

Epidemiological Profile and Management of Intestinal Occlusions of Cancer Origin in Three Hospitals in the City of Douala

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ABSTRACT

Background: Malignant bowel obstruction (MBO) is the complete cessation of physiological intestinal transit made up of matters and gases for more than 24 hours having as etiology an obstructive malignant neoplasia, which may be intra or extra abdominal. It requires a specific diagnostic evaluation and multidisciplinary care. MBO is not only less frequent in our context but little update are known about the disease, hence the interest of our work.

Objective: to study the epidemiological profile and management of MBO in three hospitals in the Douala city.

Methodology: This was a transversal analytical study with collected retrospective data collection over a period of 10 years, ranging from January 2010 to December 2019 within eight months. The study, which took place in three hospitals in Douala's city, had included the complete files of admitted patients and management of MBO with evidence of histological malignancy. Patients who had been managed out of our study sites as well as those who died before treatment and incomplete records were excluded. Results analysis is done statistically using sphinx plus² version 5.0 and Microsoft Excel 2016 software. Results means from the experiment were compared using chi² variable comparison. $P < 0.05$ is taken as statistically significant with a confidence interval of 95%.

Results: We recruited 83 MBO cases. The hospital prevalence was 3.3% with a male predominance of 53% and the male / female sex ratio was 1:1. The mean age was 52.9 ± 17.8 years with the most affected being subjects from 60 years of age. Abdominal pain was the main reason for consultation (95.2%; 79 cases). Overall, 2.4% (03 cases) of our population were admitted with a state of hemodynamic instability and only 1.2% (01 case) was feverish. Meteorism was the most constant physical sign (81.9%; 68 cases). The X-ray examination of the abdomen was one of the most prescribed morphological tests (40.3%) but the thoraco-abdomino-pelvic scanner was most reliable for its precision of the occlusion site by obstructive mass with an reliability at 70.4% ($p > 0.0001$). The left colon was the majority obstruction site (43.4%). Intestinal resection with anastomosis was the most commonly performed surgical procedure (71%; 59 cases). In addition to surgical treatment, 31,3% of our population study benefited from exclusive chemotherapy, 2,4% from adjuvant radiotherapy and 20,4% from concomitant radio and chemotherapy. Post-operative morbidity was represented by infections and bleeding from operative wound (2.4% respectively) and recurrence of bowel obstruction. Post-operative mortality rate of 16.8% was dependent on the existence of metastases ($p > 0.0001$).

Conclusion: Malignant bowel obstruction is generally more frequent among aged people with a male predominance. Surgery is the essential treatment with adjuvant methods. The prognosis is pejorative especially in the presence of metastases. Therefore, we recommend strengthening the monitoring of patients having a cancer to increase their life expectancy.

Keywords

Bowel obstruction, Cancer, Epidemiology, Treatment, Douala.

Introduction

Acute intestinal obstruction (AIO) is one of the most common pathologies in emergency digestive surgery [1]. Several etiologies

are at the origin of AOI, including mechanical and functional causes. In patients with predominantly late abdominopelvic tumors, AOI is a common complication [2-4]. The worldwide prevalence of OI on tumors varies between 3 and 15% with a higher risk in older subjects, males and especially carriers of intestinal cancer [5]. Primary intra-abdominal cancers causing AOI are mainly those of the colon (25% to 40%), followed by the ovaries (16% to 29%) and those of extra-abdominal origin causing OI are those of the breast (2% to 3%) and melanoma (3%) [5]. Affected subjects have a poor life expectancy. In the United States, for example, 17.5% of patients hospitalized for ovarian cancer develop AOI while in Spain; the 30-day mortality rate is 25% with a median survival rate of 7 months [5,6]. Colorectal adenocarcinoma is the primary cancer most implicated in malignant AOI (55%) in China [7]. Long considered the preserve of high-income countries, cancer is no longer spared in Africa today. In Africa, the diagnosis of cancer is most often made late, especially digestive cancers, sometimes at the AOI stage. This is due to the fact that the inaugural symptomatology is sometimes trivialized by the patient but also by the lack of screening means in some hospitals in addition to the poverty that reigns in the cradle of humanity [8,9]. Thus, according to the World Health Organization (WHO), cancer is a public health problem in the African region [10]. In Morocco, the main primary tumors causing AOI are predominantly digestive at 92.85% followed by gynecological tumors with 3.57% [11]. On average, 30% of patients with left colon cancer manifest their pathology by OI in the Maghreb while the mode of revelation of colorectal cancer is 53.3% in Nigeria and postoperative mortality 9.5% in Ivory Coast [11-14]. In Cameroon, Ngowe et al. report AOI of small bowel by tumor in the elderly subjects in 2010 in Yaoundé over ten years of recruitment [15]. Unlike other etiologies of OI giving a picture of abrupt acute abdomen, malignant OI sets in in a sneaky form after a few weeks or even months [2,5]. Symptoms include nausea, vomiting and abdominal pain with cessation of materials and gas within the previous 72 hours until a typical acute abdominal picture develops [5,16]. An abdominal x-ray is sufficient in most cases to suggest OI, CT scan and other x-ray examinations increase diagnostic accuracy [5,17]. Cancerous OI usually indicates a poor prognosis. Possible treatment principles include surgery which is the main measure that restores digestive transit, endoscopy, symptomatic medical treatment and anti-cancer treatment after clearing [5,14,18,19]. In Douala, the work of England et al. has long explored the epidemiological and histological characteristics of cancers of the small intestine and colon without, however, emphasizing the OIs that these can induce [20,21]. In view of these data, we therefore proposed to deepen our knowledge of the cancer etiology of OI being not only infrequent but also little explored in our context, hence our interest in carrying out a study on the epidemiological profile and treatment of OI of cancerous origin in three hospitals in the city of Douala.

