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Original Research Article

Epidemiological distribution of hepatic cirrhosis in the wilaya of Constantine

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Abstract

Cirrhosis is a severe and progressive disease that represents a significant public health concern in our country due to its high morbidity and mortality rates. This study aims to analyze and update the epidemiological, clinical, and semi-evolutionary aspects of cirrhosis based on available data. The objective was to investigate the clinical and epidemiological profile of patients hospitalized for cirrhosis and the factors associated with mortality due to this condition in the Department of Digestive Pathology of the National Hospital Center.

A retrospective study was conducted in the Hepato-Gastroenterology Department to analyze the characteristics of patients hospitalized for cirrhosis over one year, from 2022 to 2023. The diagnosis of cirrhosis was established based on clinical and paraclinical evidence. Over the one-year period, 44 patients with cirrhosis were hospitalized in the Hepato-Gastroenterology Department. The mean age of the patients was 40 years (ranging from 20 to 60 years), with a predominance of female patients and a sex ratio of 1.93. Among these patients, 70% were over 40 years old, while 23% were under 40 years of age.

In the medical history, viral hepatitis was reported in 24 patients (55.81%). The main causes of hospitalization included digestive hemorrhage (11.62%), significant weight loss (60.46%), abdominal pain (46.51%), portal hypertension (39.53%), and jaundice (18.60%). Viral causes and alcohol consumption remain the primary causes of cirrhosis in our population, with high morbidity and mortality rates mainly due to digestive hemorrhage and complications from ascites.

Keywords: Cirrhosis, morbidity, viral hepatitis, alcohol consumption, digestive hemorrhage.

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I. Introduction

Liver cirrhosis is a syndrome defined anatomopathologically as a diffuse liver disorder characterized by fibrosis and parenchymal nodules [1]. It is a relatively common and severe condition in Africa. According to the WHO, 37,000 individuals with cirrhosis died in 2001 [2]. The etiologies of this disease are diverse, but two main causes stand out: alcohol consumption and viral infections. In Algeria, this condition is predominantly associated with hepatitis C virus infections, whereas in Western countries, alcohol is the leading cause. However, no precise epidemiological reports on this condition are available [3]. The management of patients with cirrhosis remains challenging due to inadequate medical infrastructure and the low purchasing power of populations. The rate of cirrhosis progression depends on several factors, including the patient's sex and the age at which the causative condition was contracted, both of which influence disease evolution [4]. The progression of cirrhosis leads to liver failure and portal hypertension, which are responsible for clinical symptoms and abnormal biological findings. These findings may include elevated transaminases, cholestasis, increased γ-GT and alkaline phosphatases, hyperbilirubinemia, or hepatocellular insufficiency [2][3].

The objective of the present study is to analyze the epidemiological, clinical, and evolutionary profile of this condition in the Hepato-Gastroenterology departments of the Constantine University Hospital.

II. Patients and Methods

This is a purely retrospective study based on a systematic review of medical records from the Gastroenterology Department. Data were obtained from archived patient files. Inclusion criteria included all patients hospitalized for cirrhosis with complete clinical, biological, and imaging data. Exclusion criteria were incomplete records or the absence of a confirmed diagnosis. The study covered a one-year period (2022–2023). In addition, a second retrospective analysis was conducted, reviewing medical records of patients diagnosed with cirrhosis in general between 2012 and 2024 at the Gastroenterology Department of Constantine University Hospital. For each case, the following parameters were analyzed: age, sex, clinical and paraclinical findings, etiological treatment of cirrhosis, and disease progression.

III. Results

Over a one-year period, 44 patients with cirrhosis were hospitalized in the Hepato-Gastroenterology Department. The mean age of the patients was 40 years (ranging from 20 to 60 years), with a female predominance and a sex ratio of 1.93. Among these patients, 70% were older than 40 years, while 23% were younger than 40 years. As illustrated in Figure 1, an extended analysis of patient admissions for cirrhosis from 2012 to 2024 reveals notable epidemiological trends. A marked increase in cases occurred between 2017 and 2019, followed by a sharp decline during the COVID-19 pandemic, with the number of admissions dropping to 19 cases. Post-pandemic, hospitalizations began to rise again, reaching 44 cases in 2022–2023 (the core study period), and 52 cases in 2023–2024. These fluctuations, visualized in Figure 1, highlight a potential resurgence of cirrhosis likely due to delayed diagnoses during the pandemic and the

ongoing impact of risk factors such as viral hepatitis and alcohol use. Regarding clinical histories, hepatitis B or C was identified in 55.81% of patients (N = 24), a history of jaundice in 9.3% (N = 4), and type 2 diabetes mellitus in 20.93% (N = 9). Additionally, 13.95% of patients (N= 6) reported chronic smoking and/or excessive alcohol consumption. The presence of hepatitis B and C in over half of the cases highlights the significant role of viral infections as major contributors to the pathogenesis of cirrhosis. These chronic infections are well-known causes of progressive hepatic fibrosis and hepatic decompensation. Type 2 diabetes mellitus, observed in nearly 21% of patients, also represents an important risk factor, often associated with increased hepatic fibrosis and cardiovascular complications in the context of cirrhosis. Chronic smoking and excessive alcohol consumption, present in 13.95% of patients, are modifiable factors that further exacerbate liver disease and increase the risk of additional complications, such as liver cancer.

