

Acute Cholangitis: Etiological Profile and Management

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Abstract

Acute cholangitis is defined by an infection of the bile ducts due to an obstacle preventing bile flow. It is a diagnostic and therapeutic emergency. **Aim of the Study:** Report epidemiological, etiological, therapeutic and evolutionary cholangitis. **Materials:** This is a descriptive prospective study, spanning a period from September 2020 to April 2023. Patients with acute cholangitis were included. **Results:** We collected 102 cases. The average age was 63 years old with a Sex ratio M/W: 1.37. 18 patients (17.6%) had a history of cholecystectomy. Abdominal ultrasound was sufficient to visualize the obstruction in 32 (32%) patients. The lithiasic origin was revealed in 54 (53%) cases, pancreatic head tumor in 16 (15.7%), cholangiocarcinoma in 17 (16.6%), ruptured hydatid cyst in the biliary tract in 7 (7%). 100 (98%) patients benefited from endoscopic treatment and 2 (2%) benefited from surgical treatment. Endoscopic biliary sphincterotomy was performed in 84 (84%) patients and sphincteroclasia in 9 (9%) patients. Extraction of the stones or hydatid membranes by balloon was performed in 55 (55%) cases. Mechanical lithotripsy was necessary in 1 (1%) case. A biliary prosthesis was placed in 52 (52%) patients (Picture 3). The single-stage success rate was obtained in 91 (91%) cases, 8 patients (8%) required a second stage. The early complication rate after endoscopic management was 10% (n=10) with a death rate of 5% (n=5). **Conclusion:** Acute cholangitis remains a severe condition requiring urgent treatment. The prognosis has clearly improved after the advent of interventional endoscopy giving satisfactory results. Our study had shown with a technical success rate of 92.7% and a general success rate of 95%.

Keywords: Acute cholangitis, diagnostic and therapeutic emergency, Mechanical lithotripsy, cholangiocarcinoma.**Copyright © 2023 The Author(s):** This is an open-access article distributed under the terms of the Creative Commons Attribution **4.0 International License (CC BY-NC 4.0)** which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Acute cholangitis is defined by an infection of the bile ducts due to an obstacle preventing bile flow. Cholelithiasis is the main etiology.

It is a diagnostic and therapeutic emergency. The prognosis depends on the terrain, the effectiveness of the antibiotic treatment (ATB) and the rapidity of the drainage of the bile ducts, which is clearly improved with the advent of interventional endoscopy.

We report through this study the epidemiological, etiological, therapeutic and evolutionary aspects of cholangitis.

MATERIALS AND METHODS

This is a descriptive prospective study, conducted in the Hepato-Gastroenterology and Proctology department "Médecine B» Rabat, spanning

a period from September 2020 to April 2023. Patients presenting with acute cholangitis were included. Severity was assessed according to TOKYO criteria. All the patients had benefited from a biological assessment including a hepatic and inflammatory assessment. To visualize the obstacle, an abdominal ultrasound was performed or other morphological explorations were justified on request.

We studied for each patient the age, sexe, antecedents, clinical signs, paraclinical examinations, therapeutic management and the evolution.

RESULTS

We collected 102 cases. The average age was 63 years [17-90] with a Sex ratio M/W (F=43, H=59): 1.37. 18 patients (17.6%) had a history of cholecystectomy. The typical form was represented by Charcot's triad in 61 (60%) patients.

Cholestasis and a biological infectious syndrome were detected in 100% of cases. Severity assessment revealed Grade I cholangitis in 22 (21.5%)

cases, Grade II in 47 (46%) cases, and Grade III in 33 (32.5%) cases.

Painting 1: Demographic and clinical data

	n(%)
Number of cases of acute cholangitis	102
Average age (years)	63 [17-90]
Sexe	
Women	43 (42)
Male	59 (58)
Cholecystectomy	18 (17.6)
Clinical data	
Charcot's triad	61(60)
Gravity Assessment	
Grade I	22(21.5)
Grade II	47(46)
Grade III	33(32.5)

Abdominal ultrasound was sufficient to visualize the obstruction in 32 (32%) patients. Complementary abdominal computed tomography (CT) was performed in 44 (43%) cases, Bili-MRI in 25 (24.5%) cases and Endoscopic Ultrasound (EUS) in 6 (6%) cases.

