

Viral Coinfections C, D and HIV in Patients with Chronic Viral Hepatitis B in Bangui

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ABSTRACT

Introduction: Viral hepatitis B is a major public health problem. The objective of this work was to study the prevalence of viral co-infections C, D and HIV in patients with viral hepatitis B.

Materials and Methods: This was a descriptive cross-sectional study carried out in one phase, from January 1 to December 31, 2023, i.e. a duration of 12 months within the medical analysis laboratory of the Pasteur Institute in Bangui.

Results: We have listed 1049 patients during the study period. The 21-40 age group was the most represented with a number of 496 (47.3%) as well as the male gender 564 (53.8%). HBV and HDV coinfection (22.2%). Among the 158 HBsAg-positive patients screened for HCV, 11 (7%). HBV/HCV/HDV coinfection was found in 0.7% of cases.

Conclusion: The prevalence of hepatitis B is considerable and confirms that our country is part of the area of high endemicity of hepatitis B virus infection.

Keywords

Viral Hepatitis B, Cirrhosis, Co-infection, Pasteur Institute, Bangui.

Introduction

Viral hepatitis B poses a real threat to public health worldwide, especially in Africa, due to its clinical and socioeconomic complications and its frequency. Its chronic form is the leading cause of mortality from liver disease, surpassing infection by the immunodeficiency virus (HIV) and tuberculosis (TB) in terms of morbidity and mortality [1].

Globally, 2.5 billion people are infected with HBV with 0.5-1 million deaths per year, of which 350 to 400 million are chronic carriers of the virus likely to develop HCC or cirrhosis in 15

to 20% of cases [2,3]. Patients with HBV and/or HCV should be diagnosed and can be treated and cured of HCV or have viro-suppression in case of HBV/HBV/HCV/HDV/HIV coinfection should be assessed from the onset of HBs antigen seropositivity. The objective of this study was to study the prevalence of viral C, D, and HIV coinfections in patients with viral hepatitis B referred to the laboratory of the Institut Pasteur in Bangui.

Patients and Methods

This was a descriptive cross-sectional study carried out in one phase, from January 1 to December 31, 2023, i.e. a duration of 12 months in the medical analysis laboratory of the Pasteur Institute of Bangui. Included in this study were all patients referred to the Pasteur Institute of Bangui by doctors from the three university hospitals of the city of Bangui for analyses including the diagnosis

of Hepatitis B. Excluded from the study were all patients received at the laboratory for screening for hepatitis B who did not consent and those who had been screened for hepatitis B and who were not screened for viral hepatitis C, D and HIV.

The variables studied were as follows:

- Sociodemographic data (age, gender, marital status, profession, residence, level of education);
- Biological markers (HBsAg, HBeAg, anti-HBs Ab, total anti-HBc Ab, anti-HBe Ab, HBV viral load, transaminases, blood fibrosis test, prothrombin rate)
- Coinfections with HIV, HDV and HCV. Serological tests Serological markers were measured using the ELISA (Enzyme Linked Immuno-Sorbent Assay) method, which is an immunoenzymatic method.
- ELISA on plate (HBsAg, anti-HBs Ab, anti-HBc IgM Ab)
- Automated ELISA on Vidas (HBeAg, anti-HBe Ac, total anti-HBc Ac) The dosage of these different markers was carried out according to the algorithm in force at the Pasteur Institute of Bangui, below.
- HBV viral load was quantified using Gene Xpert, a real-time PCR (Polymerase Chain Reaction) test. Its detection threshold is 10 copies/ml of plasma or serum. HCV antibodies were measured using a Vidas machine; HIV serology was performed using ELISA.

Data Analysis

The sociodemographic data and analysis results reported on the survey forms were entered into Excel and analyzed using Epi info software (version 6.0).

Ethical Considerations

The study was conducted with strict confidentiality. The survey forms were designed anonymously.

Results

We collected 1049 patients during the study period. The characteristics of the study population are presented in the table below.

Hepatitis B and hepatitis D (HBV/HDV) coinfection

HDV serology was performed in 427 patients with hepatitis B, of whom 95 (22.2%) had anti-HDV antibodies, thus presenting HBV and HDV co-infection.

Coinfection HBV and HCV

Among the 158 HBsAg-positive patients screened for HCV, 11 (7%) had anti-HCV antibodies, thus presenting HBV and HCV co-infection.

HBV/HIV coinfection

There were 161 HBsAg positive patients for whom HIV serologies were performed. Among these patients, 20 (12.4%) were HIV positive, thus presenting HBV and HIV co-infection.

Table 1: Distribution of the study population according to their sociodemographic characteristics.

Features	Effective	Percentage
Age groups		
[0-20]	88	8.5
[21-40]	496	47.3
[41-60]	381	36.2
≥ 61]	84	8
Sex		
Male	564	53.8
Female	485	46.2
Marital status		
Singles	569	54.2
Married	415	39.6
Widowers	65	6.2
Occupation		
Self-employed	441	42.1
Employees	608	57.9
Level of study		
Unschool	49	4.7
Schooled	1000	95.3

The 21-40 age group was the most represented with a workforce of 496 (47.3%) and the male gender 564 (53.8%). Single people were the majority with 54.2% of the workforce. Employees and students were the most represented with 57.9% and 95.3% of the workforce respectively.

Coinfection HBV/HDV and HCV

Among the 445 patients with positive HBs antigen, 3 patients had HBV/HCV/HDV coinfection, a frequency of 0.7%.

Discussion

HIV/HBV/HCV coinfections should be assessed early in the management of patients infected with human immunodeficiency virus (HIV), due to the major therapeutic and prognostic implications for the liver.

During the study, only 427 anti-HDV antibody (anti-HDV Ab) assays were performed on 445 patients with HBsAg. This was due to a delay in delivery of reagents for anti-HDV antibody testing during the study. Thus, co-infection was found in 22.2% of cases in this study. This frequency is close to that reported by Ndam et al. which was 24.6% [4].

HBV/HCV

The frequency of HBV/HCV coinfection is 7%. This is higher than that reported by Pamatika et al. which is 3.1% in 2022 [5]. It is also superior to those observed by Ndam et al. which is 2.6% in Cameroon [4], Katilé et al. which is from 1.3% in Mali [6].

HBV/HIV

The prevalence of HBV/HIV coinfection is 12.4%. This is higher than that observed by Packo et al. in 2022 among blood donors in Bangui, which is 6.47% [7]. It is also higher than that reported by Ndam et al. in Cameroon which is 1.6% [8], but significantly

lower than those encountered by Camengo et al. which was 36.6% in 2020 in Bangui [9], Toumin et al. with a prevalence 21.6% in Guinea [10]. Nambéi et al. as for them have emphasized that the presence of HBV/HIV co-infection is commonly encountered in blood donors [11].

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