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Prevalence, clinical characteristics and related mortality of cirrhosis in a tertiary hospital setting in Sub Saharan Africa

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ABSTRACT

Background: Published data on the prevalence and mortality associated to cirrhosis is rare in Cameroon. The aim of this study was to determine the prevalence, clinical and para clinical characteristics and associated mortality of cirrhosis at the Yaounde University Teaching Hospital (YUTH), Cameroon.

Methods: Files of patient's followed up or admitted for cirrhosis at the YUTH between June 1st 2016 and June 30th 2018 were reviewed. The diagnosis of cirrhosis was made based on clinical, biological, ultrasonographic and/or endoscopic signs of portal hypertension and chronic liver failure. In other to establish the cause of cirrhosis, markers of documented chronic hepatitis B virus (HBV) and hepatitis C virus (HCV) was sought in the file of the patients and if not present, hepatitis C antibody and hepatitis B surface antigen testing were requested. In patients negative for HBV and HCV markers, alcohol intake was considered as a cause of cirrhosis in someone who have been consuming more than 30 g/day (for males) or more than 20 g/day (for females) of alcohol. Data analyses were performed using Epi info V 3.5.4.

Results: During the period of study, 1748 patients were admitted in the internal medicine unit among which 117 had cirrhosis giving a prevalence of 6.7%.

There were 67 males (57.3%) and 50 females (42.7%). The mean age of patients was 51 +/- 19.862 years. Patients with HCV related cirrhosis were older (mean age: 68years) than those with HBV induced cirrhosis (mean age: 38years).

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The most frequent signs were ascites 104 patients (88.9%), asthenia 92(78.6%), hepatomegaly 68(58.1%), jaundice 61(52.1%), abdominal distension 54(46.2%) and gastrointestinal bleeding 29(24.8%).

Anaemia was present in 58 patients (49.6%), thrombocytopenia in 56 patients (47.9%), low prothrombine time in 64 patients (54.7%). Mean serum albumine was 27.59 g/l (6-70), mean total bilirubine 49.41mg/l (3-275mg/l), mean AFP 75693 mg/ml (0.8-1578022). Spontaneous bacterial peritonitis was found in 21 patients (17.9%)

Performed in 30 patients (25.6%), upper digestive endoscopy showed oesophageal varices in 27 patients (90%), hypertensive gastropathy in 17 patients (56.7%) and an ulcer in 3 patients (10%).

Found in 47 patients (40.2%), HBV infection was the most frequent cause of cirrhosis followed by chronic HCV infection in 43 cases (36.8%) and alcohol intake in 26 patients (22.2%).

The most frequent Child-Pugh class was C in 32 patients (48.5%) followed by Child-Pugh B and A in 26 patients (39.4%) and 8 patients (12.1%) respectively. Mortality rate was estimated at 20.5% (24 patients) and death was attributed to hepatic encephalopathy in 19 patients, gastrointestinal bleeding in 3 patients and spontaneous bacterial peritonitis in 2 patients.

Conclusion: Liver cirrhosis is frequent in our setting, mostly diagnosed on advanced stages with complications. The most common causes are viral hepatitis B and C. The mortality rate is high

Keywords: Liver cirrhosis, Cameroon, Prevalence, Mortality

Background

Liver cirrhosis remains a major public health problem in the world especially in Sub-Saharan Africa. It has multiple causes which vary from one region to another. Chronic viral hepatitis B and C are dominant causes in African and Asia-Pacific regions [1,2,3,4] while alcoholism and non-alcoholic steatohepatitis are the leading causes in western countries [5,6,7]. Liver cirrhosis remains asympto-matic over long period and is mostly diagnosed in advanced stages with complications which accounts for the high morbidity and mortality in these patients. Global mortality associated with liver cirrhosis was estimated at 1 million a year in a recent meta-analysis in 187 countries with significant differences between countries of the North and South [8]. While mortality is in regression in Europe, North America and certain Asian countries due to immunization programs to fight viral hepatitis B, it remains higher in Sub Saharan Africa partly due to high prevalence of viral Hepatitis B and C [9,10]. Published data on the prevalence and mortality associated to liver cirrhosis is rare in our setting. The aim of this study was to determine the prevalence, clinical and para clinical characteristics of cirrhosis at the Yaounde University Teaching Hospital (YUTH), Yaoundé, Cameroon.

