

Epidemiology of Pancreatic Head Cancer at Zinder National Hospital (HNZ)

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ABSTRACT

Introduction: Pancreatic head cancer is increasing in incidence and remains characterized by late diagnosis, responsible for high mortality.

Objective: To describe the epidemiological aspects and prognosis of pancreatic head cancer in a context of limited technical resources at Zinder National Hospital (HNZ) in Niger Republic.

Materials and Methods: This was a cross-sectional study with retrospective data collection from June 01, 2020, to May 30, 2024, covering cases of pancreatic head cancer followed up in the hepato-gastroenterology (HGE), digestive surgery and medical oncology departments of

Zinder National Hospital (HNZ).

Results: Of 432 digestive cancers identified, 57 involved the pancreas (13.2%), including 46 located in the head (80.7%). The mean age was 56.3 ± 15.1 years (extremes: 20-83 years), with a male predominance (sex ratio: 2.28). The average consultation time was 7.9 months. The main complaints were jaundice (95.7%) and abdominal pain (76.1%). On examination, a large palpable gallbladder was found in 65.2% of cases, and hepatomegaly in 51.1%. Visceral metastases were present in 66.7% of patients. All received palliative care, and bypass surgery was performed in 45.7% of cases. Survival rates at 3, 6 and 12 months were 19.6%, 4.3% and 0% respectively. Mean survival was 2.6 months.

Conclusion: Pancreatic head cancer is increasingly common in Zinder. Diagnosis remains late, limiting the possibilities of curative treatment and clouding the prognosis, with a very poor mean survival in our series.

Keywords

Cancer, Epidemiology, Niger, Pancreatic head, Zinder.

Introduction

Pancreatic cancer is a malignant proliferation of exocrine cells [1]. It is a major cause of morbidity and mortality worldwide. According to data from the GLOBOCAN 2022 registry, this cancer ranks 13th in terms of incidence and is the seventh leading cause of cancer-related death [2]. Its prognosis remains particularly bleak, with 5-year survival estimated at just 6%, a situation observed in both developed and developing countries [3]. This poor prognosis is mainly due to late diagnosis. Several factors contribute to this: the absence of early symptoms, the deep anatomical position of the pancreas, its histological aggressiveness, its capacity to rapidly invade neighbouring structures, and the absence of systematic screening recommendations. Moreover, the identification of etiological factors remains limited, making prevention difficult [4]. When pancreatic cancer is diagnosed at a localized, resectable stage, management is based on a multidisciplinary approach combining surgery and adjuvant chemotherapy [5,6]. However, the majority of patients present at an advanced or metastatic stage, allowing only palliative treatment with chemotherapy, radiotherapy or targeted therapies to optimize survival [7-10]. In sub-Saharan Africa, pancreatic cancer remains under-diagnosed, but constitutes a real public health problem [11]. In Niger, it ranks 10th among cancers in terms of incidence, and is the 7th leading cause of cancer-related death [2]. According to a study carried out in the hepato-gastroenterology department of the Hôpital National de Zinder (HNZ) in 2022, pancreatic head cancer accounted for 4.01% of all morbidities in the department, with a case-fatality rate of 30% [12]. Given the growing burden of this disease in Niger and at the HNZ, it seems essential to gain a better understanding of its local characteristics. The aim of the present study is therefore to describe the epidemiological aspects and prognosis of patients followed up or hospitalized for pancreatic head cancer at Zinder National Hospital.

Materials and Methods

Type and setting of study

This was a cross-sectional, retrospective study conducted over a four-year period, from June 1, 2020 to May 30, 2024. The study was carried out in the hepato-gastroenterology, digestive surgery and medical oncology departments of the Hôpital National de Zinder (HNZ), Niger.

Study Population

All patients aged 15 and over, followed up or hospitalized in these departments for pancreatic head cancer during the study period, were included. Incomplete records or cases of pancreatic cancer of other locations were excluded.