Material and Methods

This was a transversal analytical study with collected retrospective data collection over a period of 10 years, ranging from January

2010 to December 2019 within eight months. The study, took place in surgery, operating theater, oncology and pathological anatomy departments of three hospitals in Douala's city in Cameroon (Douala Laquintinie Hospital, Douala General Hospital, Douala Military 2nd Region Hospital), and included the complete files of admitted patients and management of MBO with evidence of histological malignancy. Patients who had been managed out of our study sites as well as those who died before treatment and incomplete records were excluded. The variables studied were socio-demographic data, clinical and Para clinical data, treatment and postoperative complications. Results analysis is done statistically using sphinx plus² version 5.0 and Microsoft Excel 2016 software. Results means from the experiment were compared using chi² variable comparison. P<0.05 is taken as statistically significant with a confidence interval of 95%.

Results

Epidemiology

Frequency of major abdominal emergencies

As shown in table 1, we found 2454 files of patients operated on for acute abdomen. Acute bowel obstruction represented the second digestive surgical emergency (497 cases; 20.2%) of which 83 cases were of cancerous origin, the hospital prevalence being 3.3% (prevalence = study population selected / abdomen population treble * 100).

Table 1: Frequency of the main digestive surgical emergencies.

Digestive surgical emergencies	Effective (n=2454)	Percentage (%)
Appendicitis	900	36.6
Acute bowel obstruction	Cancerous	83
	No cancerous	414
Peritonitis	487	20.0
Abdominal trauma	438	17.8
Strangulated hernia	132	5.3
Total	2454	100

Frequency of causes of cancerous OI

There were 73 cases of digestive cancers (88%) with colon and rectal cancer at the top of the list respectively and ten cases of gynecologic cancer (12%) (Table 2).

Table 2: Frequency of cancerous OIs according to the type of cancer involved.

Type of cancer	Effective (n=83)	Percentage (%)
Digestive Cancers	73	88.0
Colon	38	45.8
Rectum	24	28.9
Pancreas	5	6.0
Small bowel	4	4.8
Stomach	1	1.2
Liver	1	1.2
Gynecologic Cancers	10	12.0
Cervix	6	7.2
Ovaries	4	4.8
Total	83	100.0

Frequency of intestinal obstruction of cancerous origin compared to other etiologies of intestinal obstruction

Cancers represent 17% among the etiologies of intestinal obstruction (Figure 1).

Other etiologies = occlusions by flanges, functional occlusions, occlusions by volvulus

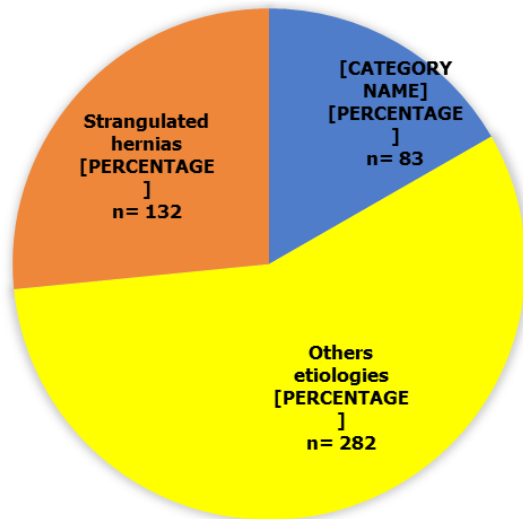


Figure 1: Frequency of cancerous OIs compared to other etiologies.

