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The Challenges of Managing Malignant Pancreatic Tumors in a Gabonese Hospital Setting

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Abstract

Introduction: Pancreatic cancer is one of the most lethal emerging gastrointestinal malignancies. Its management in low-resource settings remains a major challenge. The study aimed to describe the epidemiological, diagnostic, and prognostic characteristics of pancreatic cancer at the University Hospital Center (CHU). **Methods:** We conducted a retrospective, descriptive cross-sectional study in the Hepatogastroenterology Department of the Libreville University Hospital Center from January 1, 2021, to December 31, 2023. A presumptive diagnosis of pancreatic cancer was established based on Computed Tomography (CT) and/or Magnetic Resonance Imaging (MRI) findings. Sociodemographic, diagnostic, and outcome data were collected and analyzed using Epi Info software version 7.6.2.0. **Results:** The hospital frequency of pancreatic cancer was 1.8% of all hospitalizations and 21.43% of pancreatic diseases. The sex ratio was 1.06, with a mean age of 59 ± 8.87 years. Excessive alcohol consumption (45.45%), diabetes (24.24%), and smoking (21.21%) were the most frequently reported associated exposures. The main clinical manifestations included abdominal pain (93.93%), weight loss (87.87%), asthenia (84.84%), jaundice (69.7%), and a palpable epigastric mass (42.42%). Tumors were predominantly located in the head and body of the pancreas (75.76%), with a mean size of 3.8 cm (±1.5 cm). The mortality rate was 36.36%. **Conclusion:** Pancreatic cancer was relatively frequent among pancreatic diseases but remained infrequent at the hospital level. It was predominantly diagnosed at an advanced stage, resulting in a poor prognosis. Alcohol consumption and chronic smoking appeared to be the most common associated exposures.

Keywords

Pancreatic Neoplasms, Epidemiology, Risk Factors, Diagnostic Imaging, Gabon

1. Introduction

Pancreatic cancer is characterized by the uncontrolled proliferation of malignant, highly aggressive pancreatic cells and remains one of the most lethal gastrointestinal malignancies worldwide [1]. Approximately 95% of cases are represented by pancreatic ductal adenocarcinoma, the most common histological subtype [1] [2]. The global burden of pancreatic cancer is unequally distributed, with the highest incidence rates observed in Asia, Europe, and North America [1] [2]. In contrast, Africa is generally considered a region of lower incidence but disproportionately high mortality [2].

In Gabon, pancreatic cancer accounted for 14% of digestive malignancies in 2020, with nearly equivalent numbers of incident cases and deaths, highlighting its particularly poor prognosis [3]. This high case-fatality rate is consistent with global estimates reported by the Global Cancer Observatory, which recorded 510,992 new cases and 467,409 deaths worldwide in 2022 [2].

Several factors contribute to this unfavorable prognosis. The pancreas is a deep-seated organ, making early clinical detection inherently challenging [4]. As a result, clinical manifestations typically occur at an advanced stage of disease, and early-stage pancreatic cancer often remains asymptomatic or presents with non-specific symptoms [4]-[6]. Furthermore, the absence of reliable and sensitive early biomarkers in routine clinical practice, combined with the tumor's aggressive biology and early metastatic potential, further complicates timely diagnosis [6].

Despite significant advances in diagnostic imaging, including Computed Tomography (CT), Magnetic Resonance Imaging (MRI), and Endoscopic Ultrasound (EUS), which have improved lesion detection and characterization, pancreatic cancer continues to be diagnosed at advanced stages and remains associated with poor survival outcomes [4]-[6]. Meanwhile, recent progress in immunohistochemistry and molecular genetics has opened new avenues for personalized therapeutic approaches, offering potential improvements in patient management [7]-[10]. However, in low-resource settings such as many African countries, and particularly in Gabon, limited technical capacity restricts access to comprehensive and definitive diagnostic tools, thereby exacerbating delays in diagnosis and suboptimal management [3]-[5] [11]-[14].

In this context, a better understanding of the epidemiological, diagnostic, and prognostic characteristics of pancreatic cancer is essential to inform clinical practice and guide health system strengthening. Therefore, this study aimed to describe these characteristics at the Libreville University Hospital Center.

2. Patients and Method

This was a retrospective, descriptive, cross-sectional study conducted in the Hep-

atogastroenterology Department of the Libreville University Hospital Center from January 1, 2021, to December 31, 2023. We consecutively included all hospitalized patients aged over 18 years during the study period who presented with a pancreatic lesion suspected on abdominal Computed Tomography (CT) and/or abdominal Magnetic Resonance Imaging (MRI). Sociodemographic, clinical, biological, imaging, and outcome data were systematically collected. The diagnosis of malignant pancreatic tumor was established based on imaging findings as follows:

- On abdominal Computed Tomography (CT), the presence of a hypodense pancreatic mass during the arterial phase and/or isodense or poorly enhancing lesion during the portal venous phase, with or without perivascular tissue infiltration (particularly venous), and optionally associated with dilation of the main pancreatic duct (Wirsung duct) and/or the common bile duct and intrahepatic bile ducts.
- On abdominal Magnetic Resonance Imaging (MRI), the presence of a pancreatic mass appearing hypointense on T1-weighted images and hyperintense on T2 weighted images, with or without perivascular tissue infiltration, and with or without pancreatic ductal dilation.

