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Surgical management of tumours of the bilio-pancreatic junction at the university hospital of Brazzaville

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Abstract
The biliopancreatic crossroads is the site of several pathologies, including neoplasia.

Objective: To study the epidemiological, diagnostic, therapeutic and evolutionary characteristics of tumours of the biliopancreatic junction in the digestive surgery department of the Brazzaville University Hospital.

Patients and method: This was a descriptive study with retrospective data collection which took place in the digestive surgery department of the Brazzaville University Hospital during the period from January 2020 to December 2023, i.e. 4 years. We included all patients with tumours of the bilio-pancreatic junction treated in the digestive surgery department during the study period. The study variables were socio-demographic, diagnostic, therapeutic and evolutionary. Data were collected and analysed using Excel 2016 software.

Results: During the study period, we recorded 28 patients out of 2972, i.e. a frequency of 0.94%. There were 17 men and 11 women (sex ratio 1.54). The mean age was 59.71 ± 12.49 years (extremes: 41 and 83 years), with the 60-69 age group the most represented. The predominant clinical sign was cholestatic jaundice. Biologically, all patients had biological cholestasis. Abdominal CT scans showed 23 tumours of the head of the pancreas (74.19%), 4 tumours of the ampulla of Vater (12.91%), 2 tumours of the lower bile duct (6.45%) and 2 tumours of the second duodenum (6.45%). Therapeutically, 14 patients underwent mainly palliative surgery: 3 external biliary drains (a Kehr drain placed in the main bile duct) and 11 biliary-digestive shunts (hepatico-jejunal anastomoses (5 cases) and choledocho-jejunal anastomoses (6 cases), with a gastroentero-anastomosis in all patients). Eight patients were not operable, four patients did not consent to palliative surgery and two patients were lost to follow-up before surgery. Post-operative management was straightforward in 10 patients, 3 patients died and one patient developed a medically treated biliary fistula with a favourable outcome.

Conclusion: Tumours of the biliodigestive tract are not exceptional in our centre. The head of the pancreas is the most frequent site. The surgical management in our series is essentially surgical.

Keywords: Biliopancreatic crossroads tumour, surgery, Brazzaville

Introduction

The biliopancreatic crossroads is a complex anatomical region including the ampulla of Vater, the second portion of the duodenum, the head of the pancreas and the lower end of the main bile duct [1]. It is the site of a number of pathologies, including neoplasia. Tumours of the biliary-pancreatic junction are rare [2]. They are characterised by their particular severity and extremely poor prognosis.

In the West, they account for: 1.8% of cancers in France, i.e. 9,040 new cases per year; 0.06 to 0.2% in autopsy series; 2.1 in men and 2.4 in women per 100,000 population years for pancreatic tumours, venous ampullomas and cholangiocarcinomas respectively [2 - 4]. In Africa, tumours of the head of the pancreas account for 0.3% of cases in Mali [5].

In the Congo in 2023, a study of pancreatic tumours reported a frequency of 3.6% of all digestive cancers. Head tumours accounted for 3.02% [6].

The aim of this study was to examine the epidemiological, diagnostic, therapeutic and evolutionary characteristics of cancers of the bilio-pancreatic junction in the digestive surgery department of the Brazzaville University Hospital.

Patients and method

This was a descriptive study with retrospective data collection on tumours of the bilio-pancreatic junction (TCBP) managed in the digestive surgery department of the the Brazzaville University Hospital during the period from January 2020 to December 2023, i.e. 4 years. MBCTs were diagnosed on the basis of clinical, morphological and/or histological evidence.

- **Inclusion Criteria:** We included all patients with tumours of the bilio-pancreatic junction (tumours of the head of the pancreas, vaterian ampulloma, tumours of the lower end of the main bile duct and tumours of the second portion of the duodenum), documented by CT scan and managed in the digestive surgery department during the study period.
- **Exclusion Criteria:** Incomplete records, patients discharged against medical advice.

Variables studied

- **Socio-Demographic:** age, sex, profession, place of origin.
- **Diagnostic:** duration of evolution, WHO performance status (table 1), physical signs, terrain, impact, tumour

size, site, histological type, TNM classification of tumours, transaminases, alkaline phosphatases, prothrombin level, Gamma Glutaryl transferase.

- **Therapeutics:** type of treatment (medical and surgical), palliative or curative.
- **Progression:** post-operative follow-up, survival, death, lost to follow-up, clinical remission, biological remission, progress at 6 and 12 months.