Sex

The male sex predominated (53%; 44 cases) and the male / female sex ratio was 1.1. However, the onset of cancerous OI is not gender dependent ($p = 0.5831$).

Age

Table 3 shows that populations aged 60-69 were the most affected (22.9%; 19 cases). The extremes were 10 and 88 years for an average of 52.9 ± 17.8 years. From this table, we retain that age is a factor associated with the installation of OI of cancerous origin ($p = 0.0023$).

Table 3: Distribution according to age groups.

Age groups	Effective (n=83)	Percentage (%)
<20	2	2.4
20-29	5	6.0
30-39	18	21.7
40-49	12	14.5
50-59	12	14.5
60-69	19	22.9
≥ 70	15	18.1
Total	83	100.00

Anamnestic characteristics

Personal history

As shown in table 4, hypertension was the most common comorbidity with 27 cases (32.4%), followed by type 2 diabetes with 11 patients (13.3%).

The majority of patients with an antecedent of digestive cancer with intestinal localization (23 patients; 27.7%) of which carriers of rectal cancer predominated (8.4%; 07 cases) then those who had descending colon cancer (6 %; 05 cases). Pancreatic cancer was the first extra intestinal cancer causing OI in our series with 4 cases found (4.8%).

Cervical cancer was the 1st Gynecologic malignancy with 7.2% (6 cases).

Consumption of traditional products was more common with 20.4% (17 cases), followed by alcoholism (14.4%; 12 cases).

Table 4: Distribution according to the patient's history.

Antecedent	Effective (n=52)	Percentage (%)
Personal History		
Comorbidities		
Hypertension	27	32.4
Diabetes	11	13.2
Diabetes type II	11	13.2
Diabetes type I	-	-
VIH	3	3.6
Primary cancers with intestinal localization		
Rectal cancer	7	8,4
Descending colon cancer	5	6,0
Colorectal cancer*	4	4,8
Ascending colon cancer	4	4,8
Sigmoid cancer	2	2,4
Recto sigmoid cancer	1	1,2
Other locations		
Pancreatic head cancer	4	4,8
Liver cancer	2	2,4
History of gynecological cancer		
Cervical cancer	6	7.2
Ovarian cancer	4	4.8
Toxicological habits		
Traditional products	17	20.4
Alcohol	12	14.4
Tobacco	7	8.4
Family History		
Prostate cancer	2	2.4
Breast cancer	1	1.2

* Portion of large intestine not specified in records

Family history

In our series, 3 cases (3.6%) had family carcinological history of which prostate cancer was the most common familial malignant neoplasia (2.4%; 02 cases).

Diagnosis

Clinical diagnosis

Evolution mode: The majority of our patients (44 cases; 53%) had had a progressive symptom onset mode. However, there is a link between the time to consultation and the mode of onset of the disease ($p = 0.0113$) (Table 5).

Table 5: Relation between consultation delay and symptom.

Debut	≤15 days n (%)	16-30 days n (%)	>30 days n (%)	Total n (%)
Progressive	22 (26.5)	9 (10.8)	13 (15.6)	44 (53.0)
Brutal	17 (20.4)	1 (1.2)	-	18 (21.6)
Total				83 (100)

(Chi² = 16.51 ddl = 6 p = 0.0113)

Signs and symptoms

As shown in table 6, abdominal pain was the main reason for consultation (79 patients; 95.1%) followed by AMG (72 cases; 86.7%).

In total, 50.6% of our cases had a preserved general condition while 49.4% had an altered general condition. Only 03cas (3.6%) had hemodynamic instability (Table 6).

Table 6: Distribution according to signs and symptoms.

Symptoms/Signs	Effective (n=83)	Percentages (%)
Functional signs		
Abdominal pain	79	95.1
Material and gas shutdown	72	86.7
Vomiting	34	41.9
Food	27	32.5
Bilious	6	7.2
Fecaloids	2	2.4
General signs		
General condition		
Preserved	42	50.6
Altered	41	49.4
Fever	1	1.2
State of shock	3	3.6

Physical signs

Meteorism was a constant physical sign (81.9%; 68 cases), eardrum and tusk were also frequent with 71.1% and 65.1% respectively (table 7).

A total of 33 patients (39.8%) had an objectified abdominal mass. The rectal examination was performed in 38 patients and among these, 20 were abnormal, the rectal pathology of which was predominant with 13.2%.

Table 7: Distribution of patients according to physical signs.

