table 2 shows the functional signs found in patients with colon cancer.

Table-2: Functional signs

Functional signs	Number	Percentage (%)
Bowel movement disorders	23	76.67
Abdominal pain	22	73.33
Poor general condition	21	70
Lack of bowel movement	13	43.33
Vomiting	13	43.33
Rectorrhagia	11	36.67
Cough	1	3.33

The most frequent changes in bowel habits were alternation of diarrhea/constipation (62%). On admission, 23% of the patients had a fever and 20% had a poor general condition. On physical examination, meteorism was most common and found in 43.33% of our patients. Figure 1 highlights the physical signs observed during patients' examinations.

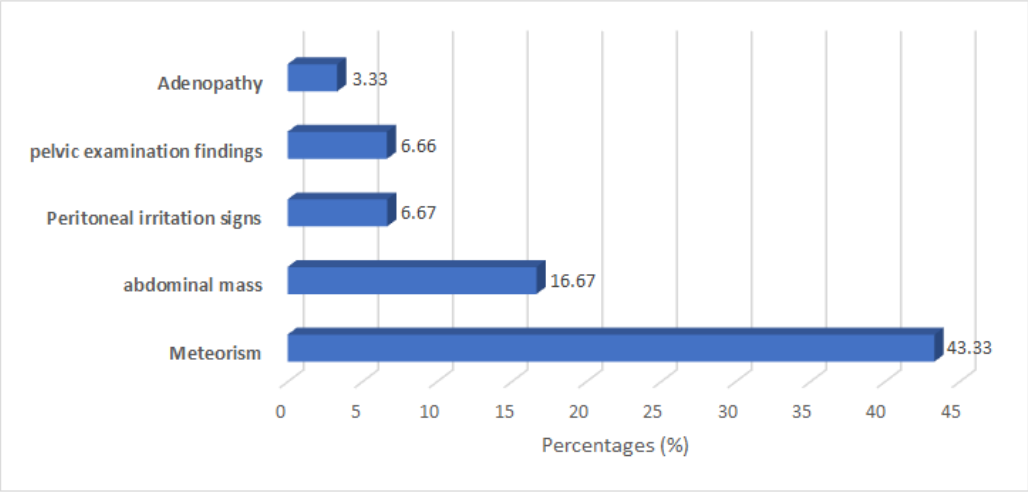

Fig-1: Physical signs in the study population

The physical examination and morphological assessment allow suspicion of cancer, detection of possible complications, and also further assessment.

Only 33.33% of the patients underwent colonoscopy followed by biopsies with histological studies revealing Lieberkühn adenocarcinoma.

Abdominal and pelvic CT scans were the most frequently performed examination in 76.67% of cases, as shown in Table 3.

Table-3: Distribution of morphological explorations.

Exploration	Number	Percentage (%)
CT	23	76,67
Abdominal X ray	10	33,33
Coloscopy with histological examination of biopsy sample	10	33,33
Pelvic abdominal ultrasound	14	43,33
Chest X ray	6	15,00

Preoperatively, 66.67% presented left colon cancer, complicated or not, and 30% right colon cancer, complicated or not. 1 patient, i.e., 3.33%, presented a bifocal tumor (left colic angle + right transverse colon). Sigmoid was the most frequent site of unifocal cancers (50%). Table 4 shows the distribution of colon tumors according to their anatomical topography.

Table-4: Distribution of unifocal cancers based on their anatomical topography

	Number	Percentage (%)
Right colic angle	4	13,33
Left colic angle	2	6,67
Caecum	3	7.50
Ascending colon	2	6.67
Left transverse colon	2	6,67
Descending colon	1	3.33
Sigmoid colon	15	50,00

Among cancers diagnosed at the complication stage, occlusion was the most frequent complication, accounting for 82% of cases, as shown in Figure 2.

