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Clinical and Paraclinical Profile of Hepatitis B Patients in Northern Cameroon

Profil clinique et paraclinique des sujets porteurs du virus de l'hépatite B dans les régions septentrionales du Cameroun

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ABSTRACT

Introduction. Hepatitis B virus (HBV) infection is a global public health concern with significant morbidity and mortality. This study aims to investigate the epidemiological, clinical, and virological characteristics of HBV-infected patients at the Garoua Regional Hospital in Cameroon. **Methodology.** This cross-sectional study analyzed medical records of patients who visited the hepatology clinic for viral hepatitis B management between June 2019 and August 2022. A structured questionnaire was used to collect clinical, laboratory, and ultrasonographic data. Statistical analyses were performed using SPSS software. **Results.** Out of 1,153 patients, only 266 underwent the necessary laboratory assessments and were included in the study. The median age of the sample was 32 years, with a male-to-female ratio of 2.2. Most patients (95.5%) had a normal clinical examination, while 4.5% exhibited signs of decompensated cirrhosis. The median HBV viral load was 3,521 IU/ml, and 43.3% of patients had a viral load below 2,000 IU/ml. Hepatitis B e antigen (HBeAg) was positive in 11.3% of patients tested, and hepatitis D serology was positive in 4.5%. Abnormal alanine aminotransferase (ALT) levels were observed in 2.44% of patients. Ultrasonographic findings showed cirrhosis without signs of portal hypertension in 3.4% of patients, cirrhosis with portal hypertension in 4.9%, and suspected hepatocellular carcinoma in 1.1%. **Conclusion.** This study highlights the challenges faced by HBV-infected patients in accessing necessary laboratory assessments for their management. The high viral load and predominance of negative HBeAg chronic hepatitis B infection pose a dilemma regarding immediate antiviral treatment initiation or surveillance to prevent decompensated chronic liver disease.

RÉSUMÉ

Introduction. L'infection par le virus de l'hépatite B (VHB) constitue un problème majeur de santé publique à l'échelle mondiale. Cette étude vise à déterminer le profil épidémiologique, clinique et virologique des patients infectés par le VHB consultant à l'hôpital régional de Garoua, au Cameroun. **Méthodologie.** Les données médicales des patients vus en consultation hépatologique pour la prise en charge de l'hépatite B virale entre juin 2019 et août 2022 ont été analysées. Un questionnaire structuré a été utilisé pour recueillir les données cliniques, biologiques et échographiques. Les analyses statistiques ont été réalisées à l'aide du logiciel SPSS. **Résultats.** Sur les 1 153 patients inclus, seuls 266 ont effectué les analyses biologiques nécessaires. L'âge médian de l'échantillon était de 32 ans, avec un ratio homme/femme de 2,2. La majorité des patients (95,5 %) présentaient un examen clinique normal, tandis que 4,5 % présentaient des signes de cirrhose décompensée. La charge virale médiane du VHB était de 3 521 UI/ml, et 43,3 % des patients avaient une charge virale inférieure à 2 000 UI/ml. L'antigène e de l'hépatite B (HBeAg) était positif chez 11,3 % des patients testés, et la sérologie de l'hépatite D était positive chez 4,5 %. Des niveaux anormaux d'alanine aminotransférase (ALAT) ont été observés chez 2,44 % des patients. Les résultats échographiques ont révélé une cirrhose sans signes d'hypertension portale chez 3,4 % des patients, une cirrhose avec hypertension portale chez 4,9 %, et des nodules hépatiques suspects de carcinome hépatocellulaire chez 1,1 %. **Conclusion.** Cette étude met en évidence les difficultés auxquelles sont confrontés les patients infectés par le VHB pour accéder aux analyses biologiques nécessaires à leur prise en charge. La charge virale élevée et la prédominance de l'infection chronique par le VHB avec HBeAg négatif posent un dilemme quant à l'initiation immédiate du traitement antiviral ou à la surveillance pour prévenir la décompensation de la maladie hépatique chronique.

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HIGHLIGHTS OF THE STUDY**What is already known on this topic**

Hepatitis B virus (HBV) infection is a significant global health concern, particularly in high-prevalence regions like Cameroon.

What question this study addressed

The epidemiological, clinical, and virological characteristics of HBV-infected patients at a regional hospital in Cameroon.

What this study adds to our knowledge

A considerable proportion of HBV-infected patients in the region exhibit high viral loads and negative HBeAg status, raising concerns about optimal treatment strategies and long-term disease management.

