

Renal Failure and Viral Hepatitis B: Epidemiological, Clinical, Biological and Evolutionary Aspects in the Internal Medicine Department of Donka National Hospital

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How to cite this paper: Bah, M.L.Y., Wann, T.A., Conte, M.L., Diallo, M.S., Diallo, K., Kante, M.A., Sylla, D. and Balde, M.S. (2025) Renal Failure and Viral Hepatitis B: Epidemiological, Clinical, Biological and Evolutionary Aspects in the Internal Medicine Department of Donka National Hospital. *Open Journal of Internal Medicine*, 15, 26-33. <https://doi.org/10.4236/ojim.2025.151004>

Received: December 6, 2024

Accepted: February 4, 2025

Published: February 7, 2025

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Abstract

Introduction: The aim of this study was to investigate renal failure associated with viral hepatitis B in the internal medicine department of Donka National Hospital. **Material and Methods:** This was a retrospective, descriptive study from January 1 to September 30, 2023, covering the files of renal failure patients carrying the hepatitis B virus hospitalized in the department during the study period. **Results:** Twenty-five cases of viral hepatitis B were collected from a total of 92 patients with renal failure, representing a frequency of 21.7%. The mean age was 44 years \pm 16.54 with a male predominance. The most frequently found reason for consultation was abdominal distension (72%). The mean evolution of the signs was 37.68 days \pm 39.82. The taking of decoction was the most frequently found antecedent (28%). The physical signs were dominated by dullness of the flanks (64%). Among our patients, 8 (32%) had oliguria. The majority (48%) had a creatinine clearance between 30 and 59 ml/min/1.73m² with a mean clearance of 33.11 ml/min/1.73m² \pm 16.98. The mean hemoglobin level was 11.09 g/dl \pm 2.02. Acute renal failure was the most common (88%). The most common etiology was decompensated cirrhosis (88%). The etiologies of cirrhosis were dominated by HBV (80%). Ten of our patients (40%) had died. **Conclusion:** Hepatitis B virus infection was frequently associated with renal failure in our study. The majority of patients had acute renal failure. Decompensated cirrhosis was identified as the most frequently associated factor with impaired renal function.

Keywords

Kidney Failure, Hepatitis B, Donka Hospital

1. Introduction

Hepatitis B virus (HBV) is ubiquitous, present worldwide and responsible for one million deaths per year. It is the second leading cause of cancer death after tobacco [1].

Chronic viral hepatitis represents a major public health problem earlier linked to hepatitis B in so-called developing countries, but not exclusively [2].

In addition to purely hepatic manifestations (hepatitis, cirrhosis, hepatocarcinoma), there are extrahepatic manifestations whose prevalence is estimated at 10% - 20% for HBV, which can however be at the forefront clinically and are associated with significant morbidity and mortality [3].

Patients infected with the hepatitis B virus have a systemic infection. This virus is found in the bloodstream, colonizes several sites, multiplies and persists in the body for years. This presence leads to an immunological response that is more or less significant depending on the individual and is responsible for renal damage [4].

The impaired renal function observed in chronic hepatitis B can be life-threatening if left undiagnosed and untreated. However, it is difficult to identify vulnerable patients who may have renal dysfunction because the relationship between hepatitis B virus (HBV) and the kidneys is complex [5].

The presence of immunological mechanisms involving viral antigens and specific anti-HBV antibodies would be responsible for several extra-hepatic manifestations, including HBV glomerulonephritis (HBV-GN) and polyarteritis nodosa (PAN) which are the most characteristic and likely to induce renal lesions [6]. This renal lesion most often manifests as Fanconi syndrome with acute renal failure and distal tubular involvement in the form of nephrogenic diabetes insipidus [7].

This study aimed to investigate renal failure associated with viral hepatitis B in the internal medicine department of Donka National Hospital.

2. Material and Methods

This was a retrospective, descriptive study over a 9-month period from January 1 to September 30, 2023.

Selection criteria:

- Inclusion criteria: The records of all patients with renal failure who were carriers of the hepatitis B virus hospitalized in the department during the study period were included.
- Exclusion criteria: Files of patients with renal failure who were not carriers of the hepatitis B virus were excluded from this study.

Renal failure was defined as an increase in serum creatinine greater than or equal to 25 $\mu\text{mol/l}$ compared to its normal value (126 $\mu\text{mol/l}$).

Acute renal failure was defined as an increase in serum creatinine greater than or equal to 126 $\mu\text{mol/l}$ with a return to baseline.