Physical signs	Effective (n=83)	Percentages (%)
Abdominal meteorism	68	81.9
Abdominal tympanism	59	71.1
Defense	54	65.1
Abdominal mass	33	39.8
Abdominal scar	27	32.5
Contracture	15	18.1
Hepatomegaly	12	14.5
Splenomegaly	2	2.4
Digital rectal examination done	38	45.8
Normal	18	21.7
Abnormal	20	24.1
Rectal pathology	11	13.2

Anal pathology	5	6.0
Prostate pathology	4	4.8
Lymphadenopathy	6	7.2
Virchow's node	3	3.6
Inguinal lymphadenopathy	3	3.6
Lung examination		
Normal	80	96.4
Abnormal	3	3.6

Para clinical Diagnosis

Biological tests

Table 8 shows that among the 56 patients who had to perform the blood ionogram, 10 (12%) had presented electrolyte disturbances.

A total of 82 blood count results were available of which 30 (36.1%) presented abnormalities in the various blood lines, and 08 patients among the 16 who had to undergo CRP had a result which was higher than normal. (50%).

Table 8: Distribution according to biological data.

	Effectifs (n=83)	Pourcentages (%)
Serum electrolytes		
Normal	46	55.4
Abnormal	10	12.0
Natremia (VN : 135-145mmol/L)		
< 135mmol/L	3	3.6
Kaliemie (VN : 3,5-4,5mmol/L)		
>4,5mmol/L	5	6.0
Chloremie (VN : 95-105mmol/L)		
>105mmol/L	2	2.4
Blood count		
Normal	52	62.6
Abnormal	30	36.1
Hemoglobin (VN : 12-17g/dL)		
7-10	24	28.9
>7	5	6.0
WBC (VN : 4-10G/L)		
>10	1	1.2
CRP (VN : <5mg/L)		
Normal	8	9.6
Abnormal	8	9.6
>5	8	9.6
< 5	-	-
Glycémie (VN : 0,7-1,2g/L)		
Normal	41	49.4
Anormal	3	3.6
<0,7	2	2.4
>1,2	1	1.2
Urémie/créatinémie (urée/créat)		
VN : Urée= 0,1-0,55g/L ; Créat= 6-12mg/L		
Normal	50	84.3
Anormal	-	-
TP/TCA		
VN: TP >70%, TCA= 25-36s)		
Normal	81	97.6
Anormal	1	1.2
TP<70	1	1.2

Imaging exams

Abdomen without preparation (AWP)

HAL higher than wide and peripheral was the abnormality that was most identified (33.7%; 28 cases) (Table 10).

Table 10: Distribution according to the results of Abdomen without preparation.

Results AWP	Effective (n=83)	Percentages (%)
HAL higher than wide and peripheral	28	33.7
HAL wider than high and central	12	14.5
HAL mixed	9	10.8
Total	49	59.0

HAL: Hydro-Aeric levels

Thoraco-abdomino-pelvic tomodensitometry

The large intestine was identified as the major site of OI (43.3%; 36 cases) with rectal obstruction being the most common (9 cases; 10.8%). For the small bowel, the duodenum was the most implicated portion (3.6%; 03 cases) (Table 11).

The rectum and duodenum were the most common secondary digestive locations (2.4% for each location). Among the 17 patients with metastases, 02 (2.4%) had hepatic and pulmonary metastases simultaneously.

Table 11: Distribution of tumor and metastasis locations.

Variables	Effective (n=83)	Percentages (%)
Tumor (Occlusion) location		
Large intestine	36	43.3
Rectum	9	10.8
Descending colon	7	8.4
Sigmoid	6	7.2
Recto-sigmoid	4	4.8
Ascending colon	4	4.8
Caecum	3	3.6
Transverse colon	2	2.4
Left colic angle	1	1.2
Small bowel	5	6.0
Duodenum	3	3.6
Ileum	2	2.4
Partly defined portion	3	3.6
Colon	2	2.4
Small bowel	1	1.2
Locations of Metastasis		
Unique extra digestive location		
Lungs	1	1.2
Bladder	1	1.2
Ovary	1	1.2
Unique digestive location		
Duodenum	2	2.4
Rectum	2	2.4
Liver	1	1.2
Caecum	1	1.2
Anal canal	1	1.2
Location not specified	2	2.4
Multiple locations		
Liver and lungs	2	2.4
Bones and lungs	1	1.2
Liver and bladder	1	1.2
Bladder and right colon	1	1.2

Other imaging exams

As shown on table 12, rectal location was the most frequent site on colonoscopy (8.4%; 07 cases) with the stenosing aspect of the tumor (19.3%; 16 cases). Abdominal ultrasound showed heterogeneous liver appearance as a common abnormality at 6%.

