

# Evaluation of Viral Hepatitis B Treatment in Pointe-Noire in 2016

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## Abstract

Prevalence of hepatitis B in Pointe-Noire is 23%. The objective of this study was to evaluate the level of therapeutic management of patients with hepatitis B in Pointe-Noire. **Methods:** A retrospective, cross-sectional, descriptive and analytical study. **Results:** 302 patients included: 217 (72%) men and 85 (28%) women of median age 40 years. The viral load was measured in 140 (46%) patients and in 162 (54%), the viral load was not measured. Their distribution according to the viremia was as follows: 0 - 1 log = 1 (0.7%) patients; 1.5 to 2 log = 23 (16%) patients; 2.5 to 3 log = 49 (35%) patients; >3log = 55 (39%) patients. Of the 302 patients included, 36 (11%) patients were treated with antivirals and 253 (83%) patients were not. **Conclusion:** The number of patients treated for chronic viral hepatitis B was low. Our results show interest for improved preventive and curative management of hepatitis B in Congo in order to reduce the existing high prevalence.

## Keywords

Access, Congo, Hepatitis B, Pointe-Noire, Treatment

## 1. Introduction

According the WHO [1], 325 million people worldwide were living with chronic hepatitis B virus (HBV) or hepatitis C virus (HCV) infection in 2017. Africa is the second most WHO region affected by Hepatitis B with 60 million cases (6.1% of the population) after WHO Western Pacific Region: 6.2% of population (115 million cases). The large majority of these people lack access to life-saving testing and treatment. Just 9% of all HBV infections were diagnosed in 2015.

Only 8% of those diagnosed with HBV infection received treatment. As a result, millions of people are at risk of a slow progression to chronic liver disease, cancer, and death. Viral hepatitis caused 1.34 million deaths in 2015. The prevalence of hepatitis B in developed countries is estimated between 0.1% and 5% [2] [3] [4] [5]. In Sub-Saharan Africa, several studies estimated between 10% and 15% a sero-prevalence of hepatitis B virus surface antigen (HBsAg) [6] [7] [8] [9] [10].

In Congo-Brazzaville, this sero-prevalence was estimated between 9% and 11.6% [11] [12] [13]. However, antiviral treatment of chronic viral hepatitis B in Congo-Brazzaville has not yet become a standard practice among hepatogastroenterologists and infectiologists due to the unavailability of drugs, high cost and poor status of patients. However, access to treatment for patients has not been evaluated.

In this context, we conducted this hospital study in Pointe Noire designed to describe the healthcare path of viral hepatitis patients in Congo, identify the shortcomings in the care offered to hepatitis B patients and difficulties that patients encounter for access to treatment, in order to improve the supply of care in Congo.

## **2. Material and Methods**

### **2.1. Study Design and Period**

We performed retrospective, monocentric, cross-sectional, descriptive and analytical study in 2016, which included patients monitored in the hepatogastroenterology department of Loandjili General Hospital in Pointe-Noire, between 2003 and 2016.

### **2.2. Criteria for Inclusion**

Were Included in study:

- 1) Patients of both sexes and all ages, with the AgHBS detected by the ELISA method,
- 2) With hepatitis B viral load measurement and,
- 3) Having an ultrasound exploration before treatment and during follow-up.

### **2.3. Criteria for Non-Inclusion**

Only, patients with acute viral hepatitis B were not included.

### **2.4. Study Variables**

Study variables included socio-demographic characteristics, eating behaviour and clinical data, source of health care funding. Data collection was conducted by a single investigator using a medical record review grid pre-tested.

Variables retained for the analyses were following:

- 1) Sociodemographic characteristics: age (year) and sex.
- 2) Eating behavior: consumption of alcohol, tobacco or drugs.
- 3) Clinical data: Co-morbidities (viral co-infections and chronic non communi-

cable diseases), stage of fibrosis evaluated by the Fibrotest-Actitest method expressed in five stages of the METAVIR score: stage 0 = absence of fibrosis (F0); stage 1 = early fibrosis (F1); stage 2 = moderate fibrosis (F2); stage 3 = severe fibrosis (F3) and stage 4 = cirrhosis (F4), circumstances of disease-detection (screening, blood donation or symptoms) and viral load expressed in logarithm (log).