Chronic renal failure was defined by an elevation of serum creatinine greater than or equal to 126 $\mu\text{mol/l}$ compared to its baseline value associated with a decrease in kidney size, cortico-medullary dedifferentiation, hypocalcemia and normocytic normochromic anemia.

Hepatitis B virus infection was confirmed in our patients based on positive HBsAg serology (ELISA method).

Cirrhosis was defined by a more or less enlarged liver with more or less deformed contours with ultrasound abnormalities of the parenchyma suggesting cirrhosis.

The types of decoctions identified during the questioning of our patients were composed of the leaves of plants and the roots of trees.

The data were collected by KoboCollect from a pre-established survey form, including epidemiological, clinical-biological and evolutionary data and then analyzed using SPSS 20.0 software.

The results are expressed in absolute value and percentage for qualitative variables, in mean, standard deviation and extreme values for quantitative variables.

The information was collected anonymously and used for purely scientific purposes.

3. Results

During the study period, 25 cases of viral hepatitis B were collected from a total of 92 patients with renal failure, *i.e.* a frequency of 21.7%.

The most represented age group was 41 - 50 years, or 28%. The average age was 44 years \pm 16.54 with extremes of 17 - 78 years.

There was a male predominance, *i.e.* 18 cases (72%) with a sex ratio (M/F) of 2.57.

Merchants/traders were the most encountered profession, *i.e.* 7 cases (28%), followed by housewives and pupils/students, *i.e.* 5 cases (20%) and 4 cases (16%) respectively.

The majority (84%) of patients came from the capital Conakry.

According to marital status, monogamous people were most frequently affected (60%) followed by single people (20%).

The most common reason for consultation was abdominal distension in 18 cases (72%), followed by jaundice and lower limb edema in 15 (60%) and 13 cases (52%) respectively.

The mean evolution of signs was 37.68 days \pm 39.82 with extremes of 10 - 150 days.

Among the medical history, taking decoction was the most common history found in 7 cases (28%) followed by hepatitis B which was present in 6 patients (24%) and

hypertension found in 4 patients (16%).

The mean systolic blood pressure was $115.76 \text{ mmHg} \pm 17.47$ with a range of 80 - 164 mmHg. The mean diastolic blood pressure was $74.40 \text{ mmHg} \pm 16.06$ with a range of 40 - 121 mmHg.

Physical signs were dominated by flank dullness 16 cases (64%) followed by positive flow sign 13 cases (52%) and jaundice 12 cases (48%).

Among our patients, 8 (32%) had oliguria and 3 (12%) had anuria.

Twenty-three of our patients (92%) had a serum creatinine level between 130 and $500 \mu\text{mol/l}$.

The majority (48%) had a creatinine clearance between 30 and $59 \text{ ml/min/1.73m}^2$ with a mean clearance of $33.11 \text{ ml/min/1.73m}^2 \pm 16.98$ and extremes of 4.5 - $67.34 \text{ ml/min/1.73m}^2$.

The mean hemoglobin level was $11.09 \text{ g/dl} \pm 2.02$ with extremes of 7.5 - 15 g/dl.

The most frequently encountered comorbidities were: liver cirrhosis (64%), hypertension (16%), hepatocellular carcinoma (16%), diabetes (8%), stroke (4%), and pulmonary tuberculosis (4%).

Ten of our patients (40%) had died compared to 9 patients (36%) who had left improved.

4. Discussion

During the study period, 25 cases of viral hepatitis B were collected from a total of 92 patients with renal failure, representing a frequency of 21.7%.

Séhonou *et al.* [8] found in 2018 a prevalence of 39% of cases of renal failure associated with HBV infection.

Yattara *et al.* [9] found in their study on chronic renal failure patients on hemodialysis that viral hepatitis B serology was positive in 10% of cases.

Moussa *et al.* [10] found in their study that hepatitis B represented 45.0% of cases.

The mean age was 44 years ± 16.54 with extremes of 17 - 78 years. There was a male predominance with a sex ratio of 2.57.

Our result is close to that of Séhonou *et al.* [8], who reported in their study a mean age of 42 ± 11 years with extremes [18 - 74] years and a male predominance with a sex ratio of 2.88.

The relatively young age of onset of hepatitis B in these different studies could probably be explained by the high frequency of contamination of this virus from a young age in African environments.

The most common reason for consultation was abdominal distension in 18 cases (72%), followed by jaundice and lower limb edema in 15 (60%) and 13 cases (52%) respectively.

Among the medical history, taking decoction was the most common history found in 7 cases (28%) followed by hepatitis B, which was present in 6 patients (24%) and hypertension found in 4 patients (16%).