Table 12: Presentation of the results of other morphological examinations.

Variables	Effective (n=83)	Percentages (%)
Colonoscopy	22	26.5
Abnormal	22	26.5
Rectal tumor	7	8.4
Descending colon tumor	4	4.8
Recto-sigmoid tumor	4	4.8
Margin anal/canal tumor	3	3.6
Sigmoid tumor	2	2.4
Ileocecal tumor	1	1.2
Tumor appearance on colonoscopy		
Stenosing	16	19.3
Budding	5	6.0
Ulcerative bud	4	4.8
Ulceration	4	4.8
Abdominal ultrasound	17	20.5
Normal	4	4.8
Abnormal	13	15.7
Heterogeneous liver	5	6.0
Abdominal effusion	4	4.8
Abdominopelvic mass	4	4.8
Chest x-ray	11	13.3
Normal	8	9.6
Abnormal	3	3.6
Right lobe nodule	1	1.2
Left basal atelectasis	1	1.2
Right lobe infiltrate	1	1.2

Anatomopathological examination

ADK was the most common histological type with 75.9% (63 cases), followed by squamous cell carcinoma with 10.8% (09 cases) (Table 13).

Table 13: Distribution according to histological type.

Histological type	Effective (n=83)	Percentage (%)
Adenocarcinoma (ADK)	63	75.9
Squamous cell carcinoma	9	10.8
Carcinoid tumor	4	4.8
NHML	3	3.6
Mucosal colloid carcinoma	2	1.6
Papillary carcinoma	2	1.6
Total	83	100

NHML-Non-Hodgkin's malignant lymphoma

Treatment

Treatments received by patients

All our patients systematically received preoperative medical treatment, only 45.7% (38 cases) had received exclusive surgical treatment while the rest of the patients were admitted to the operating room with adjuvant treatments thereafter (Figure 2).

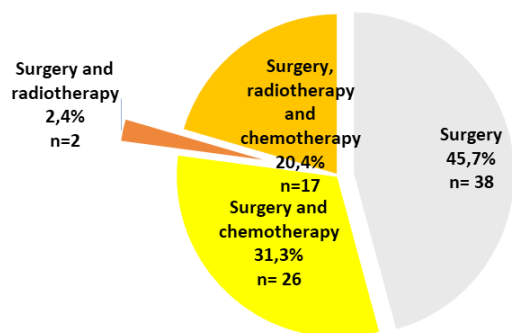


Figure 2: Distribution of patients according to treatment received.

Medical treatment

Most of our patients (45.7%) had a delay between admission and medical treatment varying between 30 and 60 minutes (Table 14).

In medical management, patients systematically received hydration. NGP was placed in 90.4% (75 patients) and UC in 72.3% (60 patients). Only 37.3% (31 patients) had received an antibiotic.

Table 14: Processing time and medical treatment received.

Variable	Effective	Percentage (%)
Processing time (in minutes)		
<30	32	38,6
30-60	38	45,7
>60	13	15,7
Type of medical treatment		
Hydration	83	100
Analgesics	77	92.8
Nasogastric probe (NGP)	75	90.4
Urinary catheter (UC)	60	72.3
Antibiotics	31	37.3
Blood transfusion	12	14.5
Antispasmodics	9	10.8
Antiemetics	4	4.8
Laxatives	2	2.4

Surgical treatment

Operative context: According to table 15, in total, 62.7% (52 patients) were admitted in an absolute surgical emergency context and 53% (44 patients) were admitted to the operating room in the 24 hours preceding their admission.

All the patients were operated under GA. The xyphopubic approach was the most used route with 56.6% (47 patients), then the umbilical approach with 30.1% (25 patients).

Table 15: Distribution according to operative context.

Variables	Effective (n=83)	Percentages (%)
Time to surgical treatment (in days)		
<24	44	53.0
24-48	19	22.9
>48	20	24.1
Admission context		

Emergency	52	62.7
Without urgency	29	34.9
Undefined context	2	2.4
Types of anesthesia		
General anesthesia (GA)	83	100.0
Surgical approach		
Xyphopubic	47	56.6
Umbilicalus	25	30.1
Under umbilical	7	8.4
Elective way	4	4.8

Intraoperative findings

Low Intestinal obstruction was the majority at 89.6% (75 cases), with the left colon accounting for 43.4% (36 cases) of the sites of obstruction. Hail was the seat in 16 cases (19.2%) (Table 16).

Table 16: Distribution according to findings per operative.