4) Source of health care funding: health insurance, employer support, personal funds, parents, mutual aid and church.

## 2.5. Sampling

We performed an exhaustive study including medical records that met the eligibility criteria. Thus, the size of our sample was not known in advance.

## 2.6. Statistical Analysis

Descriptive statistics were used to determine study population characteristics. Patients were classified by sex. Group comparisons used Pearson Chi-2 or Fisher's exact tests. The p-value was 0.05 for statistical significance. Statistical analyses were performed using SPSS v15 (SPSS, Inc., Chicago, Illinois, USA) software.

## 2.7. Ethical Considerations and Conflicts of Interest

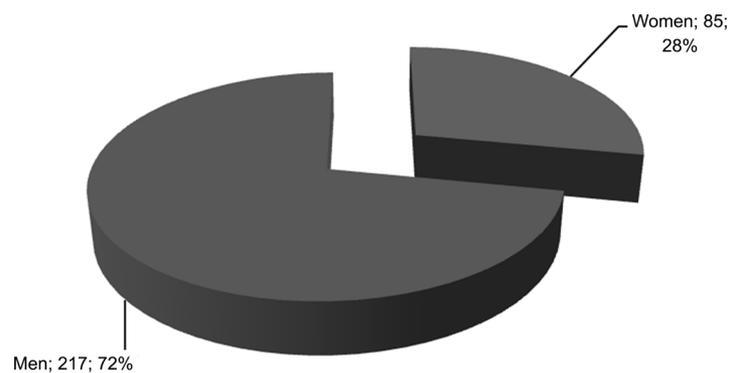
The study protocol was approved by the departmental committee of ethics in biomedical research. The authors have no conflicts of interest.

## 3. Results

A total of 302 patients from our active file of viral hepatitis B were included; 217 (72%) men and 85 (28%) women with median age 40 years old (**Figure 1**). According to their lifestyle; we found alcohol consumption in 114 (38%) patients; tobacco consumption in 3 (1%) patients; dual alcohol + tobacco consumption in 23 (8%) patients; and 162 (54%) patients did not consume alcohol or tobacco and no cases of drug use were found. For all these variables, there was no difference by sex ( $p = 0.034$ ). Search for comorbidities found: 9 (3%) patients with high blood pressure (HBP), 3 (1%) patients with diabetes mellitus, 4 (1.5%) patients co-infected with the human immunodeficiency virus (HIV); 3 (1%) patients co-infected with hepatitis C virus (HCV), 2 (1%) hypertensive and diabetic patients. Among the remaining 274 (90%) patients, pathologies associated with chronic viral hepatitis B were not found. The analysis by sex did not show a significant difference according to comorbidities ( $p = 0.483$ ). For a significant number of patients (79%), the probable mode of contamination was unknown. There was a significant difference between men and women (59% versus 20%;  $p = 0.005$ ). Details about probable mode of contamination are shown in **Table 1**. The context in which the patient status of viral hepatitis B was established was: screening 173 (57%) patients, blood donation 7 (2%), clinical symptoms 40 (13%) and unknown context 82 (27%). For 46% patients, viral load count was available before treatment initiation. For the remaining 54% viral load was unknown.

**Table 1.** Distribution of patients by hepatitis B contamination mode in Pointe-Noire, 2016.

Mode of hepatitis B contamination	Men n (%)	Women n (%)	Total n (%)
Surgical operation	36 (12)	22 (7)	58 (19)
Tattoo	1 (0)	0 (0)	1 (0)
Blood transfusion	1 (0)	1 (0)	2 (1)
Tooth extraction	1 (0)	0 (0)	1 (0)
Surgical operation + blood transfusion	0 (0)	2 (1)	2 (1)
Unknown	178 (59)	60 (20)	239 (79)
Total	217 (72)	85 (28)	302 (100)

**Figure 1.** Distribution of patients with hepatitis B by sex in Pointe-Noire, 2016 (N = 302).

Details of hepatitis B deoxyribonucleic acid (DNA) level are shown in **Table 2**. Among patients with chronic hepatitis B, only 16% patients had accessed to antiviral treatment. The treatment received by patients were: Pegylated interferon alone in 6 (2%) patients, Tenofovir alone in 35 (11.5%) patients and Tenofovir + other antivirals 5 (1.5%) patients. Financing of care was provided by: health insurance for 11 (3.6%) patients, employer for 4 (1.3%) patients, personal funds for 11 (3.6%) patients, parents for 2 (0.6%) patients. Source of funding was not specified for 21 (6.9%) patients.