The etiologies were dominated by the lithiasic origin which was revealed in 54 (53%) cases, followed by the neoplasia origin including pancreatic head tumors in 16 (15.7%), and cholangiocarcinomas in 17 (16.6%). (Figure 1).

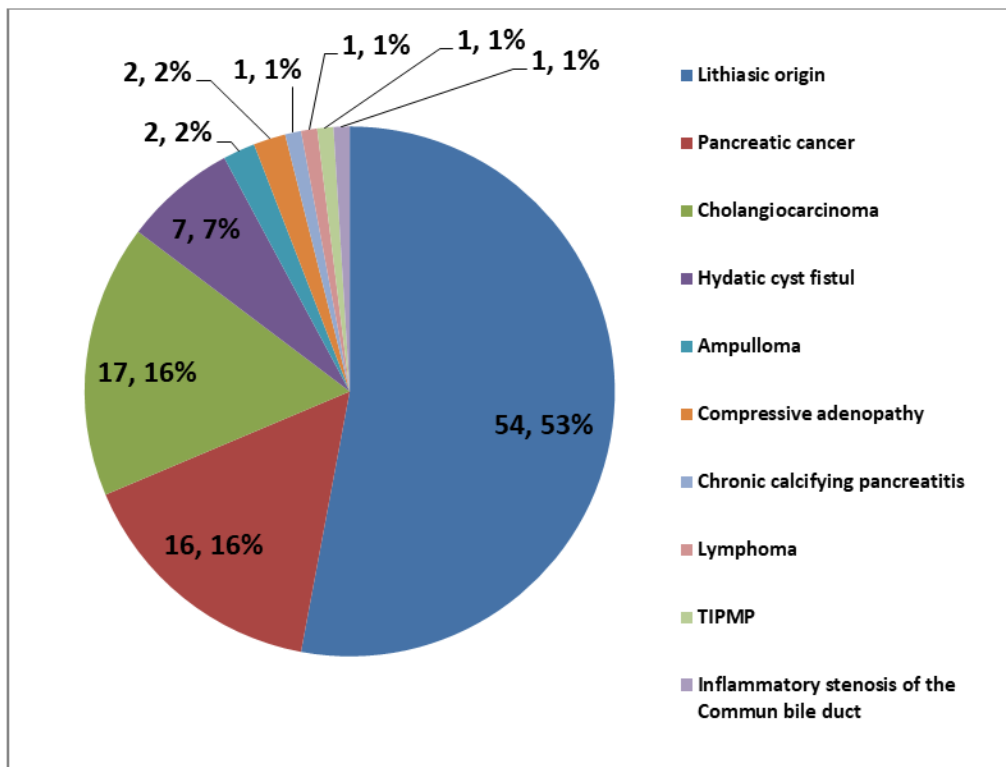


Figure 1: Etiologies of acute cholangitis

Therapeutic management includes antibiotic therapy with bile drainage. 100 (98%) patients benefited from endoscopic treatment and 2 (2%) benefited from surgical treatment. Radiological drainage was not performed in any patient in our series.

Endoscopic biliary sphincterotomy was performed in 84 (84%) patients and sphincteroclasia in 9 (9%) patients. Sphincterotomy could not be performed in 16 (16%) patients due to disorders of coagulation; in whom drainage was achieved by placement of a plastic biliary prosthesis (Picture 5).

Extraction of stones (Picture 1) or hydatid membranes (Pictures 6-7) by balloon was performed in 55 (55%) cases. Mechanical lithotripsy was necessary in 1 (1%) case. A biliary prosthesis was placed in 52 (52%) patients (Picture 3). The single-stage success rate was