Diagnostic Criteria

The diagnosis of pancreatic head cancer was based on the presence of retentional jaundice associated with a cephalic mass of the pancreas identified on computed tomography (CT) or abdominal ultrasound, with or without histological confirmation. TNM classification was used for prognostic and therapeutic staging. Variables studied

Data collected included

- Sociodemographic characteristics: age, sex, profession, origin, marital status
- Medical and surgical history and lifestyle habits (tobacco, alcohol, diet)
- Clinical signs on admission
- Consultation time, length of hospital stay
- Results of complementary examinations (ultrasound, CT scan, CA 19-9, chest X-ray)
- TNM stage, presence of metastases
- Treatment modalities (supportive care, chemotherapy, bypass surgery)
- Patient outcome (survival, death, lost to follow-up)

Operating Definitions

Overall survival was defined as the time elapsed between the date of diagnosis and the date of death or last follow-up. Patients were considered "lost to follow-up" if there was no news within six months of the last consultation.

Statistical Analysis

Data were entered and analyzed using Excel and Epi Info version 7 software. Results are presented as means \pm standard deviation for quantitative variables and as frequencies for qualitative variables. Associations between prognostic variables were explored using Epi Info software, with a significance threshold set at $p < 0.05$.

Ethical considerations

The study respected patient anonymity and the principles of the Declaration of Helsinki. No nominative information was collected or disseminated.

Results

Frequency and general characteristics

During the study period, we recorded 57 cases of pancreatic cancer out of a total of 432 digestive cancers, representing a frequency of 13.19%. Cephalic localization accounted for 10.6% (n=46) of all digestive cancers, and 80.7% of all pancreatic cancers. The annual average was 11.5 cases. The mean age of patients was 56.34 ±15.06 years, with extremes of 20 and 83 years. The 51-65 age group accounted for 43.48% (n=20). Patients were predominantly male, with a sex ratio of 2.28. Patients came from rural areas in 67% (n=31) of cases. 97.83% (n=45) of our patients had no fixed income. (Table 1).

Table 1: Distribution of patients by socio-demographic parameters.

Parameters	Number (n)	Percentage (%)
Gender		
Male	32	69,57
Female	14	30,43
Age ranges		
20-35	5	10,87
36-50	9	19,56
51 -65	20	43,47
66-80	10	21,74
>80	2	4,34
Provenance		
Rural	31	67
Urban	15	33
Profession		
Cultivator	26	56,52
Housekeeper	14	30,43
Artisan	4	8,69
Civil servant	1	2,17
Pupil/student	1	2,17

Consultation Time and Reasons

The average consultation time was 7.9 months, with extremes of 01 and 12 months. Reasons for consultation were jaundice in 95.65% (n=44), abdominal pain in 76.08% (n=35), altered general condition in 19.12% (n=26), pruritus in 18.38% (n=25) and vomiting in 4.41% (n=6).

History and Risk Factors

Patients' histories were represented by diabetes in 15.22% (n=7), chronic pancreatitis in 8.70% (n=4) and peptic ulcer in 4.35% (n=2). Dietary and environmental habits were represented by tobacco consumption in 30.43% (n=14), sedentary lifestyle in 10.86% (n=5), consumption of foods rich in animal fat and protein in 6.52% (n=3) and alcohol consumption in 1.89% (n=1).

Clinical Signs on Examination

Signs found on physical examination were a large palpable gallbladder in 65.21% (n=30), tumor-like hepatomegaly in 51.11% (n=23), scraping lesions in 28.26% (n=13), an epigastric mass in 13.04% (n=6) and ascites in 6.52% (n=3). (Table 2).

Table 2: Distribution of patients by clinical signs.

Parameters	Number (n)	Percentage (%)
Reason for consultation		
jaundice	44	32,35
Abdominal pain	35	25,74
Impaired general condition	26	19,12
Itching	25	18,38
Vomiting	06	4,41
Patient history		
Diabetes	07	15,22
Chronic pancreatitis	04	8,70
Peptic Ulcer Disease	02	4,35
Lifestyle and eating habits		
Tobacco consumption	14	30,43
Sedentary lifestyle	05	10,86
Foods rich in animal fat and protein	03	6,52
Alcohol consumption	01	1,89
Physical signs		
Large gallbladder	30	65,21
Scratch lesions	13	28,26
Tumoral hepatomegaly	23	51,11
Epigastric mass	06	13,04
Ascites	03	6,52