Definitions of terms

- **Survival:** patient alive, whatever their condition. Overall survival was defined as the duration of the period from the date of diagnosis to the date of death (from any cause).
- **Deceased:** patients who have lost their lives Clinical remission: disappearance of clinical signs of cholestasis (jaundice, dark urine, pruritus, discoloured stools)
- **Biological remission:** normalisation of biological signs of cholestasis (GGT, bilirubinemia, alkaline phosphatase) and cytolysis (transaminases).

Data were collected and analysed using Excel 2016 software.

Results

We recorded 28 patients out of 2972 during the study period, i.e. a frequency of 0.94%. There were 17 men and 11 women, giving a sex ratio of 1.54. The mean age was 59.71 ± 12.49 years, with extremes of 41 and 83 years. The 60-69 age group was the most represented with 32.14% (Table 1).

Table 1: Répartition des patients par tranche d'âge

Tranches d'âge	Effectifs	%
40 – 49 ans	2	6,45
50 – 59 ans	8	25,80
60 – 69 ans	11	35,49
70 – 79 ans	7	22,58
80 ans et plus	3	9,68
Total	31	100

Eighteen patients came from the hepato-gastroenterology department (58.06%), 6 patients from ordinary digestive surgery consultations (19.35%), 4 patients from surgical emergencies (12.90%) and 3 patients from the oncology department (9.67%).

Thirteen patients (41.93%) had consulted during the second trimester of symptoms. The average consultation time after the first symptoms was 5 months, with extremes of 1 month and 18 months.

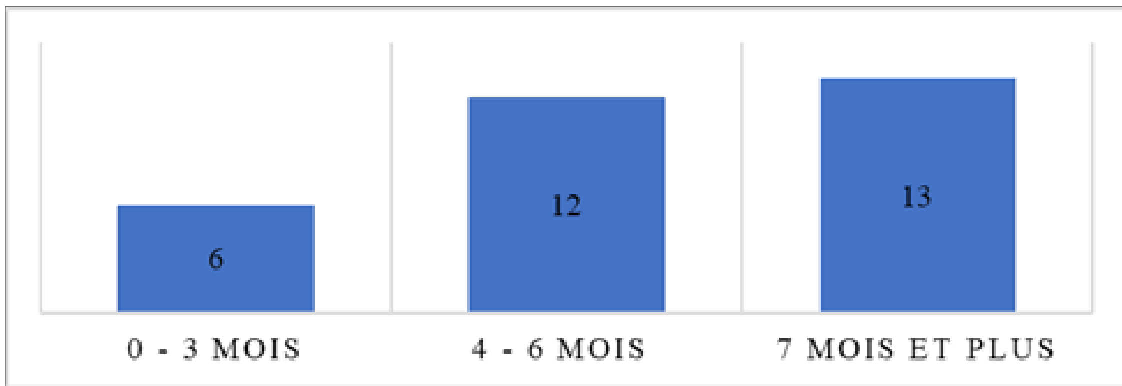

Fig 1: Distribution of patients according to consultation delay

According to the WHO performance index, thirteen patients (41.93%) consulted at stage 2 (Fig 2).

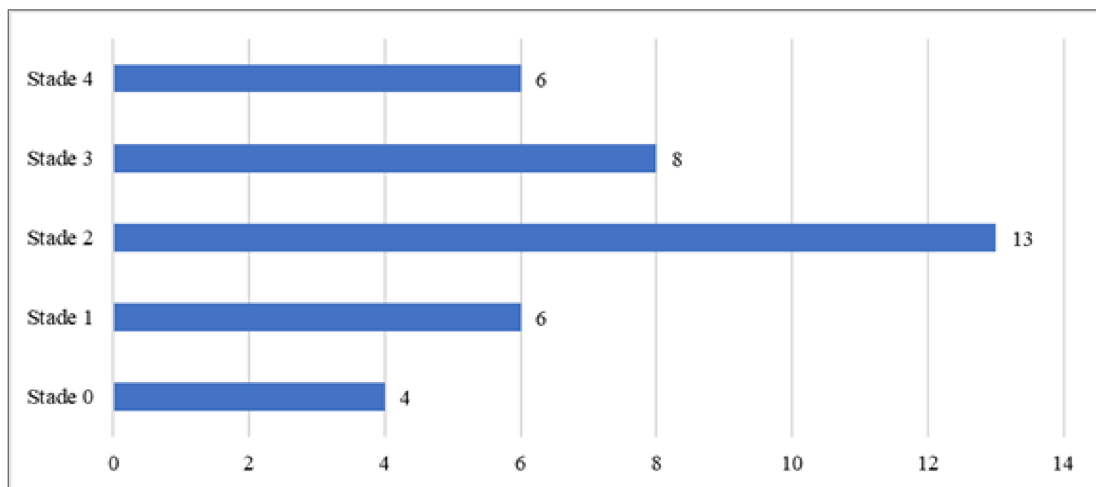

Fig 2: Distribution of patients according to WHO performance index

The dominant clinical signs were jaundice (100%), dark urine (96.77%), discoloured stools (96.77%) and abdominal pain (87.09%).