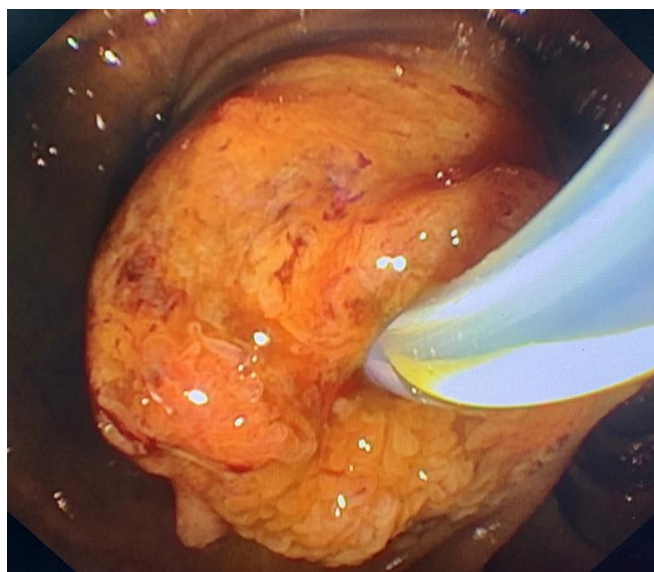
obtained in 91 (91%) cases, 8 patients (8%) required a second stage. The rate of early post-ERCP (Endoscopic Retrograde Cholangiopancreatography) complications was 10%(n=10).

Painting 2: Endoscopic treatment data

	n(%)
Endoscopic sphincterotomy	84(84)
Sphincteroclasia	9(9)
Placement of prosthesis without sphincterotomy	16(16)
Extraction of stones or hydatid membranes by balloon	55(55)
Placement of prosthesis	52(52)



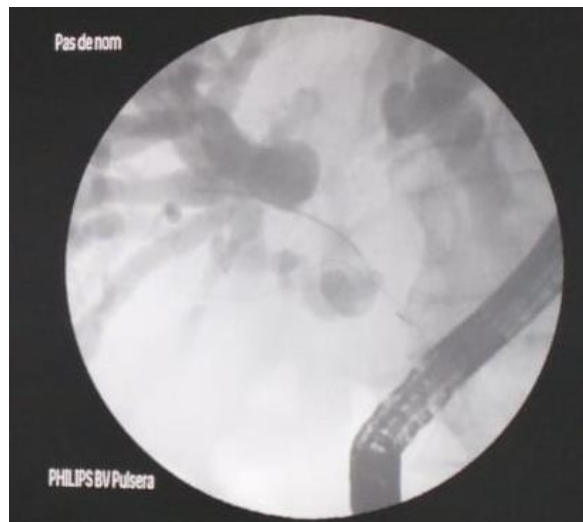
Picture 1: Cholangiogram showing common bile duct stones



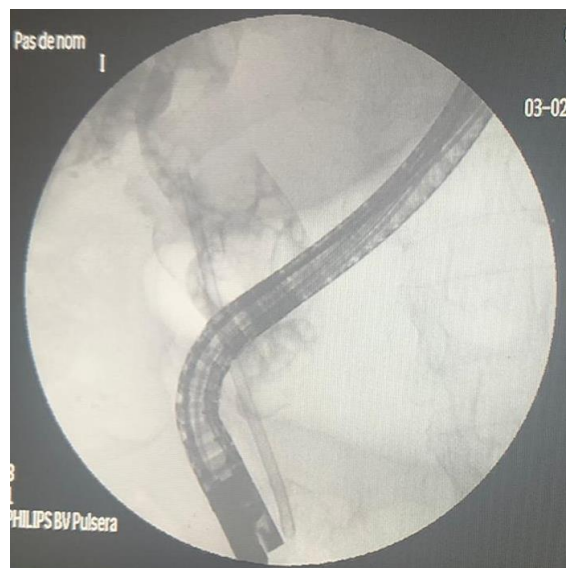
Picture 2: Endoscopic image suggestive of a vaterian amulloma in a patient with severe cholangitis



Picture 3: Cholangiogram showing placement of two metal biliary prostheses in a patient with Bismuth IIa cholangiocarcinoma



Picture 4: Cholangiography showing dilation of the intrahepatic bile ducts upstream of a process of the head of the pancreas



Picture 5: Placement of a plastic biliary prosthesis in a patient with cholangitis on choledochal stone formation with severe coagulation disorder



Picture 6: Cholangiography showing the presence of hydatid membranes in the bile ducts



Picture 7: Endoscopic image of extraction of hydatid membranes using an extraction balloon

DISCUSSION

Acute cholangitis is an acute or subacute bacterial infection of the potentially severe intra or extra hepatic bile ducts; due to an obstacle resulting in a stoppage of the enterohepatic circulation of bile and a rise in the intraductal pressure. The increase in intraductal pressure leads to an alteration of bile secretion and an alteration of intra-biliary defense mechanisms favoring bacterial proliferation in the bile. The source of contamination can be of ascending origin by the duodenal flora or hematogenous via the portal venous blood [1]. The 2 most common pathogens are *Escherichia coli* and *Klebsiella Pneumoniae*. Acute cholangitis is a diagnostic emergency given the unpredictable and rapid evolution of this condition towards a state of septic shock.