Paraclinical Data

Ultrasound examination of 33 patients (71.74%) revealed ascites in 6.06% (n=2), nodular hepatomegaly in 18.18% (n=6), a pancreatic cephalic mass in 30.30% (n=10) and dilatation of the intra- and extra-hepatic bile ducts in 100% (n=33). Abdominopelvic CT scans were performed in 45 patients (97.8%). Ascites was noted in 8.88% (n=4), nodular hepatomegaly in 51.11% (n=23), pancreatic cephalic mass in 95.55% (n=43), mesenteric adenopathy in 100% (n=45) and dilatation of intra- and extra-hepatic bile ducts in 100% (n=45). Six patients (13.04%) had elevated CA 19-9 levels in excess of 150 µmol/l. Chest X-rays revealed pulmonary metastases in 4.34% (n=2) of cases. Visceral metastases were present in 66.66% (n=30) of cases. Stage T3N1M1 accounted for 31.11% (n=14) and stage T4N2M1 for 28.88% (n=13) (Table 3).

Therapeutic management

All patients received supportive care. Gemcitabine-based chemotherapy was performed in 4.34% (n=2). Bypass surgery was performed in 45.65% (n=21). Bilio-digestive shunting was performed in 36.95% (n=17), and double bilio-digestive and gastrojejunal shunting in 8.69% (n=4).

Evolution and prognosis

Survival rates were 19.56%, 4.34% and nil at 3, 6 and 12 months respectively. Mortality rates were 67.39%, 82.60% and 86.95% at 3, 6 and 12 months respectively. A loss-of-sight rate of 13.04% (n=6) was observed throughout follow-up. Mean survival was 2.6 months (Table 4). The probability of survival at 12 months was zero (Figure 1).

Table 3: Distribution of patients according to morphology results and TNM classification.

Parameters	Number (n)	Percentage (%)
Abdominal ultrasound		
Ascites	02	6,06
Nodular hepatomegaly	06	18,18
Pancreatic cephalic mass	10	30,30
Dilatation of the bile ducts	33	100
Abdominal CT scan		
Ascites	04	8,88
Nodular hepatomegaly	23	51,11
Pancreatic cephalic mass	43	95,55
mesenteric adenopathy	45	100
dilatation of the bile ducts	45	100
TNM classification		
T2N1M0	04	8,88
T3N1M0	12	26,66
T3N1M1	14	31,11
T3N2M1	03	6,66
T4N2M1	13	28,28

Table 4: Breakdown of patients by evolutionary mode.

Year		3-month follow-up	6-month follow-up	12-month follow-up
2020	Alive	1	0	0
	Deaths	1	2	2
	Lost from sight	0	0	0
2021	Alive	1	0	0
	Deaths	2	3	3
	Lost from sight	1	1	1
2022	Alive	2	1	0
	Deaths	6	7	8
	Lost from sight	2	2	2
2023	Alive	2	1	0
	Deaths	13	14	15
	Lost from sight	3	3	3
2024	Alive	3	0	0
	Deaths	9	12	12
	Lost from sight	0	0	0

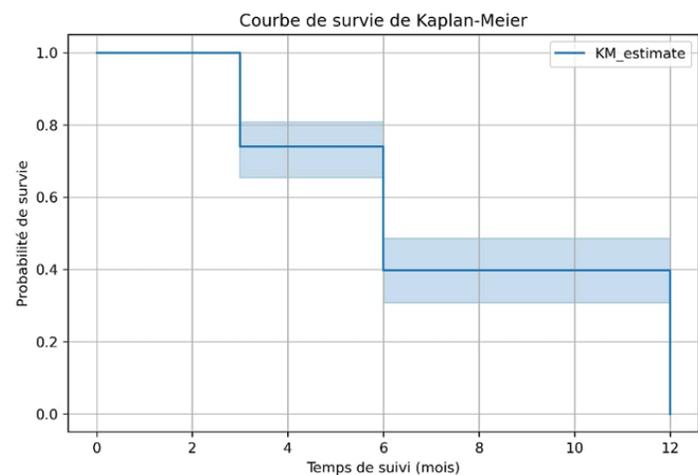


Figure 1: Patient survival curve.