Tumor staging was assessed according to the American Joint Committee on Cancer (AJCC) 8th edition (2018) classification. Statistical analysis was performed using Epi Info software (version 7.6.2.0). Quantitative variables were expressed as means with standard deviation, while qualitative variables were presented as percentages.

3. Results

Among the 1832 patients hospitalized between 2021 and 2023, 154 presented with pancreatic disease, representing 8.41% of all hospitalizations. Of these, 33 cases were malignant pancreatic tumors (21.43%), 95 were acute pancreatitis (61.69%), and 26 were chronic pancreatitis (16.88%).

3.1. Epidemiological Characteristics

The mean age of patients with malignant pancreatic tumors was 59.10 years (±8.87), with the 60 - 69-year age group being the most represented 42.42%). The sex ratio was 1.06. Sociodemographic characteristics revealed a predominance of single individuals (75.76%), and patients with a primary level of education (51.51%). The most frequently reported risk factors were excessive alcohol consumption (45.45%), diabetes (24.24%), and smoking (21.21%) (Table 1).

Table 1. Sociodemographic characteristics of patients with malignant pancreatic tumors at the Libreville University Hospital Center.

Variable	Category	Employees n (N = 33)	%
Sex	Male	16	48.48
	Female	17	51.52

Continued

Age (years)	40 - 49	7	21.21
	50 - 59	6	18.19
	60 - 69	14	42.42
	≥70	6	18.18
Socioeconomic status	Low	19	57.58
	Middle	14	42.42
Marital status	Single	25	75.76
	Married	7	21.21
	Widowed	1	3.03
Education level	Primary	17	51.51
	Secondary	9	27.27
	Higher	7	21.21
Risk factors	Smoking	7	21.21
	Alcohol consumption ≥ 100 g/day	15	45.45
	Diabetes	8	24.24
	Obesity	4	12.12
	Chronic pancreatitis	3	9.09
	Family history of cancer	1	3.03

3.2. Diagnostic Findings

Abdominal pain was reported in 93.93% of patients. Overall clinical condition was impaired in all cases 100%, with anorexia observed in 93.93%, weight loss in 87.87%, asthenia in 84.84%, and jaundice in 69.7% of patients. A palpable epigastric mass was identified in 42.42% of cases (Table 2).

3.3. Imaging Findings

All patients (100%) underwent abdominal Computed Tomography (CT), while 72.73% also underwent abdominal Magnetic Resonance Imaging (MRI). Tumors were predominantly located in the head and body of the pancreas (75.76%), with a mean size of 3.8 cm (±1.5 cm). Based on CT assessment, tumors were considered resectable in only 3.03% of patients. At diagnosis, metastatic disease was present in 72.73% of cases.

3.4. Biological Findings

Elevated carbohydrate antigen 19-9 (CA 19-9) levels were observed in 39.39% of patients. Cholestasis was present in 72.73% of cases. Histological confirmation was not obtained for all patients.

Table 2. Diagnostic and outcome characteristics of malignant pancreatic tumors at the Libreville University Hospital Center.

Variable	Category	Employees n (N = 33)	%
Clinical features	Abdominal pain	31	93.93
	Anorexia	31	93.93
	Weight loss	29	87.87
	Asthenia	28	84.84
	Jaundice	23	69.70
	Fever	2	6.06
	Scratch lesions (pruritus-related)	21	63.64
	Palpable epigastric mass	14	42.42
	Ascites	10	30.30
Imaging (CT/MRI-location)	Head and isthmus	25	75.76
	Body	6	18.18
	Tail	2	6.06
Imaging (CT/MRI-extension)	Vascular invasion	8	24.24
	Biliary duct dilation	14	42.42
	Liver metastases	17	51.52
	Suspicious lymphadenopathy	6	18.18
Biological abnormalities	Anemia	24	72.73
	Prothrombin rate < 70%	10	30.30
	Elevated CA 19-9	13	39.39
	Elevated CEA	1	3.03
	Elevated bilirubin	23	69.70
	Elevated alkaline phosphatase	21	63.64
	Elevated gamma-GT	24	72.73
	Elevated transaminases	19	57.58
	Hyperglycemia	4	12.12
Prognosis	Resectable tumor	1	3.03
	Locally advanced tumor	8	24.24
	Metastatic tumor	24	72.73
Treatment	Curative	0	0
	Palliative	8	24.24
	Symptomatic	25	75.76
Outcomes	In-hospital death	12	36.36
	Death within 6 months after discharge	7	21.21
	Death beyond 6 months after discharge	14	42.42

CT: Computed Tomography; MRI: Magnetic Resonance Imaging; PT: Prothrombin Time.