The prevalence increases with age [2], which is consistent with the results of our series, the average age being 63 years.

The clinical diagnosis is classically based on Charcot's triad. However, although this has a high specificity (96%), its sensitivity is very mediocre (26%) [3] hence the development of a score based on the TOKYO criteria (TG) defined by an international consensus conference in 2007 and updated in 2013 and 2018. The sensitivity of this score is 92% and its specificity 78%. Charcot's triad was found in 60% of cases, other forms were revealed, in particular bi-symptomatic forms.

In order to predict severity, Tokyo Guidelines experts developed a severity score in 2013 which was not changed in 2018. This includes 3 groups based on

severity. These 3 grades are associated with increasing mortality, from 1.2% for grade I, to 2.6% for grade II and more than 5% for grade III [4]. In a series of 187 patients reported by Kiriya *et al.*, 12.3% of acute cholangitis were severe compared to 32.5% in our study [5].

Regarding imaging, abdominal ultrasound is the first-line examination. Its main objective is to highlight a dilation of the intrahepatic and/or extrahepatic bile ducts [6]. It may be sufficient when it allows the obstacle to be viewed. Abdominal CT is performed as a second intention [7]; it has better sensitivity and specificity of around 83% and allows the search for complications (hepatic abscess, portal thrombosis). Bilio-pancreatic MRI is necessary more particularly in cases of stenosis of the hilar bile ducts or when the other morphological examinations are not contributive with a sensitivity of 96% and a specificity of 100% [8]. It was performed in 24.5% of our patients.

Concerning the etiological profile, we generally note a predominance of the lithiasic origin. The percentage of neoplasia origin varies according to the studies from 8 to 34%. The results of our study are similar to the data found in the study by Ming tan [9], with a rate of 53% compared to 56.6% of cholangitis of lithiasic origin, and 32% compared to 39% of neoplasia origin. These last observations do not agree with the results of Kenan *et al.*, [10] who had objectified a clear predominance of the lithiasic origin (80%) compared to the neoplasia origin (8%). This difference could be explained by the heterogeneity of the recruitment of patients from the different hospital structures.

The management of acute cholangitis is based on antibiotic therapy directed against gram-negative bacilli and anaerobic germs, taking into account the severity of the cholangitis; and drainage of the bile ducts, mainly by endoscopic retrograde cholangiopancreatography (ERCP). In our study, 98% of patients benefited from endoscopic drainage. Endoscopic drainage can be achieved by endoscopic biliary sphincterotomy which was performed in 84% of patients. Sometimes, it can be carried out by setting up a biliary prosthesis without sphincterotomy in the event of severe disorders of coagulation, thus the extraction of the stone can be postponed to a second time. In a series studying endoscopic drainage in 50 patients, endoscopic sphincterotomy, mechanical lithotripsy and extraction of stones by balloon was reported in 82%, placement of a biliary prosthesis in 34% of cases [10].

The evolution after endoscopic management was marked by a technical success rate of 92.7% compared to 94% reported in the series by Kenan *et al.*, [10]. The rate of early complications was 10% with 4 cases of hemorrhage and 6 cases of post-ERCP pancreatitis compared to 6% reported by Ming tan *et al.*, [9].

Surgical management is now becoming exceptional because of its heavy morbidity and mortality. The latter has decreased to 10-30% since 1980, with the development of endoscopic biliary drainage techniques. In our series, surgery was indicated in two patients after cannulation failure.

Current mortality rates vary between 9.6% and 37%, and death is most often due to multiorgan failure related to refractory septic shock [11]. In our study the mortality rate was 5% due to refractory septic shock despite good drainage, and one patient died from complications of COVID-19 infection. This low rate is probably related to the size of the sample studied.

CONCLUSION

Acute cholangitis remains a severe condition requiring urgent treatment. Cholelithiasis is the main etiology. The prognosis has clearly improved after the advent of interventional endoscopy giving satisfactory results. Our study had shown with a technical success rate of 92.7% and a general success rate of 95%.

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