Methods

This was a transversal and descriptive study including patient's files followed up or admitted for cirrhosis at the YTHC between June 1st 2016 and June 30th 2018.The internal medicine unit receives patients of all domains of internal medicine with a capacity of 30 beds. It also runs an outpatient department.

The diagnosis of liver cirrhosis was made based on clinical and biological signs of portal hypertension and chronic liver failure, ultrasonographic signs of chronic liver disease and endoscopic signs of portal hypertension. Ultrasonographic signs included irregular liver outline, heterogeneous echo structure, dysmorphic liver, enlarged portal vein and presence of collateral venous circulations.

The presence of ascites, jaundice, hepatic encephalopathy and gastrointestinal bleeding were considered as signs of decompensation. In other to establish the possible cause of liver cirrhosis, a history of documented chronic hepatitis B and C was sought in the file of the patients and if not present, hepatitis C antibody, hepatitis B surface antigen and hepatitis B core antibody testing were requested. A presumption of alcohol induced cirrhosis was made when markers of chronic hepatitis B and C were negative in someone having alcohol intake greater than 30 g/day for males and 20 g/day for females. To assess severity and prognosis of liver cirrhosis, Child-Pugh score involving evaluation of 5 parameters including ascites, encephalopathy, serum albumin, serum bilirubin and prothrombin time was used. Data analyses were performed using Epi info V 3.5.4.

Table 1: **Socio-demographic characteristics of the study population**

Variables	Number	Percentage (%)
Gender		
Male	**67**	**57.2**
Female	50	42.8
Age (years)		
Mean (overall: 51; HBV related cirrhosis: 38; HCV related cirrhosis: 68)		
[18-28]	18	15.4
[29-39]	22	18.8
[40-50]	17	14.5
[51-61]	23	19.6
[62-72]	14	12
>72	23	19.7
Co-morbidities*		
Intake of traditional herbs	51	37.8
Alcohol intake	39	28.9
High Blood Pressure	21	15.6
Diabetes	13	9.6
Smoking	11	8.1

*percentages according to the number of co-morbidities

Results

During this period 1748 patients were admitted in the internal medicine unit among which 117 had liver cirrhosis and thus a prevalence of 6.7%.

Socio-demographic characteristics

Of the 117 cirrhotic patients included, there were 67 males (57.3%) and 50 females (42.7%). The mean age at the time of diagnosis was 51 +/- 19.862 years with extremes (18-85). The most

represented age group was that of 51-61 years (19.7%). Patients with hepatitis C related cirrhosis were older (mean age: 68years) than those with hepatitis B induced cirrhosis (mean age: 38years). (**Table 1**).

Table 2: Signs at the diagnosis

Variables	Number	Percentage (%)
Clinical		
Symptoms		
Asthenia	92	78.6
Abdominal distension	54	46.2
Hematemesis/Melena	29	24.8
Abdominal pain	28	23.9
Altered sensorium	19	16.2
Pedal oedema	19	16.2
Jaundice	12	10.
Weight loss	10	8.5
Dyspnoea	8	6.8
Physical signs		
Ascites	104	88.9
Hepatomegaly	68	58.1
Jaundice	61	52.1
Pedal edema	32	27.4
Abdominal collateral circulation	25	21.4
Asterixis	11	9.4
Biological		
Low Prothrombin time	64	54.7
Anemia	58	49.6
Thrombopenia	56	47.9
Echographic		
Hepatomegaly	70	59.8
Irregular liver outline	115	98.3
Heterogenous echo structure	116	99.1
Dilated portal veins	38	32.5
Endoscopic (N=30)		
Oesophageal varices	27	90
Hypertensive gastropathy	17	56.7
Ulcers	3	10

Clinical Data

At the diagnosis, the most frequent symptoms included asthenia 92(78.6%), abdominal distension 54(46.2%), gastrointestinal bleeding 29(24.8%), abdominal pains 28(23.9%), altered sensorium 19(16.2%), pedal edema 19 (16.2%), jaundice 12 (10.3%), weight loss 10 (8.5%), dyspnea 8(6. 8%).

