

# Biliary Tract Pathologies: Epidemiological, Clinical and Paraclinical Aspects in N'Djamena

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## Abstract

**Introduction:** Biliary tract pathologies are a frequent reason for consultation and hospitalization in gastroenterology and digestive surgery, with a significant impact on the health system, particularly in hospital settings in Chad. The aim of this study is to evaluate the epidemiological, clinical and paraclinical characteristics of the main biliary tract pathologies encountered at the National Reference University Hospital of N'Djamena. **Patients and Methods:** This was a descriptive retro-prospective study conducted over 5 years among patients aged 18 years and older hospitalized for biliary tract diseases in the Department of Internal Medicine/Gastroenterology. Socio-demographic, clinical and paraclinical data were collected from usable medical records, entered into Excel and analyzed using SPSS 18.0. **Results:** Of 3365 hospitalized patients, 202 met the inclusion criteria, corresponding to a hospital prevalence of 6%. The mean age was 55 years, with a female predominance (63.36%) and a sex ratio of 0.57. The main symptoms were vomiting (85.14%) and abdominal pain (78.21%). Hyperbilirubinemia was found in 80.2% of cases. Abdominal ultrasound revealed a predominance of gallstone disease (51%), while abdominal CT scan identified gallbladder tumors in 2.4% of cases. **Conclusion:** In our context, biliary tract pathologies are dominated by gallstone disease, with a clear female predominance.

## Keywords

Biliary Tract Pathologies, Epidemiology, Clinical, Paraclinical, N'Djamena, Chad

## 1. Introduction

Diseases of the biliary tract often result from an inflammatory process. The exact cause of these conditions remains poorly defined. Three main biliary tract diseases are identified: biliary obstruction, tumors, and biliary lithiasis [1].

Biliary lithiasis is the presence of one or more stones in the biliary tract [2]. It is considered rare in Africa but quite common in developed countries. In Western countries, 10% to 20% of the general population suffer from biliary lithiasis [3].

In the United States, more than 750,000 cholecystectomies are performed each year [4]. New trans-orificial endoscopic techniques have recently been developed [5].

In Sub-Saharan Africa, changes in dietary habits, the introduction of oral contraception, and the longer survival of patients with hemolytic diseases such as sickle cell disease have recently led to an increase in the frequency of this condition [6]-[8].

Biliary tract cancers are divided into two main locations: gallbladder cancers, which are adenocarcinomas, and cholangiocarcinomas of intra- and extrahepatic locations. The latter have been particularly little studied because it is difficult to obtain histological proof of the disease. Registry data are therefore particularly useful for studying these rare cancers. Their incidence was estimated at 2000 new cases per year in France in 2000, representing about 3% of digestive cancers [9]. They affect, in about two-thirds of cases, patients over the age of 65. The grim nature of the prognosis is partly due to the often very late discovery of this tumor. Indeed, most patients present with an unresectable tumor at the time of diagnosis. Currently, survival is less than 5% at five years [10]-[12].

In Chad, biliary tract diseases have been the subject of few studies to our knowledge. Hence, the interest of this work is to provide an overview of biliary tract diseases.

## 2. Patients and Methods

This was a retro-prospective, cross-sectional descriptive study conducted over a 5-year period from January 1, 2021, to December 31, 2025.

The Internal Medicine/Gastroenterology and Medical Imaging departments of the National Reference University Hospital of N'Djamena served as the study setting. The study population consisted of patients hospitalized for biliary tract disease in the Internal Medicine/Gastroenterology department of the CHU-RN and patients seen in the Medical Imaging department for exploration and presentation with biliary tract disease. The study population consisted of patients who were hospitalized or seen in gastroenterology consultations. Depending on the symptoms presented by these patients, tests were requested, including medical imaging tests, which explained their visit to the department for the tests, where we have a referral within the framework of the study.

Included were patients of both sexes aged 18 years and older in whom a diagnosis of biliary tract disease was established and who had an exploitable clinical record

and consenting patients.

The variables studied were:

#### **Epidemiological**

- **Clinical:** Abdominal pain, jaundice, hepatomegaly, fever, vomiting, general deterioration.
- **Paraclinical:** Biology: cytology, cholestasis, Ca19-9.
- **Imaging:** Biliary tract dilatation, biliary tract thickening, hepatic invasion.

Data were entered into Excel 2010 and Word 2010 collection sheets and analyzed using SPSS 18.0 software. Quantitative variables were expressed as means, while qualitative variables were described as percentages. Results were presented in tables and figures.

#### **Operational definition**

Acute cholecystitis is defined as inflammation of the gallbladder of bacterial origin, caused in 90% of cases by obstruction of the cystic duct.

A tumor of the bile ducts, or cholangiocarcinoma, is an abnormal cell proliferation developing in the intrahepatic and extrahepatic bile ducts.

### **3. Results**

The frequency of biliary tract diseases at the National Reference University Hospital was 6%, *i.e.*, 202/3365 exploitable records during the study period.