Table 2: Distribution of patients according to clinical signs

Signes cliniques	Effectifs	%
Ictère	**31**	**100**
Selles décolorées	30	96,77
Urines foncées	30	96,77
Douleur abdominale	27	87,09
Prurit	24	77,41
Amaigrissement	22	70,96
Masse abdominale	16	51,61
Ascite	11	35,54
Œdème des membres inférieurs	8	25,80
Fièvre	7	22,58
Hémorragie digestive	2	6,45

The main risk factors were diabetes (50%), alcohol (29.03%), smoking (22.58%) and human immunodeficiency virus (HIV) infection (6.45%).
Biologically, all patients had biological cholestasis. The biological tests are shown in the following table.

Table 3: Distribution of patients according to laboratory tests

Bilans biologiques	Valeurs moyennes	Valeurs extrêmes
Bilirubine directe en mg/L	63,22	19,1 – 267
Phosphatase alcaline en UI/L	289,71	166 – 402
Gamma Glutamyl transférase	88,47	39 – 243
Taux de prothrombine en %	71,90	23 – 96
Transaminases ALAT	141,27	66 – 224
ASAT	137,77	72 – 213

Radiologically (Fig 3): on the injected CT scan, we recorded 23 tumours of the head of the pancreas (74.19%), 4 tumours of the ampulla of Vater (12.91%), 2 tumours of the lower bile duct (6.45%) and 2 tumours of the second duodenum (6.45%). The tumours were hypodense in 87% of cases, enhancement was spontaneous in 92% of cases, the duct of Wirsung was dilated in 23 patients (74.19%) and the bile ducts in all patients (100%). 27 patients (87.09%) had vascular invasion on CT scan.

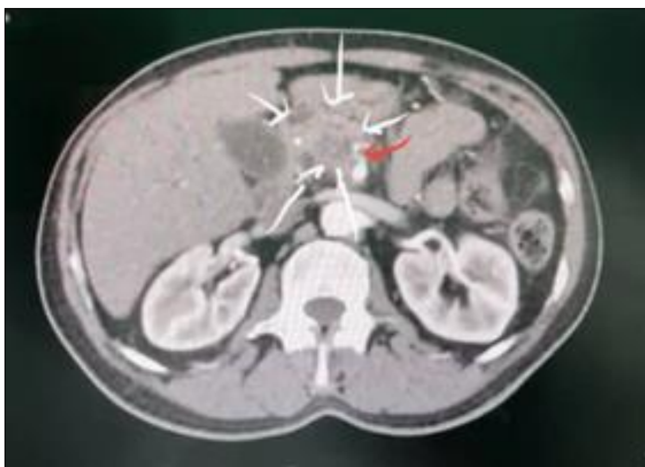

Fig 3: Axial section CT image showing a tumour of the head of the pancreas with infiltration of the superior mesenteric vein.

Therapeutically, 14 patients underwent mainly palliative surgery:

- 3 external biliary drains: placement of a Kehr drain in the main bile duct (Fig 4). The Kehr drain is placed in the main bile duct after a longitudinal choledocotomy and externalized via a counter incision in the right hypochondrium.

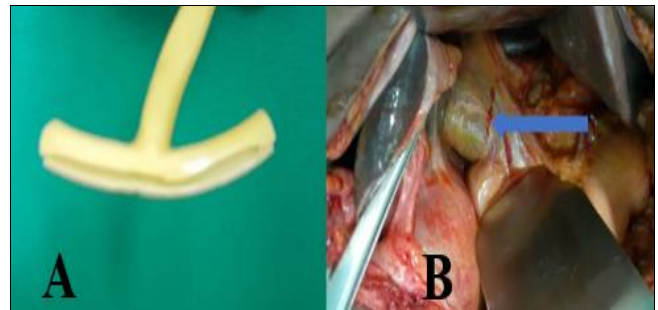

Fig 4: images showing Kehr drain (A) and dilated main bile duct (B: blue arrow)

- 11 biliary-digestive shunts: hepatico-jejunal anastomosis (5 cases) and choledocho-jejunal (6 cases) termino-lateral with gastro-entero-anastomosis in all patients (Fig 5).

