

Financial cost of the management of patients infected with hepatitis B virus treated by tenofovir in togo

Abstract

Aim: To evaluate the financial cost of the management of chronic viral hepatitis B virus treated with Tenofovir and its impact on management.

Patients and method: Prospective, descriptive and analytical study conducted over a period of 29 months in outpatient department in the Hepato-gastroenterology department of the University Hospital Campus of Lome (Togo). Patients with chronic viral hepatitis B under Tenofovir were included after at least one year of follow-up. The parameters studied were the average cost before Tenofovir, the average cost under Tenofovir and the overall average cost.

Results: During the study period, 823 patients consulted for chronic viral hepatitis B among which 396 patients (48.1%) were able to carry out the pre-therapeutic check-up; only 102 patients (12.4%) were put on Tenofovir (19 uninsured patients, 57 patients with official health insurance and 26 patients with private health insurance). The average duration of taking Tenofovir was 13.9 months (Extremes: 5 to 16 months). The cost of taking Tenofovir was evaluated at 111592.1 FCFA (€170.1) for uninsured patients, 118684.2 FCFA (€181) for patients with official health insurance and 95573.1 FCFA (€145.7) for patients with private insurance. The overall average cost was 328855.4FCFA (€501.3) for uninsured patients; 327471.9FCFA (€499.1) for patients with official health insurance and 172433.9 FCFA (€261.6) for patients with private insurance.

Conclusion: The management of chronic viral hepatitis B treated with Tenofovir in Togo is relatively expensive.

Keywords: Cost, viral hepatitis B, tenofovir, health insurance, togo, hepatocarcinoma

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Lawson-Ananissoh Laté Mawuli,¹ Bouglouga Oumboma,² Bagny Aklesso,¹ El-Hadji Yakoubou Rafiou,¹ Redah Datouda¹

¹Department of Hepatology and Gastroenterology of Lomé Campus Teaching Hospital, Togo

²Department of Hepatology and Gastroenterology of Kara Teaching Hospital, Togo

Correspondence: Lawson-Ananissoh Laté Mawuli, Department of Hepatology and Gastroenterology of Lomé Campus Teaching Hospital, Togo, Tel 00228 90162651, Email lawsonprasper@yahoo.fr

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Abbreviations: VHB, viral hepatitis B; INAM, national institute of health insurance

Introduction

Viral hepatitis B (VHB) is a real public health problem with nearly 2 billion infected individuals and 360 million chronic carriers worldwide.¹ Sub-Saharan Africa is a highly endemic area for the hepatitis B virus (HBV), with an estimated prevalence of 8% in West Africa and 5 to 7% in Central, Eastern and Southern Africa.²⁻⁴ In Togo, the prevalence of VHB is differently appreciated by the authors.⁴⁻⁷ Viral hepatitis B is responsible for the majority of cirrhosis and hepatocarcinoma (HCC) in the world and in Togo in particular where 22% of HCCs are due to HBV.^{8,9} Despite a very high morbidity, viral hepatitis B remains a forgotten disease.² In 2011, the «Dakar Appeal» emphasized the seriousness and magnitude of the public health problem posed by viral hepatitis on the African continent.¹⁰ Few countries in Sub-Saharan Africa have a national program to fight viral hepatitis.^{2,10} Added to this situation are the financial difficulties faced by patients infected with hepatitis B virus for support In Togo, several studies have been conducted on viral hepatitis B, but none of them have reported on the financial aspects of the management of the disease.^{4-7,11} this study was therefore conducted to estimate the financial cost of the management of chronic viral hepatitis B treated with tenofovir (TDF) and to increase its impact on management.