The most frequent physical signs were ascites 104 patients (88.9%), hepatomegaly 68(58.1%) and jaundice 61(52.1%) (**Table 2**)

Biological and ultrasonographic findings

Anemia was present in 58 patients (49.6%), thrombocytopenia in 56 patients (47.9%), low prothrombine time in 64 patients (54.7%). Mean aspartate aminotransferase was 137.41IU (15-

900), mean alanine aminotransferase was 70.24IU (11-523), mean serum albumine was 27.59 g/l (6-70), mean total bilirubine 49.41mg/l (3-275mg/l), mean AFP 75693 mg/ml (0.8-1578022). Spontaneous bacterial peritonitis was found in 21 patients (17.9%)

On ultrasonography, hepatomegaly was found in 70 patients (59.8%), irregular liver outline in 115 patients (98.3%), heterogeneous echo structure in 116 patients (99.1%). The portal vein was normal in 78 (66.7%) and dilated in 38(32.5%)

Upper digestive endoscopy was done in thirty patients (25.6%). Oesophageal varices was found in 27 patients (90%), hypertensive gastropathy in 17 patients (56.7%) and an ulcer in 3 patients (10%).

Table 3: Etiologies of the cirrhosis and complications

Variables	Number	Percentage (%)
Etiologies		
HBV	47	40.2
HCV	43	36.8
Alcohol	26	22.2
HBV/HDV	10	8.5
Viral Hepatitis +HIV	5	4.3
Unknown	1	0.9
Complications		
Ascites	108	92.3
Hepatic Encephalopathy	37	31.6
Hepatocellular carcinoma	36	30.8
GI bleeding	24	20.5
Spontaneous bacterial peritonitis	21	17.9
Portal thrombosis	20	17.1
Hydrothorax	5	4.3
Hepato-renal syndrom	3	2.6

Causes of liver cirrhosis and complications

Of the 117 cases of liver cirrhosis included, chronic viral hepatitis B encountered in 47 patients (40.2%) was the most frequent cause, followed by chronic viral hepatitis C in 43 cases (36.8%) and alcohol intake in 26 patients (22.2%). One patient (0.9%) had no evident cause of liver cirrhosis. HIV and chronic viral hepatitis co-infection was found in 5 patients (6%). **(Table 3)**

The most frequent complications were ascites in 108 patients (92.3%), hepatic encephalopathy in 37 patients (31.6%), hepatocellular carcinoma in 36 patients (30.8%), gastrointestinal bleeding in 24 patients (20.5%), spontaneous bacterial peritonitis in 21 patients (17.9%), portal thrombosis in 20 patients (17.9%), hydrothorax in 5 patients (4.3%) and hepato-renal syndrom in 3 patients (2.6%).

Prognosis and Mortality

Different parameters to evaluate Child-Pugh score were available in 66 patients (54.6%). The most frequent Child-Pugh class was C in 32 patients (48.5%) followed by Child-Pugh B and A in 26 patients (39.4%) and 8 patients (12.1%)

respectively. The mean duration of hospitalization was 9 days (extreme 1 and 32 days).

Mortality rate was estimated at 20.5% (24 patients). Death was attributed to hepatic encephalopathy in 19 patients, gastrointestinal bleeding in 3 patients and spontaneous bacterial peritonitis in 2 patients.

Discussion

Liver cirrhosis is an important cause of morbidity and mortality worldwide. With estimated prevalences of 11.2% and 6.5% for hepatitis B and C respectively Cameroon has a heavy burden of disease [10,11]. However, data on prevalence, clinical characteristics and mortality of liver cirrhosis which is one of the most severe complication of chronic viral hepatitis are not available. The aim of this study was to describe the characteristics and mortality associated with liver cirrhosis among admitted patients at the University teaching Hospital between June 2016 and June 2018.

During the study period, 1748 patients were admitted in the internal medicine unit among which 117 had cirrhosis giving a prevalence of 6.7%. This finding is similar to that reported by Bouglouga et al in Togo (7.06%) [12] and lower than reported by Apica et al in Uganda (10%) [13]. The differences could be explained by differences in prevalences of chronic hepatitis B and hepatitis C infection and selection bias associated with retrospective studies. More so the real prevalence is difficult to estimate because most cases of cirrhosis are asymptomatic especially when compensated and diagnosis is mostly made in advanced conditions.

