

Epidemiological profile of chronic viral Hepatitis B in CHU Hassan II of Fez in Morocco

Abstract

Introduction: The number of chronic carriers of viral hepatitis B is estimated at more than 350 million with a high risk of progression to cirrhosis and hepatocellular carcinoma. Currently, the epidemiology of viral hepatitis B is not precisely known in Morocco.

The objective of this study was to describe the epidemiological profile of patients with chronic hepatitis B

Methodology: This was a descriptive retrospective study conducted between January 2009 and December 2015 in the Hepato-gastro-enterology department of CHU Hassan II of Fez. Patients included in this study were 18 years or older with chronic viral hepatitis B under antiviral treatment and those without therapeutic indication after a clinical and laboratory evaluation seen in consultation during the study period. The data was collected from the Hospital Information System (HOSIX).

Results: A total of 154 patients were enrolled, the mean age was 40.45±13 years with a male predominance (63.6%). More than half of the sample (64.9%) had active chronic hepatitis B with a history of diabetes (1.3%) and alcoholism (5.8%). The diagnosis of viral B infection was revealed at the stage of compensated cirrhosis in 40.25%. HBeAg was positive in 22.1% of patients. Co-infection with hepatitis delta virus was noted in 1.3% of cases and with hepatitis C virus (HCV) in 6.5% of cases. Anti-viral treatment was prescribed in 25% of cases. HBe sero conversion was noted in 3.2% of patients and HBs sero conversion in 1.3%.

Conclusion: This study reveals that chronic hepatitis B is a major health problem in Morocco. There is a need for health education and vaccination programs to prevent this spread of this disease.

Keywords: Hepatitis B virus, epidemiology, hassan II CHU of Fez

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Abbreviations: HCC, hepatocellular carcinoma; HCV, hepatitis C virus

Introduction

The number of chronic carriers of hepatitis B virus is estimated at more than 350 million with a high risk of progression to cirrhosis and hepatocellular carcinoma (HCC). It is estimated that more than 300,000 new cases of HCC are reported worldwide each year with nearly one million deaths each year (WHO 2002). The prevalence of HBV is estimated at 5.4% worldwide, compared with 1% for HIV and 3% for hepatitis C.¹ Before the introduction of hepatitis B vaccine into the Expanded Program on Immunization (EPI), Morocco was considered a country, according to WHO data, to have an intermediate prevalence (2-7%).² Currently, the epidemiology of viral hepatitis B is not precisely known in Morocco. The main objective of this work was to describe the epidemiological profile of chronically infected subjects with viral hepatitis B in the Hepato-gastroenterology Department of CHU HASSAN II of Fez.

Methods

This was a retrospective study performed at the Hepato-gastroenterology department of CHU Hassan II in Fez between January 2009 and December 2015. All patients aged 18 years and

older with chronic hepatitis B under antiviral B agents and those who had no therapeutic indication after a clinical and laboratory evaluation were included in our study. Patients who do not meet the criteria for chronic hepatitis B, patients under 18 years of age who have not been seen in the Hepato-gastroenterology department of CHU Hassan II have not been included. The data was collected from the Hospital Information System (HOSIX). Data collected focused on the socio-demographic, clinical, and para clinical characteristics of patients. The data input was done with Excel and the statistical analysis by the Epi-info version 7 software.

Results

A total of 154 patients were included in our study, the mean age was 40.45±13 years. These patients were male in 63.6%, of urban origin in 81.7% and carriers of chronic active hepatitis B with a history of diabetes (1.3%) and alcoholism (5.8%) (Table 1). Dental care (15.6%) and tattoos (11%) were the highest risk factors. Other risk factors such as promiscuous sexual behavior and substance abuse were noted in 1.2%. The viral serology of spouses was performed in six cases (3.9%) and was positive in 0.6% of cases (Table 2). The diagnosis of the pathology was made during a blood donation in 47.4% of cases, in the decompensated cirrhosis stage in 7.1% of cases. Regarding the complementary examinations, Esophago-gastro-duodenoscopy (EGD) was carried out in 5.8% of patients (n=9) with

diagnosis of esophageal varies in 1.9% (n=3). The serology of HBe Ag was positive in 34 patients (22.1%), and that of anti HBe AC was positive in 46.8% (n=72) of patients. Serology of quantitative HBs Ag was done in 14.9% of cases (n=23). The viral load was done in 56.5% (n=87) of cases and its average was 3914.07 UI/ml. An abdominal ultrasound was performed in 48.7% and showed signs of Portal Hypertension in 20.1%, HCC in 0.6% and fatty liver in 0.6%. Hepatic biopsy (HB) was done in 8.4% of cases, fibrotestin 2.6% and fibroscanin 34.4% (Table 3). Hepatitis Delta co-infection was noted in 1.3% of cases and with hepatitis C virus (HCV) in 6.5%. Anti-viral treatment was prescribed in 25% of cases. Clinical intolerance, discontinuation of treatment, and relapse were observed in 2.6%, 3.9% and 10.6% of cases respectively. No cases of sustained viral response were observed (patients on interferon) (Table 4). HBe seroconversion was noted in 3.2% of patients and HBs seroconversion in 1.3%.