Patients and method

We conducted a prospective, descriptive and analytical study

covering a period of 29 months (January 1st, 2015 to May 31st, 2017). The study was conducted in the Hepato-gastroenterology department of the CHU (Lomé University Hospital: Togo). Included were patients with chronic viral hepatitis B followed by outpatients and placed on TDF after a follow-up of at least one year. Our study population consisted of uninsured patients, patients with health Insurance from INAM (National Institute of Health Insurance) and patients with private health Insurance. Complementary examinations carried out during the follow-up before and after TDF are shown in Table 1. INAM is the organization responsible for administering the compulsory health insurance scheme for public organizations workers; it covers between 80% and 100% of the patient's expenses. INAM, unlike private insurance, does not cover the cost of tenofovir, as well as certain tests carried out as part of the management of VHB (viral load B, Fibrotest, Anti-HBe). The parameters studied were the average cost before TDF, the average cost under TDF, the overall average cost of the management of chronic viral hepatitis B. For the uninsured patient, the cost estimate took into account the expenses incurred by the patient himself; for the patient with an insurance (private or INAM), the cost evaluation took into account the part of the expenses paid by the patient after the partial coverage of the expenses by the insurance (private or INAM). The average cost before putting on TDF was the sum of biochemical, biological, immunological, virological and radiological examinations fees and examinations to evaluate fibrosis before putting on TDF. The average cost under TDF was the sum of the biochemical, biological and virological examination fees and the examinations to evaluate the fibrosis, under treatment by TDF associated with the cost of the TDF. The overall average cost was

the sum of the average cost before TDF and the average cost under TDF. The overall average cost was calculated for uninsured patients, patients with INAM insurance and patients with private insurance (fees paid by the patient himself after partial coverage by insurance (insured patient) or non-coverage by insurance (uninsured patient)). The data were processed using the R software (Table 1).

Table 1 Additional examinations carried out for the care

	Additional examinations
Examinations to evaluate fibrosis	AST, Complete blood count, Fibrotest
Biochemical examinations	AST,ALT, glycemia, urea, creatinine, phosphoremia
Biological examinations	Complete blood count, prothrombin rate, protein electrophoresis,Alphafetoprotein, Fibrotest
Immunological examinations	HBsAg, HbeAg, Anti-Hbe, Anti-HBc, HIV retroviral serology, serology of hepatitis C
Virological examinations	Viral load B
Radiological examinations	Abdominal ultrasound

Results

During the study period, 823 patients consulted for chronic viral hepatitis B among which 396 patients (48.1%) were able to perform the pre-therapeutic assessment; only 102 patients out of 396 (25.8%) were put on Tenofovir (19 uninsured patients, 57 patients with official health insurance and 26 patients with private health insurance); there were 72 men and 30 women. The average age was 35.6 years (Extremes: 18 to 59 years). The duration of follow-up of patients before been put on TDF ranged from 13 to 24 months and the mean duration of TDF intake was 13.9 months (Extremes: 5 to 16 months). The estimation to evaluate fibrosis before been put on TDF was 21131.6 FCFA (€32.2) in uninsured patients Table 2, 24029.5 FCFA (€36.6) in patients with health insurance INAM and 10907.7 FCFA (€16.6) among patients with private insurance (Table 2).

The cost of taking TDF was estimated at 111592,1 FCFA (€170,1) for uninsured patients, 118,684.2 FCFA (€181) for patients with health insurance INAM and 95,573.1 FCFA (€145.7) for patients with private insurance. The overall average cost was 328855.4 FCFA (€501.3) for uninsured patients; 327,471.9 FCFA (€499,1) for the patients having an official health insurance and 172433,9 FCFA (€261,6) for the patients having a private insurance (Table 3).

Table 2 Average cost* of the additional examinations and the treatment by Tenofovir in insured and uninsured patients

	Before putting on Tenofovir		Under Tenofovir	
	FCFA	€	FCFA	€
Uninsured patients				
Biochemical examinations	22526,3	34,3	14473,7	22,1
Examinations to evaluate fibrosis	21131,6	32,2	11079	16,9
Biological examinations	13300	20,3	3500	5,3
Immunological examinations	30420	46,4	-	-
Virological examinations	48631,6	74,1	42000	64
Radiological examinations	10200	15,5	-	-
Tenofovir	-	-	111592,1	170,1
Patients with health Insurance from INAM**				
Biochemical examinations	16127,4	24,6	12558	19,1
Examinations to evaluate fibrosis	24029,5	36,6	9119,7	13,9
Biological examinations	25333,2	38,6	2940	4,5
Immunological examinations	28219	43	-	-
Virological examinations	47894,7	73	40526,3	61,8
Radiological examinations	2040	3,1	-	-
Tenofovir	-	-	118684,2	181
Patients with private health Insurance				
Biochemical examinations	4307,7	6,6	3084,6	4,7
Examinations to evaluate fibrosis	10907,7	16,6	2392,3	3,6
Biological examinations	6220,8	9,5	700	1,1
Immunological examinations	9200	14	-	-
Virological examinations	22615,4	34,5	8400	12,8
Radiological examinations	2040	3,1	-	-
Tenofovir	-	-	95573,1	145,7