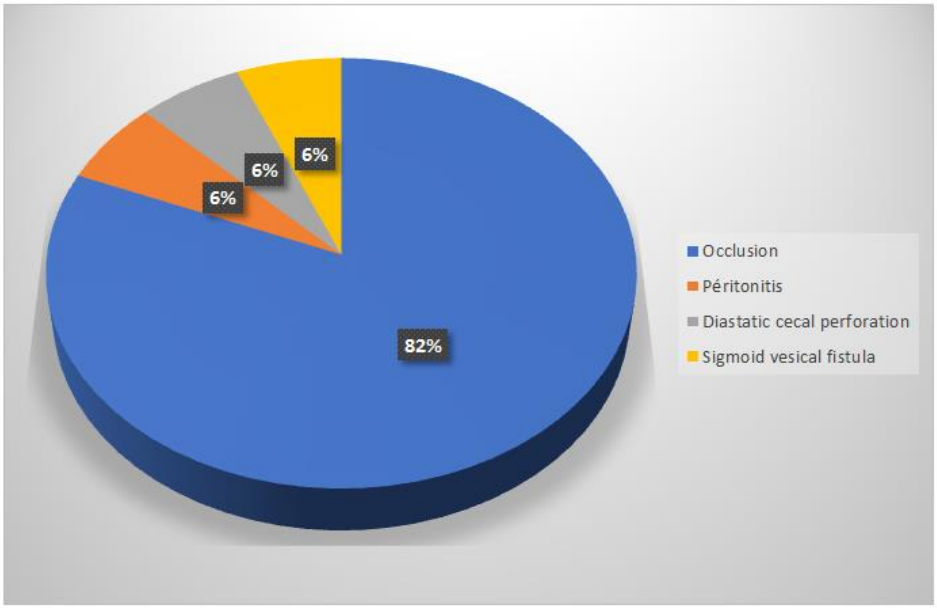

Fig-2: Complications associated with cancer

The further radiological examination was uneventful in 21 patients (70%). The lesions found in the remaining 9 patients were 01 cases of loco-regional invasion, 06 cases of hepatic metastases, and 01 cases of cerebral and pulmonary metastases respectively.

2.3. Therapeutic aspects

No patient had received neoadjuvant chemotherapy. 36.67% (n=11) had received adjuvant chemotherapy using the FOLFOX protocol. Out of the 30 patients, 26 were operable, i.e. an operability rate of 86.6%. The resectability rate was 70%. The surgery was palliative in 42.31% of cases and curative in 57.69% of cases.

The most frequent procedure was a right hemicolectomy followed by an ileo-transverse anastomosis in 34.6%. The histological findings of the biopsy sample were mostly Lieberkühn adenocarcinoma (80.00%). Not all tumors were classified according to the pTNM classification. Among those classified, stage IIA was the most represented (36.67%).

The postoperative follow-up was uneventful for the most part (80.77%, n=21) with a resumption of bowel movements occurring in an average of 2.56 days +/- 1.34 days. Five cases of deaths were encountered in the study population (16.67%).

The average duration of hospitalization was 12.76 days +/- 8.29 days, ranging from 6 to 46 days. Of the 25 patients discharged alive from the hospital, 10 were lost to follow-up and 6 died with an average post-surgical survival of 6 months +/- 8.82 months, ranging from 6 months to 28 months.

3. DISCUSSION

3.1. Epidemiological aspect

Colon cancer is a predominantly male disease. This male predominance is found in the majority of studies with a sex ratio ranging from 2 to 1.14 [5, 6, 7, 8, 9]. Men would be slightly more affected than women, perhaps due to the accumulation of risk factors (obesity, meat diet, tobacco, alcohol) [10].

The mean age of the population was 54.6 years. GBESSI et al had a mean age of 50 years in their study conducted in Benin in 2014 [11], and HOUMENOU had a mean age of 42 years also in Benin in 2011 [5]. The mean age has hardly evolved in Benin over ten years. In France, according to the SNFGE, the median age at diagnosis is 71 years for men and 75 years for women [10]. According to BRENNER in France, the median age is 70 years in developed countries [11]. This difference can be explained by the youth of the African population. Africa has the youngest population in the world with more than 400 million young people aged between 15 and 35 years [12].