Table.1 Frequency of clinical and para-clinical signs in cirrhotic patients in Constantine.

SIGNE	FREQUENCY	%
FUNCTIONAL SYMPTOMS		
Abdominal pain	20	46.51
Diarrhea	09	20.93
Gastrointestinal bleeding	05	11.62
Vomiting	04	9.30
PHYSICAL SIGNS		
Hepatomegaly	23	53.48
Emaciation	26	60.46
Icter	08	18.60
Portal Hypertension (PH)	17	39.53
CLINICAL HISTORY		
Hepatitis B and C	24	55.81
Jaundice	04	9.30
Alcohol	06	13.95
Diabetes	09	20.93
Chronic smoking	06	13.95
HEPATIC PARAMETERS	**MEAN LEVEL**	**EXTREMES**
AST (aspartate aminotransferase) > 40 IU/L	106.05	27- 247
ALT (alanine aminotransferase)40 IU/L	107.3	20- 356

Clinical and Physical Signs

Clinically, the most common functional symptoms included abdominal pain (46.51%, N = 20), followed by diarrhea (20.93%, N = 9), gastrointestinal bleeding (11.62%, N = 5), and vomiting (9.30%, N = 4). These symptoms reflect the severe functional impairments associated with cirrhosis, often linked to digestive disturbances and hepatic complications.

Physically, weight loss, observed in 60.46% of patients (N = 26), indicates advanced malnutrition, frequently encountered in chronic liver diseases. Hepatomegaly, present in 53.48% of patients (N = 23), suggests an increase in liver volume, often due to fibrosis or congestion. Additionally, portal hypertension (39.53%, N= 17) and jaundice (18.60%, N = 8) are hallmark complications of cirrhosis, associated with metabolic and vascular dysfunctions of the liver. These findings underscore the severity of the disease.

Liver function parameters revealed elevated mean levels of AST and ALT, at 106.05 IU/L and 107.3 IU/L, respectively, with ranges from 27 to 247 IU/L for AST and 20 to 356 IU/L for ALT. These results indicate significantly increased enzymatic activity, reflecting active or recent hepatic damage. The elevation of transaminases (AST and ALT) beyond normal thresholds (>40 IU/L) often signifies hepatocyte damage, typical of conditions such as cirrhosis, viral hepatitis, or advanced hepatic steatosis.

In this context, the predominance of above-normal mean values confirms functional liver impairment in these patients. The wide range of extremes indicates significant inter individual variability, potentially attributable to different stages of the disease or aggravating factors such as co-infections, alcohol consumption, or other comorbidities. As shown in Figure 2, 77% of women with cirrhosis were postmenopausal, while 23% were younger than 40 years. This distribution reflects an increased prevalence of cirrhosis among postmenopausal women, potentially linked to hormonal changes after menopause, such as decreased estrogen levels. Estrogens are known to play a protective role against certain metabolic and liver diseases, and their decline may promote the progression of liver damage. Conversely, the proportion of 23% of women under 40 years of age suggests that the disease is not exclusive to older age groups. This could be associated with specific risk factors such as chronic viral infections (hepatitis B or C), autoimmune diseases, or other environmental or behavioral causes (e.g., alcohol consumption or exposure to toxins).