Findings	Effective (n=83)	Percentage (%)
Site of intestinal obstruction		
Large Intestine		
Left colon	36	43.4
Descending colon	13	15.7
Recto-sigmoid	10	12.0
Sigmoid colon	5	6.0
Left colic angle	3	3.6
2 nd portion of the middle 1/3 transverse colon	5	6.0
Right colon	25	30.1
Ascending colon	11	13.3
Caecum	6	7.2
Right colic angle	4	4.8
1st portion of the middle 1/3 of the transverse colon	4	4.8
Rectum	14	16.2
TOTAL	75	89.6
Small Intestine		
Ileum	8	9.6
Jejunum	4	4.8
Duodenum	4	4.8
TOTAL	16	19.2
Other discoveries		
Peritoneal carcinoma	16	21.7
Complete dilation of the handles	15	18.1
Ascites	10	12.0
Adhesions	9	10.8

Intraoperative gestures

According to the table below, the large intestine was the bowel that received the most surgery. Low anterior resection + colo-anal anastomosis was the most performed 19.3% (16 cases) for the large intestine, ileal resection + duodeno-colic anastomosis at 9.6% (8 cases) the major gesture of the small bowel.

Table 17: Distribution according to intraoperative procedures.

Gestures	Effective (n=83)	Percentage (%)
Large Intestine		
Resection and anastomosis		

Low anterior and colo-anal anastomosis	16	19.3
Right hemicolectomy and ileo-transverse anastomosis	12	14.5
Left hemicolectomy and sigmoid-transverse anastomosis	7	8.4
Transverse colectomy and colo-colic anastomosis	6	7.2
Sigmoid colectomy and colorectal anastomosis	7	8.4
Right segmental colectomy and colo-transverse anastomosis	3	3.6
Left segmental colectomy and colo-transverse anastomosis	2	2.4
Total colectomy and ileostomy	2	2.4
Celiac mass resection and ileocolic anastomosis	2	2.4
Sigmoid mass resection and colorectal anastomosis	1	1.2
Appendectomy	1	1.2
Total	59	71.0
Stomy		
Left colostomy	10	12.0
Sigmoid colostomy	3	3.6
Transverse colostomy	2	2.4
Right colostomy	1	1.2
Total	16	19.2
Small Intestine		
Ileal resection and duodeno-colic anastomosis	8	9.6
Duodenal resection and gastrojejunal anastomosis	4	4.8
Jejunal resection and duodeno-ileal anastomosis	4	4.8
Total	16	19.2
Other gestures		
Peritoneal toilet	10	11.0
Adhesiolysis	3	3.6
Lymph node dissection	1	1.2
Total	14	16.8

Post-operative treatment

Postoperative medical treatment

In our series (table 18), tramadol and paracetamol were the most commonly used analgesics. Only 4.8% (04 cases) had received morphine. Ceftriaxone, gentamycin and metronidazole were the most administered antibiotics with 69.9%, 54.2% and 36.1% respectively.

Table 18: Distribution according to postoperative medical treatment.

Postoperative treatment	Effective (n=83)	Percentages (%)
Analgesics		
Tramadol	53	63.9
Paracetamol	51	61.4
Nofepam	37	44.6
Morphine	4	4.8
Antibiotics		
Ceftriaxone	58	69.9
Métronidazole	45	54.2
Gentamycin	30	36.1
Amoxicillin et clavulanic acid	15	18.1
Céfuroxime	8	9.6
Imipenem	2	2.4
Ofloxacin	1	1.2
Ciprofloxacine	1	1.2

Cefotaxime	1	1.2
Other postoperative treatment		
Hydration	83	100.0
Heparin therapy	52	62.7
Gastroprotector	47	56.6
Transfusion	11	13.3
Antispasmodic	3	3.6
Oxygen therapy	2	2.4

Adjuvant treatment

In total, of the 19 patients who performed adjuvant radiotherapy, 18 (21.7%) had followed the long regimen and only one person (1.2%) the short regimen (Table 19).

Concerning chemotherapy, 33 patients had received postoperative chemotherapy, 18 (21.7%) had been followed by the folfox protocol.

Table 19: Distribution according to adjuvant radio and chemotherapy.

Treatment	Effective (n=83)	Percentage (%)
Adjuvant radiotherapy		
*Long	18	21.7
*Short	1	1.2
Total	19	22.9
Protocols of adjuvant chemotherapy		
Folfox	18	21.7
Folfox + capecitabin	4	4.8
5-Fluorouracillus (5-FU)	3	3.6
Cysplatin	3	3.6
Gemcitabine	2	2.4
Carbotaxol	2	2.4
Xelox	1	1.2
Total	33	39.7

* Long: radiotherapy regimen consisting of delivering 45-50Gy of rays divided into 25-28 sessions of 1.8-2Gy each.