Discussion

Our work has several limitations: its retrospective nature, the frequent absence of histological confirmation, the non-negligible rate of lost to follow-up (13%) and poor access to certain complementary examinations. However, it highlights the realities of the field and the need to improve diagnostic and management strategies in Niger. Pancreatic head cancer remains a pathology with a poor prognosis, both worldwide and in resource-limited countries such as Niger [12].

In our study, the frequency of pancreatic cancer among digestive cancers (13.2%) and the predominance of cephalic localization are in line with trends observed in other sub-Saharan African countries, where obstructive jaundice favours more frequent diagnosis of cephalic forms [13-22].

Clinically, jaundice (95.7%) and abdominal pain (76.1%) are the main reasons for consultation, in line with studies carried out in Côte d'Ivoire, Burundi, Morocco and Burkina Faso [16,20-22]. The high frequency of palpable large gallbladder and hepatomegaly is indicative of advanced involvement at the time of diagnosis.

The second clinical presentation, pain, which is also the main clinical presentation of caudal localizations, may delay or even falsify the diagnosis with its main differential diagnosis, peptic ulcer disease, a real factor of diagnostic delay in our context.

The mean age of our patients (56.3 years) and the predominance of males (sex ratio: 2.28) are consistent with data from the African and international literature, where the disease predominantly affects men over 50 years of age [14,21]. This epidemiological profile is partly explained by increased exposure to certain risk factors (tobacco, alcohol, high-fat diet), although in our series, the majority of patients had no identified risk factors, confirming the difficulty of prevention evoked in the literature [22].

A striking feature of our series was the high average delay in consultation (7.9 months), clearly higher than that reported in high-resource countries.

This delay results in diagnosis at an advanced stage, with visceral metastases in 66.7% of cases in our study, thereby limiting curative treatment options. In the regional literature, the rate of metastatic disease at discovery varies from 50% to 70% depending on the series [14,15,20].

Access to complementary examinations remains limited: CT scans were available in only 97.8% of patients, and CA 19-9 assays, although useful for diagnostic orientation and follow-up, were available in only 13% of cases. The frequent absence of histological confirmation is a major limitation common to many African studies [4].

Therapeutic management remains essentially palliative in our context: no patient was able to benefit from curative surgery (cephalic duodenopancreatectomy). Similar studies have reported

low to zero rates of curative surgery [14-23].

The prognosis remains extremely unfavorable, with a mean survival of 2.6 months, and a 12-month mortality of 87%. These results are comparable to those reported in other African series, and contrast sharply with developed countries, where median survival, although low, reaches 6 to 12 months thanks to earlier diagnosis and multidisciplinary management [24].

The poor prognosis associated with pancreatic cancer in general, and with cephalic localization in particular, The poor prognosis associated with pancreatic cancer in general, and in the cephalic location in particular, reflects the particular features of this cancer, notably the absence of early symptoms, the deep retroperitoneal position of the organ, its anatomical relationships and the risk of rapid invasion of surrounding tissues and organs, its particular histological aggressiveness and its powerful invasiveness; Added to this is the absence of consensus recommendations for screening [4,5,15,17,20,21].

Conclusion

Pancreatic head cancer is increasingly common in Zinder. Its diagnosis remains late, making curative treatment rarely possible and the prognosis very poor, with a low average survival rate. Earlier diagnosis and greater technical resources are needed to improve management of this disease.