Mean follow-up time for treated patients was 4 years. Quantitative HBS antigen, anti-HBS B viral DNA and anti-HBe antibodies were assessed every 6 months. We observed that the viral load was negative after 8 months for all treated patients. However, quantitative HBS antigen remained positive for all patients and any anti-HBS seroconversion was not observed. Patients did not showed signs of complications during ultrasound monitoring every 6 months.

#### 4. Discussion

Chronic viral hepatitis B remains a major public health problem, particularly in Sub-saharan African countries. There are two therapeutic classes which efficacy against chronic viral hepatitis B have been validated [1] [2]:

**Table 2.** distribution of patients by level of hepatitis B deoxyribonucleic acid (DNA) at antiviral hepatitis B treatment initiation in Pointe-Noire, 2016.

Viral load (log)	n	%
0 - 1	1	0.7
1.5 - 2	23	16.0
2.5 - 3	49	35.0
>3	55	39.0
Total	140	100.0

**1) Immunomodulators** with standard interferon currently replaced by pegylated interferon. It is recommended as monotherapy in chronic hepatitis B with HBe positive antigen and/or bi-therapy with lamivudine for HBe antigen negative chronic hepatitis patients if viral load is greater than or equal to 2000 copies or 3 log. The dosage is subcutaneous injection of 180 µg pegylated interferon  $\alpha 2A$  or  $\alpha 2B$  weekly over 48 weeks or 12 months. The objective of the treatment is the negativation of the viral load with loss of HBsAg and anti-HBe and anti-HBs seroconversion obtained at about 30% according to the studies.

**2) Direct antivirals (analogues)** included two groups: nucleoside inhibitors including lamivudine, telbuvudine, emtricitabine, and nucleotide inhibitors including adefovir diproxil, entecavir and tenofovir used in monotherapy in chronic viral hepatitis B patients. The threshold of viral load used to start treatment according to international guidelines is 2000 copies and more than 3log in a young person without fibrosis, comorbidities and other factors that can accelerate the progression to complications. For each drug, dosage for daily is: tenofovir 300 mg; entecavir 0.5 mg; telbuvudine 600 mg; adefovir diproxil 10 mg and lamivudine 100 mg. According scientific evidences, only two molecules are currently used for first-line treatment of chronic hepatitis B: tenofovir 300 mg and entecavir 0.5 mg. The duration of treatment with tenofovir or entecavir is indefinite: the objective of treatment is the negativation of viral DNA load and quantitative HBsAg with anti HBe and anti-HBs seroconversion [2] [14]. However, despite marketing for more than 10 years drugs against chronic hepatitis B (pegylated interferon, nucleoside and nucleotide analogues), many African countries, including Congo, still lack of real programs against viral hepatitis. That can explain a high prevalence and the low rate of access to treatment. Indeed, only 46% of our patients had accessed to confirmation test in CERBA laboratory (Paris) due to the non-availability of technical equipment in Congo. In our study, only 16% of patients have received antiviral treatment for hepatitis B. Several factors can explain this low rate of access to treatment in our context: 1) lack of a national program against viral hepatitis, 2) high cost of blood analysis (492.30 Euros in Paris), 3) lack of drugs in Congo, 4) lack of universal health insurance in Congo that expose patients to catastrophic health costs and 5) lack of therapeutic education of viral hepatitis patients.

Previous studies conducted in African context have reported similar results to our study and the WHO estimates the rate of access to antiviral hepatitis B treatment in developing at 8% [1]. Despite our results, some study limitations need to be recognized. Design of our study (retrospective) limits the choice of variables that were analyzed in our study. Indeed, that restricts the in-depth analysis of factors that influencing non access to treatment among our patients. Prospective cohort study would have been better adapted to assess our patients' recovery time and especially the factors that lead to patients not having access to treatment [14].

## 5. Conclusion

The number of patients treated for chronic viral hepatitis B in Pointe-Noire was low. Our results show interest for improved preventive and curative management of hepatitis B in Congo in order to reduce the existing high prevalence.

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