It appears that colon cancer patients reside mostly in urban areas (86.67%). Our results are similar to those of IMAD et al in Morocco [7] and WEKHA et al in Uganda [13]. This could be explained by the fact that urban populations are those to adopt a western lifestyle (high fat and high protein diet). Stephen *et al*. in the United States showed that the incidence of colon cancer was higher in African-Americans than in rural Africans (65:100,000 versus 5:100,000). These higher rates were primarily related to diet.

Overweight or obesity, high macronutrient diet, alcohol, and smoking are known risk factors for colon cancer. The risk factors that we found in our study are related to the consumption of alcohol, tobacco, and red meat. The use of NSAIDs or Aspirin considered a protective factor and was found in only one patient.

3.2. Clinical aspects

Most patients were admitted in an emergency context. This would indicate that the pathology was diagnosed most often at the stage of complications. The time between the appearance of the first symptoms and medical appointment was on average 127.37 days +/- 194.57 days, ranging from 4 to 700 days. KONATE et al in their study in Senegal, reported an average of 450.2 days before a medical appointment for all sites combined, ranging from 3 days to 3650 days [4]. This delay was 486.66 days with a range of 91.25 days to 1095 days in ZARE et al in Burkina Faso [14]. This long delay before medical consultation could be explained by the reluctance of patients to go to the hospital because of the banalization of the seriousness of their symptoms or because of their relatively low purchasing power. In fact, according to the National Institute of Statistics, the global poverty threshold in Benin is estimated at 376 € per year. Analysis of the Beninese household budget indicates that 38.5% of individuals live below this poverty line [15].

Patients initially presented with bowel movement disorders (76.67%), abdominal pain (73.33%) and poor general condition (70%). These results are different from those of GBESSI *et al.* in Benin, who reported rectal discharge (78.8%), abdominal pain (44.2%), and transit disorders such as alternating diarrhea and constipation (42.3%) [6]. KONATE *et al*. in Senegal found abdominal or anal pain (50.7%), rectal bleeding (46.5%) and transit disorders (42.2%) [4]. These differences can be explained by the fact that the studies of GBESSI et al and KONATE et al included both colon cancers and rectal cancers which would be more likely to cause rectal discharge.

In our series, the major complication found was occlusion (82%). Unlike literature where occlusions are more frequently located in the left colon [4], in our series they are equally distributed in the left and right colon (20% each). This apparent equality could be explained by the relatively small study sample size.

Colonoscopy is the fundamental examination in the diagnosis of colon cancer. In our series, only 33% of the patients underwent it. HOUMENOU had the same rate of colonoscopy in 2011[5]. The colonoscopy rate has not changed in Benin in 10 years. This low rate could be explained by the admission of patients at a complication stage, which required immediate intervention.

The left colon was the most affected in our series with a predilection for the sigmoid. The same is true in most West African series [4, 5, 11]. However, the topographical distribution of colon cancer in our study is in contrast to that found in a French population (49.4% of right colon cancer followed by the sigmoid colon and rectum) [16]. In addition, since the 1980s, a progressive shift of cancers from the left colon and rectum to the right colon has been observed in Europe and the United States of America. Proximal colon cancer tends to become more frequent than the distal colon when the level of socio-economic development of a country rises [17].

From further explorations, we noted locoregional invasion in 1 patient and metastases in 8 patients. Hepatic metastases (6 cases) were the most frequent, followed by brain and lung metastases.

KONATE in Senegal reported hepatic metastases in 8.4%, pulmonary in 1 case (1.4%) and locoregional invasion in 16 cases [4].