Note *Fees paid by the patient himself after partial coverage by insurance (insured patient) or non-coverage by insurance (uninsured patient); **National Institute of Health Insurance

Table 3 The overall average cost* of the management of patients (uninsured, with private health Insurance, with health Insurance from INAM**) infected with hepatitis B virus treated by Tenofovir

	The average cost before putting on Tenofovir		The average cost under Tenofovir		The overall average cost	
	FCFA	€	FCFA	€	FCFA	€
Uninsured patients	146210,6	222,9	182644,8	278,4	328855,4	501,3
Patients with health Insurance from INAM**	143643,8	218,9	183828,1	280,2	327471,9	499,1
Patients with private health Insurance	61683,9	94	110750	167,6	172433,9	261,6

Note *Fees paid by the patient himself after partial coverage by insurance (insured patient) or non-coverage by insurance (uninsured patient); **National Institute of Health Insurance

Discussion

The vast majority of people infected with viral hepatitis are in low-and middle-income countries in Africa and Asia, where screening and access to treatment are not available.^{12,13} Three criteria are essential to establish the indication of treatment for chronic viral hepatitis B: serum ALT, serum HBV DNA and severity of hepatic injury.¹⁴ Treatment should be considered if the DNA level of HBV is >2000 IU/ml, if ALT level is above the upper limit of normal, and the severity of hepatic disease evaluated by liver biopsy, is moderate to severe ($A \geq 2$), and/or mild fibrosis ($F \geq 2$) (METAVIR score). If patients meet these criteria for DNA levels of HBV and the severity of histological lesions, treatment can be started even if ALT levels are normal.¹⁴ TDF is effective in patients who are naive to any HBV treatment as well as in multidrug-resistant patients, both HBe positive antigen and HBe negative antigen.¹⁵ In our study, only about one in four patients had been treated with TDF; less than half of the patients who consulted for viral hepatitis B were able to perform the requested checkup (immunological, virological, biological, radiological). In Togo, given the relatively high cost of checkup, most patients fail to honor the assessments which means we must surely have in our study, among those patients who have not been able to perform the checkups, patients who must be put under TDF; but with the absence of results that can confirm the indication of the treatment, they are not put under TDF. This explains the challenge of setting TDF; the financial difficulties of the patients to carry out the checkup in case of chronic viral hepatitis B. This situation confirms the finding of some authors on the reality of care in Africa of patients infected with the hepatitis B virus.^{2,10,16-17} This is because most countries in Sub-Saharan Africa do not have universal health coverage or low-cost viral hepatitis B treatment, which represents a real obstacle to the control of the epidemic.² Some of the analyses such as viral load or Actitest-Fibrotest, within the framework of the management of VHB are not carried out on the spot in Togo but the samples are sent out of the country ; which increases the cost of care. The management of patients faces the difficulties of access to virological markers of infection, as well as the difficulties of appreciation of the severity of the hepatopathy to establish the therapeutic indications (serum markers of fibrosis, quantification of viral load).¹⁰ In addition, these analyzes are not covered by the INAM for workers in public organizations In Togo, the existence of INAM has considerably improved the management of active or retired workers,¹⁸ but several analyzes (Actitest-Fibrotest, the viral load) are not covered by the INAM; this could explain the fact that the cost of care for patients with INAM insurance does not really differ from that of uninsured patients (€499.1 vs €501.3). With a few exceptions, such as Senegal and Côte d'Ivoire, there is no policy

for the therapeutic management of patients, and antiviral drugs are generally not available or accessible to patients, including tenofovir.¹⁰ In Benin, the treatment of eligible patients according to international recommendations is supported by the national budget unlike Togo, but the cost of eligibility checkup very high and at the expense of patients, prohibits access to the vast majority of patients among them.¹⁰ Pourette,² in their study on the representations and lived experience of hepatitis B of Sub-Saharan patients in Côte d'Ivoire and France had noticed that Ivorian patients did not benefit from health insurance and were therefore responsible for all of their expenses, with the consequence that it is impossible to assume financially the diagnostic, pre-therapeutic and follow-up examinations, as well as the treatment ; on the other hand, patients treated in Île-de-France did not encounter any financial obstacle to access to care and treatment because they all had rights to health insurance. The overall cost of care for uninsured patients was almost double that of patients with private insurance (€ 501.3 vs € 261.6); health insurance therefore reduces the cost of care for our patients. The financial difficulties and the absence of a real health cover push on the one hand the patients to competitive alternatives, much cheaper : family pharmacopoeia, traditional therapy, herbal medicine, with a false hope of healing² and the other hand to non-regularity in medical monitoring. This situation could also have a negative impact on the disclosure of the disease to the family and the screening of relatives, while in Île-de-France the financial brake does not intervene in the care or screening of the entourage living in France because, regardless of their administrative situation, people benefit from health insurance.²

Conclusion

The management of chronic viral hepatitis B treated with tenofovir in Togo is relatively expensive, thus constituting a brake on the management of a large number of patients. It is therefore necessary to set up a national program to fight against viral hepatitis B and universal health coverage.