How this is relevant to clinical practice policy or further research:

These findings highlight the need for improved access to diagnostic tools and antiviral treatment for HBV-infected patients. Additionally, further research is warranted to develop tailored management approaches to prevent disease progression and complications in resource-limited settings.

INTRODUCTION

Hepatitis B virus (HBV) infection is a major public health problem worldwide. According to the World Health Organization (WHO), there were 296 million people living with chronic HBV infection in 2019, with at least 1.5 million newly infected individuals every year and the number of deaths in the year 2019 was estimated at 820 000 worldwide, mainly secondary to cirrhosis or hepatocellular carcinoma (1). In Cameroon, the estimated prevalence of HBV infection is 11.2% in the general population (2) and more than 50 % of hepatocellular carcinoma cases are estimated to be secondary to HBV chronic infection (3). Several associations for the study of liver diseases have issued recommendations on the management of this infection, based particularly on the quantification of HBV viral load (HBV-DNA), the presence or absence of coinfection with hepatitis D virus (HDV), Alanine aminotransferase (ALT) levels and the presence of major fibrosis or cirrhosis (4–6). We therefore decided to carry out this study with the objective to determine the epidemiological, clinical and virological profile of patients infected with HBV who consulted at the Garoua Regional Hospital.

MATERIALS AND METHODS

It was a cross-sectional study based on medical records of patients received in an outpatient hepatology consultation for the management of viral hepatitis B from June 2019 to August 2022. The Garoua Regional Hospital is a secondary health facility in the headquarters of North Region of Cameroon. The hospital has a capacity of 180 bed and includes all the major medical and surgical specialties among which the gastroenterology unit where most patients with liver diseases in the three northern regions of Cameroon (Adamawa, Far-North and North regions with more than 5 million inhabitants) are referred to for management. Patients who had carried out at least

HBV-DNA quantification, hepatitis D serology and abdominal ultrasound were included. A structured pretested questionnaire designed to collect clinical, laboratory and ultrasonographic data was completed for each patient file. Clinical data consisted of socio-demographic characteristics (age, sex, marital status and occupation) as well as symptoms and signs associated with chronic HBV infection (signs of cirrhosis decompensation, particularly ascites, splenomegaly, jaundice and pedal edema). Laboratory data included HBV viral load, hepatitis B e antigen (HBeAg), alanine aminotransferase (ALT) and hepatitis D antibody (HDV-antibody). Ultrasonographic data included liver morphology, signs of portal hypertension namely ascites and splenomegaly, and suspected hepatocellular carcinoma (HCC) features like nodules or masses. Patients having coinfection with HIV or hepatitis C virus (HCV) were excluded from this study because they have specific algorithms of treatment, like the ‘test and treat strategy’.

This study was approved by the Review Board of the Garoua Regional Hospital.

Statistical analyses were done using SPSS® version 26 software (IBM SPSS statistics for Windows, version 26.0. Armonk, NY: IBM Corp). Variables were described as mean (\pm standard deviation) or median (interquartile range) if quantitative or as count (percentage) if categorical. We used the Chi-square test or Fisher’s exact test where necessary for comparison between proportions and student t test to compare means between groups or Man-Whitney test when necessary. The threshold for significance was set at the level of 5%.

RESULTS

During the study period, 1153 patients consulted for viral hepatitis B infection, but due to the financial cost of laboratory analysis, only 266 did the minimum necessary assessment and were included in our sample. The median age (25th-75th percentiles) of our sample was 32 years (27-40) with extremes of 12 and 67 years. The sex ratio (M/F) was 2.2 and 54.8% of the female patients were housewives (see Table I).

Table 1: Demographic data of the study population

Characteristics	Count (n)	Percentage (%)
Gender		
Male	182	68.4
Female	84	31.6
Age groups (years)		
0-19	11	4.1
20-39	190	71.4
≥ 40	65	24.4
Marital status		
Single	92	34.6
Married	168	63.2
Divorced	1	0.4
Widower	5	1.9
Occupation		
Students	38	14.3
Civil servants	68	25.6
Private sector	25	9.4
Self-employed	89	33.5
Housewives	46	17.3

The clinical examination was normal in 254 (95.5%) patients and 12 patients (4.5%) had signs of decompensated cirrhosis at the time of their presentation. HBV-DNA was not detectable in 24 (09%) patients. When detected, the median viral load (25th-75th percentiles) was 3521 IU/ml (291.25-226258.75) with no statistically significant difference related to gender ($p=0.554$). The viral load was below 2000 IU/ml in 105 (43.3%) patients. Out of the 71 patients who tested for HBeAg, 08 (11.3%) had a positive result. HDV serology was positive in 12 patients (4.5%). Among the 164 patients who did liver enzymes tests, 04 (2.44%) presented with an acute cytolysis, the ALT levels ranging from 12.5 ULN (upper limit of the normal) to 55.6 ULN for these patients and 129 (78.7%) had normal ALT (Table II). On imaging, 09 (3.4%) patients had cirrhosis without signs of portal hypertension, 13 (4.9%) patients had cirrhosis with portal hypertension and 3 (1.1%) had cirrhosis with hepatic nodules which are suspected to be a HCC.