No patient underwent curative surgical resection. Endoscopic biliary drainage was performed in 6.06% of patients (n = 2). At the same time, surgical biliary bypass was carried out in 18.18% (n = 6).

Clinical outcomes were marked by a high mortality rate: 36.36% of patients died during hospitalization, 21.21% within six months after discharge, and 42.42% beyond six months following discharge.

4. Discussion

4.1. Epidemiological Considerations

Pancreatic diseases accounted for 8.41% of hospitalizations in our study, of which malignant tumors represented 21.43%. This result is consistent with that reported by Maganga *et al.* (2021), who observed that pancreatic cancers accounted for 16.1% of digestive malignancies [3]. Although relatively frequent among pancreatic diseases, malignant pancreatic tumors accounted for only 1.8% of all hospitalizations, situating our setting within a low-prevalence context, like that reported across most African countries [2]-[5] [11]-[15].

This relatively low observed frequency may be partly explained by the lower prevalence of established risk factors compared with Western settings, where tobacco use, excessive alcohol consumption, and obesity constitute major public health challenges [6]-[10]. However, this apparent low burden should be interpreted with caution, as it may also reflect underdiagnosis and underreporting, particularly in low-resource settings with limited access to advanced diagnostic tools [2] [3].

Male predominance, consistently reported in the literature [1] [2], was also observed in our study. Among the recognized risk factors for pancreatic cancer, active smoking (21.21%), diabetes (24.24%), and chronic excessive alcohol consumption (45.45%) were the most frequently identified exposures in our cohort. The high prevalence of alcohol consumption has previously been highlighted by Mimbila *et al.* (2011) in adolescents and young adult populations in Libreville [16], suggesting a broader population-level exposure that may contribute to disease occurrence. These findings are consistent with previous studies demonstrating that tobacco use, diabetes, and alcohol consumption are commonly reported among patients with pancreatic cancer [17] [18]. Nevertheless, given the descriptive nature of our study design, these factors should be interpreted as associated exposures rather than causal determinants.

4.2. Diagnostic, Therapeutic, and Prognostic Aspects

From a diagnostic perspective, the clinical presentation was dominated by abdominal pain (93.93%), weight loss (87.87%), and jaundice (69.7%). This classical presentation is consistently reported in literature [1] [2] [17]-[19]. The occurrence of pain is often suggestive of unresectable disease due to celiac axis invasion and is associated with a poor prognosis [1] [2] [20]. These findings likely reflect the typically late clinical presentation of pancreatic cancer [1] [2] [11]-[14] [17]-[20].

In addition, healthcare-seeking pathways influenced by socio-cultural beliefs may contribute to delayed consultation [21]. Economic constraints and limited public awareness of early clinical signs further hinder timely diagnosis [21].

From a biological standpoint, CA19-9 levels were elevated in only 39.39% of patients, corroborating findings by Siegel *et al.* (2022) who highlighted the limited specificity of this biomarker [2]. Abdominal Computed Tomography (CT) was the primary diagnostic modality in our study, consistent with findings reported by Kpossou *et al.* (2021) in Benin, whereas in Burkina Faso, Koura *et al.* (2020) reported that fewer than one-third of patients underwent CT imaging [13] [20]. These disparities may be explained by differences in availability and cost of imaging modalities across settings [13] [20].

Tumors were predominantly located in the pancreatic head, accounting for approximately three-quarters of cases, in line with reports from several African studies [5] [13] [15] [20] [22] [23]. Only 3.03% of tumors were deemed resectable, confirming the advanced stage at diagnosis commonly observed in African contexts [5] [13] [15] [20] [23]. This situation likely explains why systematic histological confirmation was not performed. Indeed, similar challenges have been reported by Koura *et al.* in Burkina Faso, where histological confirmation was limited due to constrained technical resources and the low proportion of operable cases [13]. Likewise, Kpossou *et al.* reported histological confirmation in only 15.1% of cases in Benin [20].

From a therapeutic perspective, no curative surgical resection was performed, reflecting both the very low proportion of resectable tumors and limited technical capacity. Comparable findings have been reported in other African series [13] [20]. Endoscopic biliary drainage was performed in 6.06% of patients, while surgical biliary bypass was carried out in 18.18%, consistent with observations by Koura *et al.* and Diallo *et al.* [13] [15].

From a prognostic standpoint, in-hospital mortality reached 36.4%, comparable to the 30.8% reported by Koura *et al.* and consistent with global estimates reported by GLOBOCAN [3]. In contrast, higher in-hospital mortality rates (68.8%) have been reported by Kpossou *et al.* [4]. The poor survival observed in our cohort likely reflects delayed healthcare utilization and suboptimal treatment conditions.

5. Conclusions

Pancreatic cancer ranks as the third most common digestive malignancy in the hepatogastroenterology department of the Libreville University Hospital Center. It is most often diagnosed at an advanced stage, which significantly limits therapeutic options and worsens prognosis.

These findings underscore the urgent need to strengthen public awareness regarding the harmful effects of tobacco use and chronic alcohol consumption, as well as to improve access to advanced diagnostic tools, particularly endoscopic ultrasound.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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