**Socio-demographic and clinical data distribution according to socio-demographic characteristics (Table 1)**

**Table 1.** Socio-demographic characteristics of patients.

<b>Socio-demographic characteristics</b>	<b>n</b>	<b>%</b>
<b>Age group (years)</b>		
[18 - 30]	8	3.9
]30 - 40]	37	18.3
]40 - 50]	53	26.2
<b>]50 - 60]</b>	<b>60</b>	<b>29.7</b>
]60 - 70]	32	15.8
>70	12	5.9
<b>Sex</b>		
Male	74	36.6
Female	128	63.4

The most represented age group was between 51 and 60 years; the mean age was 55 years. There was a female predominance: 128 women, *i.e.*, 63.36%, compared with 74 men, *i.e.*, 36.64%, with a sex ratio of 0.57. In this series, the risk factors for biliary tract diseases identified were mainly diabetes (n = 24), *i.e.*, 11.9%, followed by obesity and sickle cell disease at 10.4% (n = 21) and 4.9% (n = 10), respectively.

As for the reasons for consultation and hospitalization, abdominal pain and vomiting accounted for more than 85% (n = 172). Jaundice was found in 90 patients, *i.e.*, 44.4%, and fever in 95, *i.e.*, 47%. On physical examination, hepatomegaly was present in 14.4% (n = 29) and guarding in 31.2% (n = 63).

#### Paraclinical data

Biologically, the total bilirubin level was elevated in 80.2% of cases, followed by an increase in transaminases (77.22%) (**Table 2**).

**Table 2.** Distribution according to the type of biliary tract disease on imaging.

Biliary tract pathologies	Ultrasound n = 180	Percentage	CT scan n = 22	Percentage
Gallbladder lithiasis	103	51	8	3.9
Acute cholecystitis	30	14.8	2	1
Acute cholangitis	40	19.8	4	1.9
Gallbladder tumor	4	1.9	5	2.4
Main bile duct tumor	2	1	1	0.5
Intrahepatic bile duct tumor	1	0.5	2	1

Abdominal ultrasound was requested in 180 patients, *i.e.*, 89%. It revealed 51% simple gallbladder lithiasis and 3.48% biliary tract tumors.

CT scan was requested in 22 patients, *i.e.*, 38.12%. It showed 3.96% simple gallbladder lithiasis and 2.47% gallbladder tumors.

## 4. Discussion

In this series, 202 cases of biliary tract disease out of 3365 were included at the CHU-RN, representing a hospital prevalence of 6%. Our results are consistent with African literature, which reports a prevalence between 3% and 8%. However, our figures are lower than those in Western literature, which reports a prevalence in the general population between 10% - 15% [13] [14]. This could be explained by the fact that the CHU-RN concentrates on symptomatic or complicated cases, whereas many carriers of biliary tract diseases remain asymptomatic.

A female predominance of biliary tract diseases (63.36%) was noted. This result is similar to the literature, notably in the study by Hamza *et al.* on the epidemiology of biliary tract cancers [1], which stated that these cancers are rare but more frequent in women. This female predominance of biliary tract diseases could be explained by the fact that women are more exposed to multiple risk factors, including sex hormones, pregnancies, hormonal treatments, and metabolic factors [15].

The age group between 51 and 60 years was the most represented in this series, which corroborates the study by Ka *et al.* [2] in Senegal, who found a mean age of 58.1 years.

The symptomatology was dominated by vomiting and abdominal pain, respec-

tively in 85.14% and 78.21%. Ka *et al.* had noted a predominance of right hypochondrium pain and jaundice syndrome [2].

Biologically, an elevation of total bilirubin was observed in 80.2% of cases in our series. This result is consistent with the data of Ba *et al.* in Senegal (82.6%) as well as those of Nzamba Bisselou *et al.* in Gabon, who also reported a significant increase in total bilirubin [13] [16]. In our context, this hyperbilirubinemia can be explained by the high frequency of biliary obstructive syndromes related to lithiasis.

Biliary tract diseases in our series were dominated by gallbladder lithiasis, relatively high on abdominal ultrasound (51%) and low on abdominal CT (3.9%). Our results are consistent with Senegalese and Malian series, which reported a predominance of gallbladder lithiasis greater than 50% on ultrasound [13] [17]. The prevalence and incidence of gallbladder lithiasis vary by country. They are very high among Native Americans, low among Africans, and intermediate in Western countries. The prevalence is around 10% in the adult population in Western Europe [3]. The predominance of gallbladder lithiasis on ultrasound in our series could be explained by the fact that ultrasound remains the first-line examination, with high sensitivity for gallstones and low cost. The low rate (3.9%) on abdominal CT could be explained, on the one hand, by the fact that CT is less effective for poorly calcified stones, and on the other hand, by its high cost.

In this series, gallbladder tumors were reported in 2.4% on abdominal CT and 1.9% on ultrasound. Our results are consistent with African series (Senegal, Gabon), where the frequency of gallbladder tumors remains low (<5%) [2] [7]. These rates vary worldwide depending on the geographical regions [18]. These tumors are rare, often discovered late in our context, and ultrasound remains an initial screening tool, complemented by CT for a more precise diagnosis.

## 5. Conclusion

Biliary tract diseases at the National Reference University Hospital are dominated by gallbladder lithiasis, with a female predominance and a clinical presentation marked by vomiting and abdominal pain. Ultrasound remains the main diagnostic tool, while CT plays a complementary role. Biliary tumors are rare but serious because of their mortality.

## Conflicts of Interest

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

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