References

1. Moore A, Donahue T. Pancreatic cancer. *JAMA*. 2019; 322: 1426.
2. Bray F, Laversanne M, Sung H, et al. Global cancer statistics 2022: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin*. 2024; 74: 229-263.
3. Ilic M, Ilic I. Epidemiology of pancreatic cancer. *World J Gastroenterol*. 2016; 22: 9694-9705.
4. Zhang L, Sanagapalli S, Stoita A. Challenges in diagnosing pancreatic cancer. *Monde J Gastroenterol*. 2018; 24: 2047-2060.
5. Kolbeinsson HM, Chandana S, Wright GP, et al. Pancreatic Cancer: A Review of Current Treatment and Novel Therapies. *J Invest Surg*. 2023; 36: 2129884.
6. Masiak-Segit W, Rawicz-Pruszyński K, Skórzewska M, et al. Surgical treatment of pancreatic cancer. *Pol Przegl Chir*. 2018; 90: 45-53.
7. Domagała-Haduch M, Gorzelak-Magiera A, Michalecki Ł, et al. Radiochemotherapy in Pancreatic Cancer. *Curr Oncol*. 2024; 31: 3291-3300.
8. Gugenheim J, Crovetto A, Petrucciani N. Neoadjuvant therapy for pancreatic cancer. *Updates Surg*. 2022; 74: 35-42.
9. Van Dam JL, Janssen QP, Besselink MG, et al. Pancreatic Cancer Group. Neoadjuvant therapy or upfront surgery for resectable and borderline resectable pancreatic cancer: A meta-analysis of randomised controlled trials. *Eur J Cancer*. 2022; 160: 140-149.
10. Ducreux M, Seufferlein T, Van Laethem JL, et al. Systemic treatment of pancreatic cancer revisited. *Semin Oncol*. 2019; 46: 28-38.
11. Simoes PK, Olson SH, Saldia A, et al. Epidemiology of pancreatic adenocarcinoma. *Chin Clin Oncol*. 2017; 6: 24.
12. Garba SM, Hami H, Zaki HM, et al. Pancreatic cancer in Niger: First results from the National Cancer Registry. *Annals of Oncology*. 2017; 28: iii23.
13. Hamidine I, Garba AA, Elh Lamine HZ, et al. Morbidity and mortality in the hepato-gastroenterology department of Zinder National Hospital, Niger. *Rev int sc méd Abj*. 2022; 24: 245-251
14. Koura M, Napon-Zongo PD, Somé OR, et al. Pancreatic cancer at the Sourô SANOU University Hospital of Bobo-Dioulasso (Burkina Faso): Epidemiological, Diagnostic and Therapeutic Aspects. *Health Sciences And Disease*. 2020; 21: 95-99.
15. Kpoussou AR, Gbessi DG, Gnanon FH, et al. Pancreatic cancers at the Centre National Hospitalier Universitaire de Cotonou: epidemiological, diagnostic, therapeutic and prognostic aspects. *Pan African Medical Journal*. 2021; 6: 39.
16. Ouattara A, Kone S, Soro D, et al. Pancreatic cancer: Epidemiological, clinical and therapeutic aspects in abidjan (ivory coast). *Open Journal of Gastroenterology*. 2017; 7: 223-229.
17. Toure G. Bilio-digestive shunts in palliative surgery for pancreatic head cancer at Gabriel Toure University Hospital. *Mali Médical*. 2018; 33.
18. Mikolélé Ahoui Apendi C, Itoua-Ngaporo NA, Mongo-Onkoko A, et al. Increase in the Frequency of Pancreatic Cancers at the Brazzaville Hospital and University Center. *Gastroint Hepatol Dig Dis*. 2025; 8: 1-3.
19. Bouglouga O, Lawson-Ananissoh LM, Bagny A, et al. Pancreatic cancer: Epidemiological, clinical, and management aspects in the department of hepatogastroenterology at the Lome Campus teaching hospital (Togo). *Médecine et Santé Tropicales*. 2015; 25: 323-326.
20. Bambara AT, Zida M, Ouangré E, et al. Pancreatic head tumors: a diagnostic and therapeutic challenge in Ouagadougou. *African Journal of Cancer*. 2014; 1: 17-21.
21. Mouaquit O, El Alami F, Chourak M, et al. Pancreatic head cancer in the emergency department: clinical and therapeutic aspects. *African Cancer Journal (Print)*. 2009; 1: 217-222.
22. Ferlay Jacques, Christian Partensky. The disturbing increase in pancreatic cancer incidence and mortality worldwide. *Bulletin of the National Academy of Medicine*. 2017; 201: 227-235.
23. Ntagirabiri R, Niyonkuru S, Karayuba G, et al. Pancreatic cancer in Burundi, the experience of Kamenge University Hospital. *J Afr Hepatol Gastroenterol*. 2012; 6: 312-314.
24. David M, et al. P. 322 Treatment and prognosis of pancreatic cancer have not evolved over the past 30 years in France." *Clinical and Biological Gastroenterology*. 2009; 33: 209.