The mean age of our patients was 51 years. This relatively young mean age of patients with cirrhosis in Cameroon is close to that reported by other authors in sub-Saharan Africa [14,15]. However, it is different from the mean age of cirrhotic patients at diagnosis in Singapore [16], Europe [7] and North America [17] where cirrhosis usually occurs a decade later in the majority of cases. This young age in African patients could be explained by early infection with hepatitis B virus in childhood responsible for liver cirrhosis. In fact, more than 90% of hepatitis B infections in Africa are transmitted during the first 5 years of life [18]. Male to female sex ratio was 1.34 in our study population, lower to the 2.12 sex ratio reported by Ouavene [19] in Bangui. The male predominance in our study and others could be explained by the mode of life of most men exposing them to risk factors of chronic liver diseases such as alcoholism and viral infections.

The mean evolution of symptoms before first consultation was 3 weeks. In another study in Benin, Dovonou et al [20] reported a mean duration of up to 4.45 months. Late consultation with disease in advanced stages in the majority of cases is frequent in cirrhotic patients in Africa and this could be explained by financial constraints or use of traditional herbal medicine. The most frequent presenting complaint was asthenia (78.6%), abdominal distension (46.2%), gastro intestinal bleeding (24.8%), abdominal pain (23.9%) while the most frequent clinical signs were ascites (88.9%), hepatomegaly (58.1%), jaundice(52.1%), pedal edema(27.4%). These findings are similar to those reported by Diarra et al [14] in Mali who found ascites (70.2%) and Jaundice (54.4%) as the most frequent signs. Ouavene et al [19] found edema and ascites to be the most frequent complaint (95.5%) and altered general state (95.5%). In a similar study in Sweden, At diagnosis, ascites and variceal bleeding was reported in 43% and in 6% of patients respectively [7]. The high frequency of signs and symptoms reported by different studies in Africa reflects the advanced stage of the disease when patients seek for medical consultation for the first time.

Forty-nine-point six percent of patients has anemia, 47.9% thrombopenia and 54.7% low prothrombine level. Ouavene et al [19] found anemia in 71.5% of patients, thrombopenia in 56% of patients. Esophageal varices and hypertensive gastropathy were found in 90% and 56.7% of the patients who performed an

upper digestive endoscopy. This shows that most patients presented also with biological and endoscopic signs of portal hypertension upon diagnosis.

The most frequent causes of cirrhosis were viral hepatitis B (40.2%), viral hepatitis C (36.8%), alcohol (25.6%), hepatitis B/D co-infection (8.5%). Bossali et al [21] in Congo reported hepatitis B (41%), viral hepatitis C (15.7%) and alcohol (12.6%) as the most frequent causes of cirrhosis. Ouakaa-Kachou et al [22] in Tunisia also reported similar findings with viral hepatitis B (49.1%), viral hepatitis C (18.9%), alcohol (3.6%) being the most frequent causes. Wang et al [4] in China found VHB (77.2%), alcohol (5.7%), VHC (2.8%) as the most frequent causes of cirrhosis. These findings are consistent with that reported in literature which suggests that viral hepatitis are the main cause of cirrhosis in African and Asian countries while alcohol is the most predominant risk factor in western countries followed by chronic hepatitis C [7,23, 24]. The most frequent complications were ascites (92.3%), hepatic encephalopathy (31.6%), hepatocellular carcinoma (30.8%), gastro-intestinal bleeding (20.5%) and spontaneous bacterial peritonitis (17.9%). These results are similar to those reported by Bossali et al [21] who reported ascites (69.4%), hepatocellular carcinoma (26.3%), hepatic encephalopathy (15.7%) as the most frequent complications. Sehonou et al [25] in Benin found ascites (75%), hepatocellular carcinoma (42.3%), hepatic encephalopathy (25%), GIT bleed (21%) as the main complications of cirrhosis. Hepatocellular carcinoma is thus a frequent complication of cirrhosis hence screening every 3 to 6 months is required in patients with cirrhosis.

About half of study population (48.5%) was classified Child-Pugh C, while 39.4% and 12.1% were respectively classified Child-Pugh B and A. In another study in Gabon on patients with decompensated cirrhosis, Bignoumba et al. [15] found that the majority of the patients (58.1%) were at Child-Pugh C score, finding similar to that reported by Ouavene et al [19] in Central Africa Republic with 49.03% of patients classified Child-Pugh C. These results correlate with the advanced stage of the disease at diagnosis in most african patients and probably justify the high mortality observed (20.5%) in our study.

Conclusion

Liver cirrhosis is frequent in our setting, mostly diagnosed on advanced stages with complications. The most common causes are viral hepatitis B and C and alcohol. The mortality rate is high.

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