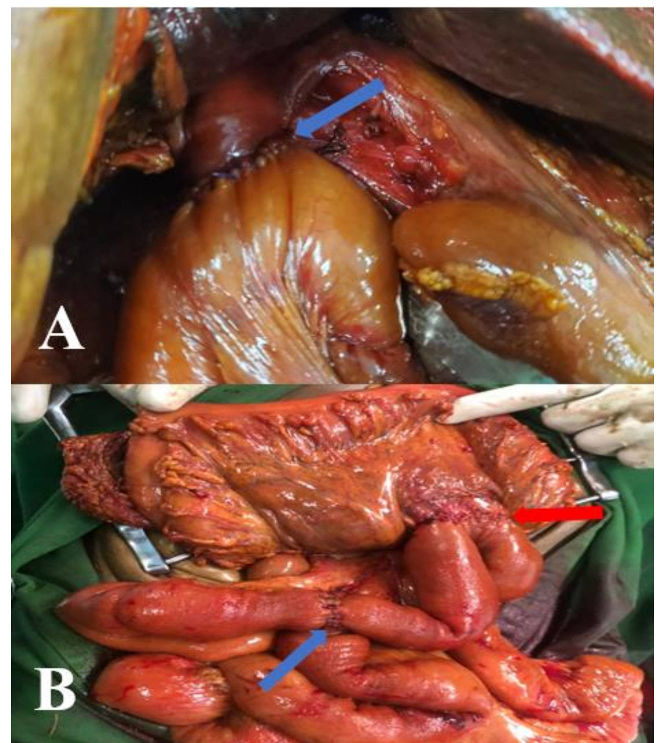

Fig 5: A: intraoperative image showing the bilio-digestive anastomosis (blue arrow); B: intraoperative image showing the gastro-jejunal anastomosis (red arrow) and the anatomy at the foot of the loop (blue arrow).

Eight patients (28.57%) were not operable, four patients (14.28%) did not consent to palliative surgery and two patients (7.14%) were lost to follow-up before surgery.
Post-operative management was straightforward in 10 patients (71.42%), 3 patients had died (21.42%) and one patient (7.14%) had developed a medically treated biliary fistula with a favourable outcome. Anatomopathological examination of the biopsies indicated pancreatic adenocarcinoma in 3 patients (10.71%) and duodenal adenocarcinoma in 2 patients (7.14%). Eight patients (25.80%) had a biological remission at 6 months and overall survival was 17.85% at 12 months.

Table 4: Progression and prognosis at 6 and 12 months

	Évolution à 6 mois		Évolution à 12 mois	
	N	%	N	%
Survie Globale	11	39,28	5	17,85
Opérés	14	50	5	17,85
Décédés	16	57,14	18	64,28
Perdue de vie	4	14,28	5	17,85
Rémission clinique	8	28,57	5	17,85
Rémission biologique	8	28,57	5	17,85

Discussion

Based on GLOBOCAN 2018 data, pacreatic cancer ranks fifth among digestive cancers. Its incidence has been increasing in recent decades, with a variable rate depending on the country. The highest incidence was in Europe (7.7 per 100,000 population) and Oceania (6.4 per 100,000 population). The lowest rate was observed in Africa, with an estimated incidence of 2.2 per 100,000 population. [7]. In sub-Saharan Africa, tumours of the biliopancreatic carrefour are poorly documented in the literature. The mean annual incidence of 7 cases is almost identical to that reported by Aboudou Raïmi Kpossou *et al*. (Benin) who reported 7.2 cases [8]. These incidences appear to be underestimated due to difficulties in accessing diagnostic and therapeutic resources.

The average age of our patients was 59.71 years, which is similar to the data of several African authors [8, 9, 10]. In contrast to Western countries where the age of onset of pancreatic head tumours is much higher. Maire *et al*. in France reported an average age of 71 years [11]. This finding confirms the youthfulness of African patients and accounts for the early onset of cancers of the biliary digestive tract in African populations, suggesting the existence of genetic and/or environmental factors to which African populations are exposed.

Cancer of the head of the pancreas is more common in men in all regions of the world, with a sex ratio of 1.2 to 2.6 [8, 10 - 13]. In our series, 17 men (60.79%) and 11 women (39.28%) were found to be predominantly male, giving a sex ratio of 1.54. Our results are close to those found in the literature. Our results are close to those found in the literature. This could be explained by the fact that smoking, the main risk factor for pancreatic cancer, and alcohol consumption are more prevalent in men than in women.