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None.

Conflicts of interests

The author declares that there is no conflicts of interest.

References

1. Liaw YF, Chu CM. Hepatitis B virus infection. *Lancet*. 2009;373:582–592.

2. Pourette D, Enel C. Representations and disease experience of hepatitis b by sub-saharan patients in ivory coast and france. *Santé Publique*. 2014;6:869–878.
3. Schweitzer A, Horn J, Mikolajczyk RT, et al. Estimates of world wide prevalence of chronic hepatitis b virus infection: asystematic review of data published between 1965 and 2013. *The Lancet*. 2015;386:1546–1555.
4. Patassi A, Benaboud S, Landoh D et al. Hepatitis B infection in HIV-1-infected patients receiving highly active anti retro viral therapy in Lome, Togo: Prevalence and molecular consequences. *S Afr Med J*. 2016;106:634–639.
5. Bagny A, Bouglouga O, Djibril M et al. Knowledge, attitudes, and practices relative to the risk of transmission of hepatitis B and C viruses in a hospital in Togo. *Med Sante Trop*. 2013;23:300–303.
6. Kolou M, Katawa G, Salou M et al. High prevalence of hepatitis B virus infection in the age range of 20-39 years old individuals in Lome. *The Open Virol J*. 2017;11:1–7.
7. Ekouévi KD, Thomas A, Sewu D et al. Prevalence of hepatitis B among students from the University of Lomé, Togo in 2015. *Open Journal of Epidemiology*. 2017;7:262–272
8. Bouglouga O, Bagny A, Lawson-Ananissoh LM, et al. Is the management of hepatocellular carcinoma evolving in Sub Saharan Africa? *Rev Med Madag*. 2012;2:176–179.
9. Feray C. Hepatitis B in Africa: A forgotten epidemic. *Humanitarian*. 2015;40:68–73.
10. Kodjoh N. Fighting viral hepatitis B and C in Africa. Focus on Benin. *Med Sante Trop*. 2015;25:141–144
11. Lawson-Ananissoh LM, Bouglouga O, Bagny A, et al. Knowledge of hepatitis B virus among out patients consulting in the hepato gastro enterology departmentat the Lome Campus University Hospital. *Med Sante Trop*. 2015;25:319–322.
12. Lemoine M, Eholié S, Lacombe K. Reducing the neglected burden of viral hepatitis in Africa: Strategies for a global approach. *Journal of Hepatology*. 2015;62(2):469–476.
13. Jaquet A, Wandeler G, Tine J et al. HIV infection, viral hepatitis and liver fibrosis among prison inmates in West Africa. *BMC Infectious Diseases*. 2016;16:249.
14. European Association for the Study of the Liver (EASL). Clinical practice guidelines: management of chronic hepatitis b virus infection. *Journal of Hepatology*. 2012;57:167–185.
15. Heathcote EJ, Marcellin P, Buti M et al. Three-year efficacy and safety of tenofovir disoproxil fumarate treatment for chronic hepatitis B. *Gastroenterology*. 2011;140:132–143.
16. Kissi Anzouan-Kacou HY, Bangoura AD, Diallo D et al. Treatment of chronic viral hepatitis with pegylated interferon in Ivory Coast. *Open Journal of Gastroenterology*. 2016;6:65–74.
17. Bignoumbalbouili R, Iba Ba J, Itoudi Bignoumba PE et al. Socio-economic aspects of the management of chronic hepatitis B and C in Libreville (Gabon). *Med Sante Trop*. 2012;22:101–102.
18. Lawson-Ananissoh LM, Bouglouga O, Bagny A, et al. Impact of the health insurance on the financial direct cost of the cirrhosis medical management at campus teaching hospital of Lomé, Togo. *J Afr Hépatol Gastroentérol*. 2015;9:7–11.