Table 1 Characteristics of socio-demographic, liver status and comorbidity of patients

Characteristics of socio-demographic	N	%	M±SD*
Average Age (years)			40.45±13.01
Sex (n=154)			
Masculine	98	63.6	
Feminine	56	36.4	
Residence (n= 153)			
Urban	125	81.7	
Rural	28	18.3	
Status of hepatitis B			
Active chronic Hepatitis	100	64.9	
inactive carriers	54	35.1	
Comorbidity			
Diabetes	2	1.3	
Alcoholism	9	5.8	

Table 2 Distribution of patients according to different risk factors

Risk factors	N	%
Dental care	24	15.6
Tattoo	17	11
History of surgery	11	7.1
Transfusion	3	1.9
Drug abuse	1	0.6
Promiscuous sex life	1	0.60%
Mother with positive HBs antigen	1	0.60%

Table 3 Distribution of patients according to the complementary examinations carried out and their results

Complementary exams	N	%	Average+ Extremes
Antigen HBe Serology			
Positive	34	22.1	
Negative	40	26	
Anti-HBc Antibody serology			

Table Continued...

Complementary exams	N	%	Average+ Extremes
Positive	72	46.8	
Negative	5	3.2	
Quantitative serology of HB antigen	23	14.9	
Viral load in UI/ml	87	56.5	
ASAT (Asparate amino-transferase)			40.97 (1–895)
ALAT (Alamine amino-transferase)			58.83 (1–2490)
GGT (gamma glutamyl transferase)			38.97 (1–502)
Bilirubin			10.12 (1–66)
Albumin			38.90 (11–58)
Prothrombin rate(PR)			85.25 (42–100)
Platelets			230485.43 (85–2160000)
Neutrophil Polynuclear (NPN)			3914.07 (14–10792)
Hemoglobin			13.30 (7–19)
Esophagogastroduodenoscopy	9	5.8	
Fibrotest	4	2.6	
Fibroscan	53	34.4	
Abdominal ultrasound (n=75)			
Signs of portal hypertension	31	20.1	
Cirrhosis	25	16.2	
Hepatocellular carcinoma	1	0.6	
Hepatic steatosis	1	0.6	
Liver puncture biopsy (LPB)	13	8.4	

Table 4 Treatment of patients with active chronic hepatitis (n=100)

	N	%
Patients treated		
yes	25	25
No	75	75
First molecules used		
Sebivo	6	6
Baraclude	6	6
Pegazys	5	5
Zefix	5	5
Interferon	3	3

Discussion

Viral hepatitis B is highly contagious, averaging 10 times more than hepatitis C and 100 times more than HIV, with approximately 1 million deaths each year attributable to chronic hepatitis, cirrhosis and hepatocellular carcinoma (Abedi et al. 2011). It is the most common sexually transmitted disease in the world: WHO currently estimates that two billion people have been exposed to the hepatitis B virus. Every year, nearly 10 to 30 million new infections occur. Of the two billion

people infected, at least 350 million are chronic carriers constituting a constant reservoir of transmission (Denise 2006). Rare studies have been done to estimate the prevalence of HBV in Morocco; those that concerned blood donors (Mrani et al. 2002) and health professionals (Djjeriri et al. 2008), with prevalence estimated respectively at 2.5% and 1%. Two studies were conducted in 2005 and 2009 (Boulaajaj et al. 2005, Atitar et al. 2009) in at-risk patients and the prevalence of HBV infection found were 2% and 15.8%, respectively. However, the different groups studied during these studies do not represent the entire Moroccan population.

The comparative study conducted by André in 2000 between different countries of the world (Middle East, Japan, China, Sub-Saharan Africa and North Africa) showed that most African countries, such as Senegal and Egypt, have a high endemicity except Morocco and Tunisia which are part of the intermediate endemic areas. Therefore, the results reported in this study show that Morocco has moved from intermediate endemicity for hepatitis B to low endemicity. This decline in the prevalence of hepatitis B can be explained by the success of the national HBV vaccination program. In our study, the mean age of patients was 40.45 ± 13.01 years, thus similar to the data from the literature; A. SBAI found in his series an average age of 39 ± 11.97 years. Several series have reported an average age around 45 years.^{3,4} It should be noted however that, although prevalence in adults of this infection is characteristic in various studies, it is not exclusive and all ages can be affected. As in our case, male predominance has been described by several authors; A.SBAI reported in Rabat a male prevalence of 60.14%. Moreover, Antona et al. in France described this high male prevalence in 2005. This male predominance is linked to the susceptibility of the infection according to gender and/or the difference in immune response to infection one way or the other; by the way of life of men which most often put them in contact with the risk factors more than women.