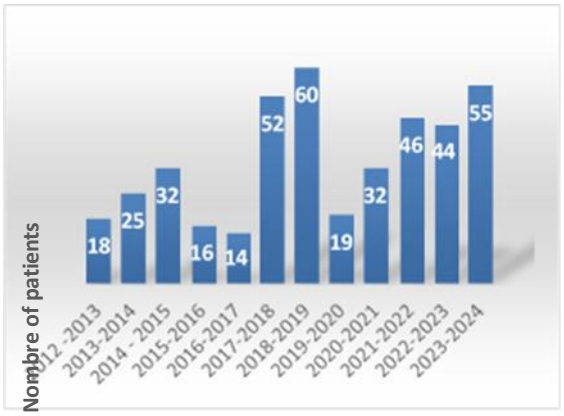

Figure 1: Distribution of patients by year

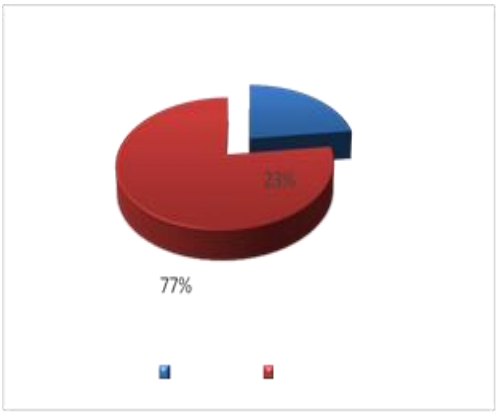

Figure 2 Distribution according to menopause

IV. Discussion

Global estimates of the prevalence and incidence of cirrhosis remain imprecise. However, this disease represents a major public health concern in Algeria. The primary causes of cirrhosis in the country include viral hepatitis, particularly hepatitis B and C, as well as excessive alcohol consumption [5]. According to data from the Ministry of Health, the prevalence of hepatitis B in Algeria is estimated at 2.15%, while hepatitis C prevalence is approximately 1%. National research indicates that hepatitis B virus is more prevalent in southern regions and the Hauts Plateaux, whereas hepatitis C virus predominates in the eastern part of the country. These chronic viral infections are major risk factors for the development of cirrhosis [6].

These results are comparable to those reported by Sang Soo Lee et al. [7], who documented a mean age of 49.3 ± 14 years, by Latifa [5], with a mean age of 52.4 years, and by Driouiche et al. [8], whose cohorts showed slightly higher mean ages.

However, the younger mean age observed in our study (40 years) raises important considerations. This difference may be explained by earlier exposure to viral hepatitis in childhood or adolescence, limited access to early healthcare services, and a lack of systematic screening in rural or underserved populations. Socioeconomic disparities and lifestyle-related factors may also contribute to earlier onset of liver complications.

We observed a female predominance in our cohort, with a sex ratio of 1.93, consistent with the literature [5]. Among the women with cirrhosis, 77% were postmenopausal, while 23% were under 40 years of age. These observations suggest that the onset of cirrhosis in women may be linked to menopause, as demonstrated by Florentino [9]. Indeed, the decrease in estrogen levels after menopause promotes fat

accumulation in the liver, which can lead to metabolic syndrome and eventually progress to hepatic cirrhosis.

The drop in estrogen levels during menopause leads to changes in lipid metabolism, increased oxidative stress, and a decrease in the anti-inflammatory effects usually mediated by estrogens [13]. These hormonal changes may accelerate hepatic fibrosis and contribute to the development of cirrhosis, particularly in the presence of comorbid conditions such as diabetes or metabolic syndrome [14] [15].

The occurrence of symptoms such as gastrointestinal bleeding, jaundice, abdominal pain, hepatomegaly, and weight loss often reflects the severity of the disease and may result in potentially fatal complications. Portal hypertension, a common complication of cirrhosis, plays a central role in the appearance of these symptoms, notably gastrointestinal bleeding due to esophageal and gastric varices. Death is frequently associated with complications such as ascites, severe jaundice, and massive hemorrhages.

Our findings are consistent with studies conducted in Benin [10], where primary liver cancer often reveals cirrhosis through episodes of decompensation, including marked jaundice or ascites. This close association makes it challenging to differentiate between the natural history of cirrhosis and hepatic cancer, as the two conditions are frequently diagnosed simultaneously [11]. These observations underscore the importance of close monitoring and early management of patients with cirrhosis to prevent progression to irreversible complications

The elevation of transaminases, particularly aspartate aminotransferase AST and alanine aminotransferase ALT (>40 IU/L), observed in this study often reflects significant damage to hepatocytes. These enzymatic increases are characteristic of numerous hepatic conditions, including cirrhosis. This biochemical marker is particularly valuable for assessing hepatic injury and its progression, thereby enabling better clinical management of patients. Our findings align with the literature [5][8][12], which reports similar values in comparable contexts of chronic liver diseases.

V. Conclusion

Liver cirrhosis remains a major public health concern in our hospitals. It is frequently associated with chronic infections caused by hepatitis B and C viruses (HBV and HCV), which together account for more than half of the reported cases. The severity of complications, particularly among young adults, underscores the urgent need for coordinated public health interventions.

Promoting awareness about reducing—or ideally ceasing—alcohol consumption is essential, especially for patients with mild symptoms or those in the early stages of cirrhosis. Such preventive measures can significantly slow disease progression and improve patient quality of life.

Furthermore, active engagement from the Ministry of Health is crucial to implement systematic screening programs for hepatitis B and C and to guarantee equitable access to appropriate treatments. These efforts are vital to prevent disease progression and its associated complications.

This study does have certain limitations. As a retrospective, single-center analysis, it may not capture the complete epidemiological landscape of cirrhosis within the broader population. Additionally, subclinical or undiagnosed cases may have been missed due to the exclusive reliance on hospital admission records.

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