In our series, all patients reported jaundice. Dark urine and discoloured stools were reported in 96.77% each. These signs are linked to cholestasis and are indicative of CCBD [10]. In fact, these signs are usually trivialised because they are attributed to viral or infectious hepatitis, and patients often first resort to self-medication or even traditional medicine before consulting a health facility where the cost of treatment is often prohibitive. This explains the long average consultation time in our series, which was 4 months, even though 87.09% of patients were already in pain. Aboudou Raïmi Kpossou *et al*. in Benin [8] and Sidibé *et al*. in Mali [10] obtained an average delay of 3 months and 4.88 months respectively. In France, Jooste *et al* [14] reported a shorter delay of one month.

Given the clinical signs of cholestasis, biliary MRI and abdominal computed tomography (abdominal CT) are two key tests for confirming biliary stasis, assessing its severity and determining its aetiology [15]. Abdominal CT was able to identify the mass attached to the MBCTs in all our patients, confirming the specificity of abdominal CT in the diagnosis of this pathology. It also revealed signs of locoregional extension or vascular invasion in 87% of cases, and also enabled the location of the tumour to be determined, enabling 23 tumours of the head of the pancreas (74.19%), 4 tumours of the ampulla of Vater (12.91%), 2 tumours of the lower bile duct (6.45%) and 2 tumours of the second duodenum (6.45%) to be identified. Abdominal CT has become the examination of choice for the positive diagnosis of DLBCT, with a sensitivity and specificity of 96% and 93% respectively [8, 16].

There are a number of suitable treatments for BPD: external biliary drainage, biliodigestive bypass, cephalic duodeno-pancreatectomy (CPP), digestive stents and local excision of the tumour or duodeno-papillectomy or sphinterotomy. Of all the surgical therapeutic approaches, only DPC is curative. It remains the standard treatment for BPT [17]. In our series, only 14 patients (50%) underwent surgery. This was mainly palliative surgery: 3 external biliary drains (10.71%) and 11 biliary diversions (39.29%). Aboudou Raïmi Kpossou *et al*. in Benin performed curative surgery in 2.7% and palliative surgery in 37.5% [8]. Imorou *et al* [18] reported 68.9% palliative surgery. In Europe, the resectability rate is higher [18]. This low rate of resectability in our African context may be explained by the more pronounced delay in diagnosis, which limits therapeutic options. It should also be noted that pancreatic and hepatobiliary surgery is still rarely performed in our hospitals, as it requires a high level of technical support (preoperative imaging, appropriate intensive care, instruments for parenchymal transection).

The as-flow biliary fistula described in our work is a known complication in the literature, but in different proportions [19].

Clinical and biological remission of cholestasis was 28.57% at 6 months and 17.58% at 1 year. We found no comparable data in the literature. Survival at 12 months in our series was 17.85%, which is very low compared with Aboudou Raïmi Kpossou *et al*. Benin, who reported a 1-year survival of 31.4%. In France, survival was assessed at a distance from the operation, and Cowpply *et al* [19] reported a 5-year survival rate of 9%. The poor survival observed in our series could be explained on the one hand by delays in consultation, where some patients began treatment at an advanced stage, and on the other hand by the fact that our therapeutic possibilities are only palliative. In addition to these arguments, the absence of a histological diagnosis in the majority of patients (82.14%) makes the role of chemotherapy problematic, since it should be adapted to the histological type. These results confirm the data in the literature, which stipulate that chemotherapy provides a survival benefit regardless of the advanced stage of the tumour [20, 21].

Conclusion

DLBCT is not exceptional in our centre. Patients are often adults with an average age of 59, and are predominantly male. Symptoms are dominated by jaundice, pruritus, discoloured stools, dark urine and pain. The head of the pancreas is the most common site for these tumours, and the most common histological type is adenocarcinoma. Surgical management in our centre is totally palliative due to the advanced stage of the disease and the late consultations. Concomitant chemotherapy remains a challenge in our context due to the absence of histological results, and

overall survival is still poor. A policy of early management of DLBCT needs to be revitalised, particularly in terms of prevention, early detection, histological diagnosis and curative surgery.

Conflicts of Interest: The authors declare no conflicts of interest

Authors' Contributions: All the authors actively participated in the drafting and correction of the article. They have read and approved the final version of the manuscript

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