All the authors are unanimous on the nature of complementary explorations and the predominance of liver metastases followed by lung metastases, but the frequency of the neighboring organs affected differs from one author to another.

3.3. Therapeutic aspect

In our series, the operability rate was 86.6% and the resectability rate was 70%. HOUMENOU reported in Benin, an operability rate of 85% and resectability rate of 74% [5]. In Konate's study in Senegal, the overall resectability rate was 66.7% [4]. In contrast, ZARE in Burkina Faso reported an operability rate of 100% and a resectability rate of 86.6% [18]. The surgery was palliative in 42.31% of cases and curative in 57.69% of cases. Our results are close to those of GBESSI *et al*. [6] in Benin (palliative surgery=48.1 and curative surgery= 51.9); HOUMENOU [5] in Benin (palliative surgery=54% and curative surgery in= 46%). ZARE *et al*. [18] in Burkina-Faso reported a higher rate of curative surgery than ours (surgery=75.5% and palliative surgery=24.5); on the other hand, BENELKHAIAT *et al*. [19] in Morocco found a rate of curative surgery that was much lower than ours (6%); their rate of palliative surgery was 94%. These rates of palliative surgery are relatively high because the patients are seen late at the stage of complication. Once again, there is a socio-economic problem that explains these high rates.

The most frequent surgical intervention was a right hemicolectomy at 34.6%. The right hemicolectomy was performed in 50.9% in ZARE [5, 18, 20], in 43% in HOUMENOU [5] and in 35.7% in BENELKHAIAT [19]. This finding is justified by the fact that in cases of cancers with right colon occlusion it is recommended to perform a right hemicolectomy with immediate ileo-transverse anastomosis, whereas the treatment of occluded left colon cancers is controversial.

The 4-year survival of colon cancer patients in our series was 60%. HOUMENOU [5] reported in Benin, a colon cancer patient survival rate of 10% five years after surgery. Thus, it appears that the survival of patients in Benin has improved considerably. This is multifactorial. First, it should be noted that the university visceral surgery clinic currently has an outpatient chemotherapy unit, which was not the case at the time of HOUMENOU's study. Secondly, all Beninese civil servants receive chemotherapy free of charge when it is indicated. In our series, government employees represent 60% of the study population.

CONCLUSION

Left colon cancer with a predilection for the sigmoid colon is Benin's most diagnosed. It is pathology of relatively young people living in urban areas. Colonoscopy, a fundamental paraclinical examination for diagnosis, is only rarely performed. The main histological form is Lieberkühn adenocarcinoma. Surgery is the keystone of treatment but is often palliative in our context of long delays before a medical consultation. Nevertheless, in-hospital mortality remains low, but 4-year survival is also relatively low.

REFERENCES

1. Rosen, A.W., Degett, T.H., Gögenur, I. (2016). Individualized treatment of colon cancer. Ugeskr Læger, *178*(31); V11150916.
2. Gnangnon, F., Egue, M., Akele-Akpo, M., Amidou, S., Brun, L., Mehinto, D., ... & Parkin, D. (2020). Incidence des cancers à Cotonou entre 2014–2016: les premiers résultats du premier registre des cancers en République du Bénin. *Revue d'Épidémiologie et de Santé Publique*, *68*, S124.
3. 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.
4. Konaté, I., Sridi, A., Ba, P. A., Cissé, M., Gaye, M., Ka, I., ... & Touré, C. T. (2012). Étude descriptive des cancers colorectaux à la clinique chirurgicale du CHU Aristide Le Dantec de Dakar. *Journal Africain du Cancer/African Journal of Cancer*, *4*(4), 233-237.
5. Houmenou, E.Y. (2011). Les cancers du côlon: approches épidémiologiques, diagnostiques et thérapeutique au CNHU-HKM de Cotonou trachomatis dans les infections sexuellement transmissibles [Thèse de Doctorat en Médecine]. Cotonou : Faculté des Sciences de la Santé, 95p
6. Gbessi, D. G., Seto, D. M., Atindehou, S. L., Lawani, I., Azon-Kouanou, A., & Gnangnon, F.