* Short: radiotherapy regimen consisting of delivering 25Gy of radiation in 5 sessions of 5Gy each over 5 days.

Postoperative complications

As shown in table 20, post-operative complications represented 28.9% (24 cases) and the death rate at 16.8% (14 cases). One case of recurrent OI was recorded (1.2%).

Table 20: Distribution of postoperative complications.

Type of postoperative complications	Effective (n=83)	Percentage (%)
Death	14	16.8
Surgical bleeding	2	2.4
Bleeding	2	2.4
Acute bowel obstruction	1	1.2
Other	5	6.0
Total	24	28.9

Others: Acute functional renal failure (02 cases); hematuria (01 case); pleurisy (01 case); respiratory distress (01 cases).

The search for a relationship between complications factors such as age (p = 0.3582), Sex (p = 0.2064), The approach (p = 0.4061), n did not show any association. However, we retain that

the occurrence of postoperative complications depends on the existence of metastasis ($p > 0.0001$).

Discussion

In 2010 and 2012, the prevalence of cancerous OI was in the range 3-15% [5,22]. During our study, it was around 3.3%, which brings us closer to the data in the literature.

In our series, both sexes were largely represented with a slight male predominance: 44 cases (53%) against 39 (47%) for the female sex. This same observation had been made by other authors. Thus, in the American continent, especially in Canada and the United States, Chakraborty and Dalal found this male predominance, i.e. 54.3% and 55% respectively [23,24]. Kim et al. also identified a male preponderance in South Korea at 73.9% [25]. Likewise, in Europe, Delgado et al. found the male sex to be 66% dominant [26]. Kaissi in 2019 found 75% in North Africa, as did Abudu et al. in 2016 in West Africa (57.7%) [12,13]. In South Africa, Moola et al. found male predominance at 57.1% in 2014 [27]. Our results are similar to those of previous studies.

The average age of our patients was 52.9 years. This finding is confirmed with other studies done in Africa, in which the average age was also in the fifties precisely 56 years in North Africa, 55.9 years in West Africa and 59 years in South Africa [11,13,27]. These results diverge from series made in other continents where the average age was older. In South Korea, a study reports 62.8 years, 61 years in North America and 67.3 years in Europe [23,25,26]. Indeed, this age difference of African stories with other continents is explained by the life expectancy which is higher in these continents compared to ours, particularly in Cameroon where life expectancy is estimated on average. at 55 years old [28].

Subjects aged 60-69 years represented the population most affected in our work (22.9%; 19 cases). This same observation was made in Nigeria in 2015 and also in South Asia: Abudu et al. 28.9% for the 61-70 years age group, 29.7% for the 60-69 age group according to Mohd et al. [13,29]. Indeed, according to Engbang et al, subjects over 50 years of age are more at risk of developing colon cancer [21]. So having this entity, they are more likely to manifest an occlusive syndrome with primary intestinal cancer as the etiology.

During the course of their neoplastic disease, in 28% of patients with colorectal cancer (CRC), OI occurs justifying a surgical procedure, the CRC would thus increase the occurrence of IO [28]. In our analysis, it emerged that among the 29 patients dead of digestive cancer, 23 (27.7%) had known primary intestinal cancer (colon or rectum). Indeed, the work of Hsu and his collaborators in 2019 in the United States, had shown that 8-29% of patients with CRC developed OI, and in Europe 10-29% were identified [5,30]. In North Africa, Bouchra also found in his series 29% of patients with history of primary digestive cancer [11]. Our results are therefore similar with the work carried out previously and this would therefore confirm that the existence of a primary digestive neoplasia is a possible factor in the development of intestinal obstruction, especially when it is localized at the colorectal level.

After colorectal cancers, gynecological neoplasias and particularly those of the ovary, uterus and endometrium are considered to be the first secondary cancers causing intestinal obstructions. In our case, 12% of the population had history of gynecological cancers. We have noticed that this proportion tends to be closer to the Moroccan data which related 19% but the difference is important compared to other continents [11]. Particularly in France, 21.8% are reported according to Prost à la Dénise et al, while in China this rate is 28% according to Tsai et al. [31,32]. This could be explained by the fact that our study was done in a poorer country as compared to others. The population then has little financial means to carry out regular screening examinations for gynecological cancers.

Certain toxic products are also involved in the genesis of precancerous lesions, such as alcohol and tobacco, for example. We found that 8.4% of our population were smokers and 14.4 % alcohol users. These proportions were divergent from those of the Maghreb [11]. Indeed, North Africa being predominantly Muslim, alcohol is prohibited and this is not the case in Central Africa and particularly in the city where our study was made. Unfortunately for the other authors, the traditional product component had not been studied so that we could make a comparison.