On the other hand, Séhonou *et al.* [8] reported in their series that HTA was

significantly associated with the decline in renal function.

Shin *et al.* [11] had made the same observation. Arterial hypertension, even mild to moderate, is a risk factor for chronic renal failure, with a higher incidence in black subjects [12].

Physical signs were dominated by flank dullness 16 cases (64%) followed by positive flow sign 13 cases (52%) and jaundice 12 cases (48%).

Among our patients, 8 (32%) had oliguria and 3 (12%) had anuria.

Twenty-three of our patients (92%) had a serum creatinine level between 130 and 500 $\mu\text{mol/l}$.

The majority (48%) had a creatinine clearance between 30 and 59 ml/min/1.73m² with a mean clearance of 33.11 ml/min/1.73m² \pm 16.98 and extremes of 4.5 - 67.34 ml/min/1.73m².

Séhonou *et al.* [8] had reported that of the 105 patients in their study population, 41 had a GFR below 90 ml/min/1.73m² with a majority (34.2%) having a GFR between 60 and 90 ml/min/1.73m².

Vinclair [13] found in her study that the GFR was on average 51.2 ml/min/1.73m² at the start and 76.7 ml/min/1.73m² on average at the measurement prior to the event.

Acute renal failure was the most common type of renal failure encountered in our study with 22 cases or 88% (Figure 1).

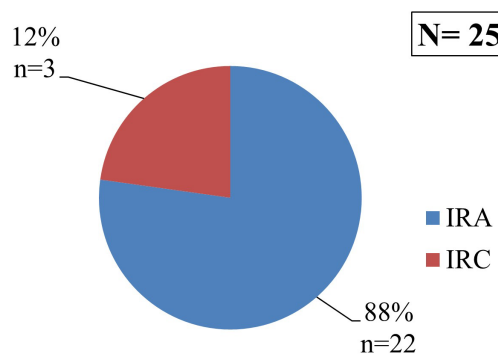


Figure 1. Distribution of patients according to type of renal failure.

On the other hand, Vinclair [13] reported in her study 60% of cases of chronic renal failure.

Moussa *et al.* [10] reported in their study 53% of cases of renal failure, including 16% of terminal renal failure, 11% of severe renal failure and 26% of moderate renal failure.

Decompensated cirrhosis was the most frequently encountered etiology during our study, *i.e.* 22 cases (88%) (Table 1).

This could be explained by the fact that cirrhosis is the most frequently encountered complication during hepatitis B virus infection.

This considerable frequency of renal involvement could be explained either by hypoperfusion of the renal parenchyma, which can induce acute ischemic tubular

necrosis or is often associated with hepatorenal syndrome in the late stage of liver disease [10].

Table 1. Distribution of patients according to the etiologies of renal failure.

Etiologies	Workforce	Percentage (%)
Decompensated cirrhosis (hepatorenal syndrome)	22	88
Dehydration	4	16
Vascular nephropathy	4	16
Severe malaria	1	4
Hemorrhagic shock	1	4
Interstitial nephropathy	1	4

Decompensated cirrhosis was the most frequently found factor associated with renal failure (**Table 2**).

Table 2. Distribution of patients according to factors associated with renal failure.

Associated factors	Workforce	Percentage (%)
HTA	3	12
Decompensated cirrhosis	21	84
Type 2 diabetes	1	4
Tenofovir treatment	1	4
Decoction	1	4
Digestive hemorrhage	1	4

Table 3. Distribution of patients according to the etiologies of cirrhosis.

Signs	Workforce (N = 25)	Percentage (%)
Viral hepatitis B	20	80
Viral hepatitis C	3	12
Alcohol	1	4
Toxic (decoction)	1	4
Total	25	100

Table 4. Distribution of patients according to treatment.

Treatment	Workforce	Percentage (%)
Rehydration	18	72
Analgesic	12	48
Lactulose	8	32
Others	7	28
Tenofovir	6	24

Others: antihypertensive (16%), antidiabetic (8%), antituberculosis (4%).

Viral hepatitis B was the most frequently encountered etiology of cirrhosis during our study, *i.e.* 20 cases (80%) (**Table 3**).

Moussa *et al.* [10] reported in their study that post-hepatitis B cirrhosis was more represented with a frequency of 45.0%.

The majority (72%) of our patients had benefited from rehydration treatment (**Table 4**).

Ten of our patients (40%) had died compared to 9 patients (36%) who had left improved.

5. Conclusion

Hepatitis B virus infection was frequently associated with renal failure in our study. The majority of patients had acute renal failure. Decompensated cirrhosis was identified as a factor associated with impaired renal function.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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