(2015). Facteurs pronostiques de mortalité précoce dans les cancers colo-rectaux au Bénin. *Benin Medical Care*, *59*, 21-26.

7. Imad, F. E., Drissi, H., Tawfiq, N., Bendahhou, K., Jouti, N. T., & Radallah, D. (2019). Aspects épidémiologiques, nutritionnels et anatomopathologiques des cancers colorectaux dans la région du grand Casablanca. *Pan African medical journal*, *32*(1).
8. Abualkhair, W. H., Zhou, M., Ahnen, D., Yu, Q., Wu, X. C., & Karlitz, J. J. (2020). Trends in incidence of early-onset colorectal cancer in the United States among those approaching screening age. *JAMA Network Open*, *3*(1), e1920407-e1920407.
9. Cowppli-Bony, A., Colonna, M., Ligier, K., Jooste, V., Defossez, G., Monnereau, A., ... & Woronoff, A. S. (2019). Épidémiologie descriptive des cancers en France métropolitaine: incidence, survie et prévalence. *Bulletin du Cancer*, *106*(7-8), 617-634.
10. Société Nationale Française de Gastro-Entérologie. (2018). Cancer du côlon (cancer colorectal). 2018. Disponible sur : https://www.snfge.org/content/cancer-du-colon-cancer-colorectal.
11. Brenner, H., Kloor, M., Peter, C.P. (2014). Colorectal cancer. Lancet, 383: 1490–502.
12. Eurostat. (2020). Archive: Structure et vieillissement de la population. 2020. Disponible sur : https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Archive:Structure_et_vieillissement_de_la_population&oldid=510188
13. Wekha, G., Ssewante, N., Iradukunda, A., Jurua, M., Nalwoga, S., Lanyero, S., ... & Bongomin, F. (2021). Colorectal Cancer in Uganda: A 10-Year, Facility-Based, Retrospective Study. *Cancer Management and Research*, *13*, 7697.
14. Kambire, J. L., Ouedraogo, S., Sanon, B. G., Zida, M., & Traore, S. S. (2017). Colic Adenocarcinoma Revealed by Ileo-Colic Intussusception. *Colorec Cancer*, *3*(2).
15. Institut National de la Statistique et de l'Analyse Économique. (2020). Note sur la pauvreté en 2019. Disponible sur : https://insae.bj/images/docs/insae-publications/autres/Note-sur-la-pauvrete/Note%20synth%C3%A8se%20sur%20la%20pauvret%C3%A9%20en%202019.pdf.
16. Cerbelaud, C., Chouillet, A. M., Molinie, F., Auffert, N., Bouvier, A. M., & Lambrail, P. (2008). Pratique de prise en charge du cancer du côlon en Loire Atlantique en l'année 2000. *Revue d'épidémiologie et de santé publique*, *56*(5), 298.
17. Lambert, R. (2009). Épidémiologie du cancer colorectal (CCR). Cancero digest, 1; 2-6.
18. Limaiem, F., Azzabi, S., Sassi, A., & Bouraoui, S. (2018). Colorectal cancer in young adults: a retrospective study of 32 tunisian patients. *Pan African Medical Journal*, *31*(1).
19. Benelkhaiat, R., Rabbani, K., Nasrollah, N., Finech, B., Louzi, A., & El Idrissi Dafali, A. (2010). Les cancers digestifs dans la région de Marrakech. *Journal Africain du Cancer/African Journal of Cancer*, *2*(3), 160-165.
20. Harouna, Y. D., Illo, A., Seybou, A., Sani, R., Saley, Z., Abdou, I., ... & GOZA, A. (2008). Les cancers colorectaux: notre expérience à propos de 42 cas. *Médecine d'Afrique noire*, *55*(4), 197-202.