Table 2: Virological et biochemical characteristics of the HBV patients of our study

Variables	Count (n)	(%)
ALT (n = 164)		
Normal (N)	129	78.7
N < ALT < 10	31	18.9
> 10 N	4	2.4
HDV serology		
Negative	254	95.5
Positive	12	4.5
HBeAg (N=71)		
Negative	63	88.7
Positive	8	11.3
HBV-DNA (IU/ml)		
Undetectable	24	9
< 2000	105	39.5
≥ 2000	137	51.5
Median HBV-DNA (IU/ml) = 3521		
Male: 3951 Female: 2199 p = 0.554		
HDV: hepatitis D virus; HBV: hepatitis B virus; HBeAg: Hepatitis B e antigen; ALT: alanine aminotransferase		

DISCUSSION

Cameroon is located in an area of high endemicity for hepatitis B virus infection. The three northern regions of Cameroon are regions with moderate to high prevalence of HBV infection, namely Adamawa region with a prevalence of 8 to 15%; Far-North and North regions with a prevalence of more than 15% (7). This may be due to poor access to information, education and care concerning viral hepatitis. Out of 1153 viral hepatitis B patients seen during the study period, only 266 were able to carry out quantification of HBV-DNA and screening for hepatitis D virus. This can be explained by the fact that in these regions where the economic well-being of households is the lowest according to the 2018 Demographic and Health Survey, these laboratory analyses paradoxically cost 1.5 to 2 times more expensive than in the other regions of the country (8). Regarding demographic characteristics, the median age of 32 years found in our study is consistent with data from the Cameroonian and African literature (9–11). This confirms the important role still played by

mother-to-child transmission and early horizontal transmission of hepatitis B virus in our context. But with the introduction of the hepatitis B vaccine in the Expanded Program of Immunization since 2005 in Cameroon, as well as the implementation of the first dose of vaccine at birth as from January 2023, and the improvement of maternal screening during antenatal care, it is expected that the prevalence of hepatitis B will decrease in the general population in the next decades, and particularly in the 20-39 age group which is currently the most affected group. On the clinical aspects, most of patients of our study were asymptomatic and this could also explain, at least partially, the non-performance of virological analyses, the importance of these analyses being not fully understood in this group of our study population. HDV serology was positive in 4.5% of our sample. There is a statistically significant difference ($p = 0.003$) with the prevalence of HDV infection of hepatitis B patients found by Luma et al in an approximately same size sample of patients recruited in Douala (12). We have not found an explanation for this difference in prevalence apart from a disparity in the geographical origin of the participants in these two studies. Moreover, a particularity of our study, more than half of our patients had a viral load ≥ 2000 IU/ml although the ALT level was often normal. In this situation, it is recommended to abstain from HBV treatment and to control the HBV viral load and ALT every three to six months (4), but we are often confronted with patients who, after having carried out expensive laboratory tests, think that they have been "refused" the prescription of antiviral treatment. And some of these patients would no longer come back to consultation or they would come years later with decompensated chronic liver disease.

There were some limitations to this study, notably its retrospective and monocentric nature as well as the inclusion of one out of four patients (266/1153) who consulted for HBV infection. There was also a lack of data on the evaluation of liver fibrosis which would have allowed better patient stratification and better application of the management algorithms for these patients. Despite these limitations, our study is, to our knowledge, the first documented in these northern regions of Cameroon where the prevalence of chronic hepatitis B is the highest in the country.

CONCLUSION

One out of four HBsAg positive patients in our settings were economically able to carry out the minimal laboratory analyses necessary for their suitable management. The HBV-DNA was ≥ 2000 IU/ml in half of our sample, with predominance of negative HBeAg chronic hepatitis B infection. This therefore give rise to a dilemma: should we immediately start antiviral treatment for these patients who are unable to assess fibrosis for financial or technical reasons? Or should virological and biochemical surveillance be started, with the risk of seeing some of these patients later at the stage of decompensated chronic liver disease.

DECLARATIONS

Competing interests: The authors declare that they have no competing interests.

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