Regarding the clinical aspects; screening, cirrhosis, asthenia, jaundice are main the reasons for the discovery of the infection in our series (98%). These results corroborate those found in the literature.^{5,6} Liver manifestations were quite common in our series. These manifestations are linked to the immune complex deposits formed by the viral antigens and the corresponding antibodies.⁵⁻⁷ Risk factors were mostly dominated by dental care, tattoos, surgical procedures and blood transfusion. A. SBAI found in his series high rates of history of surgery. In France, the average individual risk of contracting HBV infection, following dental care due to the lack of sterilization of the rotary instrument holders between each patient, was estimated in 2009 at 1/516 000 compared to 1/420 million for HIV (Thiolet 2009). These high rates in our study can be explained by an insufficiency or even a lack of respect for the universal elementary rules in terms of prevention of infections in the health sector and on the other hand on the use of certain high risk socio-cultural practices.

With respect to para-clinical data in our study, 54.54% of patients had an average hemoglobin level of 13.30 g/l. These figures are much higher than those reported in the literature (12.6 g/l).⁸ In clinical practice, among the many biochemical parameters altered by hepatocellular insufficiency, the most modified in general are the prothrombin, albumin and bilirubin levels.⁹ In our series the average prothrombin rate was 85.25%, which is higher than the data from several studies, where it is between 54% and 59%.⁹⁻¹¹ Regarding viral serology B, in our series, it fits into the natural history of infection. The serological profile corresponding to chronic active hepatitis was found in one hundred patients (64.9%). This phase is marked by active

viral replication with high serum HBV DNA, HBe antigen present in the serum, histologically the presence of HBe antigen in the nucleus of hepatocytes in large quantities.⁵ Fifty-four of our patients (35.1%) were inactive carriers of the B virus. When spontaneously, or under the effect of antiviral treatments, the immune system controls the viral infection, this leads to the inactive phase of the Hepatitis B virus.

HBV-HCV coinfection was found in 6.5% of cases in our series; it is usually accompanied by inhibition of hepatitis B virus replication with increased clearance of hepatitis B virus, which explains some serological profiles (anti HBe AC positive in an isolated fashion).¹² HBV-HDV co-infection was observed in two of our patients (1.3%). This coinfection is characterized by a tendency to an exacerbated severity of acute hepatitis compared to that caused by HBV alone.¹³ The abdominal ultrasound was performed in 48.7% of cases and allowed to detect liver abnormalities in 37.5% of our patients: signs of Portal Hypertension in thirty one patients, cirrhosis in twenty-five patients, hepatic steatosis in 0.6% and hepatocellular carcinoma in 0.6% of cases. Our data are comparable to those of the literature.¹⁴ Fibroscan was performed in 34.4% of our patients and was significant in one out of four patients who underwent this examination. Miss I. Elhidaoui found in her series in Marrakech, a fibroscan significant in more than three out of four patients who did this review. Several studies have shown that hepatic elasticity measured by fibroscan correlates with liver fibrosis in patients with chronic liver disease. Liver Puncture biopsy was performed in 13 (8.4%) of our patients for diagnostic purposes. Upper gastrointestinal endoscopy was performed in 9 (5.8%) of the patients and revealed the presence of esophageal varices in 1.9% of cases. We discovered mainly stage I and II esophageal varices, which is comparable to a study carried out at Ibn Sina University Hospital in Rabat where 57.7% of esophageal varices were stage II, as well as an Italian study where esophageal varices stages I was largely predominant (56%).¹⁵ Regarding the therapeutic aspects, antiviral treatment was prescribed in 25% of our patients and HBe seroconversion was observed in 3.2% of cases with normalization of transaminases in nineteen patients before the 12th week of treatment. A Chinese study conducted by Leung NW1 et al in 58 patients with chronic hepatitis B showed that treatment with lamivudine for 3 years significantly improved liver histology and resulted in HBe antigen seroconversion (HBeAg) in 23 patients (40%) compared to placebo.¹⁶ A similar trend was observed in the study conducted by Sombié in Cameroon.

The indication of the antiviral treatment was prescribed in cases of extensive cytolysis associated with a rise of the viral load above 2000 IU/ml, in pregnant women for prophylaxis of mother-child transmission and finally for preemptive treatment in patients who are candidates for chemotherapy or immunosuppressive therapy. Despite an overall satisfactory evolution, some complications were observed comparable to other studies carried out.^{17,18} During follow-up, some patients remained as inactive carriers (68.51%). In contrast, other inactive carriers progressed to cirrhosis (3.70%).

Conclusion

In light of our results, it appears that chronic hepatitis B is a major health problem in Morocco as in many developing countries. It is necessary to put a special emphasis on prevention in order to better control this pathology. Beyond the national HBV vaccination program, it is important to set up health education and information programs on the disease.

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Conflicts of interest

The author declares that there is no conflicts of interest.

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