Abdominal pain is a common functional sign caused by abdominal distension or a tumor mass invading or compressing the intestine [4,11]. It was found in our series in 95.1% (79 cases) as in Bouchra who also found a frequency of 93% in Morocco [11]. Western series report a slightly low frequency: 80% according to Laval et al. in France, 72-80% according to Tuca et al. in Spain [5,33]. We note that the frequency of abdominal pain is higher in African series compared to those of Westerners, because the majority of Africans tend to trivialize the symptoms and only go to hospitals when the pain becomes unbearable or unmanageable by traditional practitioners. Like abdominal colic, vomiting is classic in occlusive syndrome, but it can be intermittent or continuous. Their frequencies as well as their abundance will be the cause of probable dehydration. In our study, they were present in 41% (34 cases) with the most frequent food content with 32.5%. Ripamonti et al. described a frequency between 68-100% in 1993, Dean et al. 62% while Ferguson et al. reported 87-100% in 2015 as well as Bento de Sousa et al. in 2019 [4, 34-36]. This difference with the Western and American series is argued by the fact that in the event of low IO vomiting can be observed late and the majority of our patients had colonic obstruction (85.2%). Stopping transit is the master of symptoms but stopping gas has a high semiological value [11]. In our study, matter and gas arrest (AMG) was noted in 86.7% (72 cases). Tuca et al. found AMG in 85-93% in 2012, as did Ferguson et al. in 2015 as well as Bento de Sousa et al. in 2019 [5,34,36]. Our results therefore go hand in hand with those of the literature.

Meteorism is a major sign of OI [5,37]. We report 68 cases in our series, i.e. a rate of 81.9%. This rate is close to those of the Spanish (56-90%), Moroccan (95%) and French (86%) stories [5,11,33]. Rectal examination (DRE) is mandatory in OI, to confirm rectal emptiness and rule out obstruction by faecal impaction or rectal

mass [36]. In our study, 20 patients had pathological TR (24.1%) of which 11 had rectal tumor (13.2%). This rate matches that of the study in the Maghreb which reported 16% [11].

The management of OI with cancerous etiology is multidisciplinary [5,23]. Once diagnosed with OI, oral nutrition and hydration are stopped [33]. The surgical technique depends on the patient's condition, the findings during the operation and the surgeon's preference [32].

In our series, 45.7 % of the selected population had received surgical treatment only. Other African series yielded 84% and 100% while Western studies reported lower figures, 24% in Great Britain and 8.3% in Canada [9,11,23,35]. This statistical difference in African figures from other continents could be elucidated by the fact that cancer patients are very well followed, and probably have little chance of having complete intestinal obstruction in these developed countries compared to African patients who are little followed, either by the lack of specialized doctors, or by an inadequate technical platform for better follow-up or by the ignorance and poverty of the patients.

Only 31.3% of the patients in our study benefited from adjuvant chemotherapy, 2.4% from radiotherapy and 20.4% from concomitant radiochemotherapy postoperatively. In Morocco, adjuvant chemotherapy was performed in 38.1%, radiotherapy 1% and the combination radio chemotherapy 7% [11]. Very high frequencies have been reported in America, i.e. 83.8% surgery associated with adjuvant chemotherapy and 22.8% surgery with postoperative radiotherapy in Brazil, 78% postoperative chemotherapy and 31% adjuvant radiotherapy in the United States [24,34]. The statistical discrepancy with the American series could be explained by the lack of universal health coverage in our context. Added to this is the poverty that reigns within our populations in order to be able to follow adjuvant treatment under optimal conditions, and also the lack of specialist doctors.

Conclusion

In the light of this work carried out on 83 cases of intestinal obstruction of cancerous origin over a period of 10 years in the city of Douala, it emerges that the pathology appeared to be that of predominantly male elderly subjects with cancer, colon as the main etiology. Its diagnosis being both clinical and paraclinical, abdominal pain was the most constant functional sign and abdominal meteorism the most frequent physical sign. PSA was the most prescribed x-ray examination, but the thoraco-abdominopelvic scan was more reliable for the accuracy of the site of obstruction by the cancerous mass. His surgical management consisted of performing intestinal resection with anastomosis in most cases. Half of the patients had received adjuvant treatment based on exclusive chemotherapy, single radiotherapy or a concomitant combination of radio and chemotherapy. The prognosis is poor especially in the presence of metastases, hence the severity of the pathology related to the poor ground on which it occurs.

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