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(RESEARCH ARTICLE)

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Epidemiological and clinical aspects of chronic infections of hepatitis b virus at the Mohammed V military teaching hospital in Rabat – Morocco

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Abstract

Background: Infection with hepatitis B virus is a major public health problem worldwide. Globally hepatitis B virus's prevalence is 5.4%, more than one million between them die each year from complications that are essentially cirrhosis and hepatocellular carcinoma. The objective of this study is to describe epidemiological and clinical aspects of patients with chronic viral hepatitis B monitored in the Military Teaching Hospital Mohammed V in Rabat.

Patients and methods: This are a retro-prospective study carried out in the virology laboratory of the Mohammed V Military Teaching Hospital in Rabat, spread over a period of 15 years from January 2001 to January 2016. Were included in our study all Moroccan patients aged 18 years and over with chronic viral hepatitis B defined by the presence of HBsAg beyond 6 months and the absence of IgM anti-HBc antibodies.

Results and discussion: Out of 104 infected persons, 71% are men and 50% of infected was discovered by screening, 19% of patients had fatigue as a primary symptom, 69% had dental care as a risk factor and 46% of patients were carriers of the active form of chronic hepatitis B. Currently, few studies relate the epidemiology of HBV in Morocco. The prevalence of HBsAg during the study period was 1.03, despite this, Morocco is so far considered, according to WHO's data, as having an intermediate prevalence of viral hepatitis B.

Conclusion: Immunization, compliance with universal recommendations for the use of medical and paramedical equipment as well as education and awareness are the only guarantee to limit the spread of Hepatitis B virus.

Keywords: HBsAg; Chronic Hepatitis B; Prevalence; Risk factors**.**

1. Introduction

Hepatitis B virus (HBV) infection is a major public health problem worldwide. It is the main cause of acute or chronic liver disease. The World Health Organization (WHO) currently estimates that two billion people have been exposed to this virus, and nearly 10 to 30 million new infections per year. The number of chronic carriers is estimated at more than 350 million with a high risk of progression to cirrhosis and hepatocellular carcinoma (HCC) **[1].** It is estimated that more than 300,000 new cases of HCC are observed per year worldwide, with nearly one million deaths each year **[1].**

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Before the introduction of the hepatitis B vaccine in the expanded immunization program (EPI), Morocco was a country considered, according to WHO data, as having an intermediate prevalence of hepatitis B (2 to 7 %). However, the epidemiology of hepatitis B virus is not well known in our country in recent years.

The objective of this study is to describe the epidemiological and clinical aspects of patients with chronic viral hepatitis B monitored at the Mohammed V Military Teaching Hospital in Rabat (Morocco).

2. Materials and methods:

This is a retro-prospective study carried out in the virology laboratory of the Mohammed V Military Teaching Hospital in Rabat, spread over a period of 15 years from January 2001 to January 2016. Were included in our study all Moroccan patients aged 18 years and over with chronic viral hepatitis B defined by the presence of HBsAg beyond 6 months and the absence of IgM anti-HBc antibodies. The data was collected from the laboratory information system and the information sheet. During our study, all the patients included benefited from a blood sample:

On a dry tube for the search for anti-Hbc and anti-HBe antibodies and HBs and HBe antigens;

- On an EDTA tube for molecular biology tests (viral DNA).
- The specimens were sent from the specimen collection room or hospital services within the following hour. The serums and plasmas were stored at -20°C.
- The search for anti-HBV antibodies was carried out by an Enzyme-Linked Immuno Assay technique (ELISA) for outpatients and by a Chemiluminescence Microparticle Immunoassay technique (CMIA) for hospitalized patients.
- The quantitative determination of viral DNA in the blood was carried out using a real-time PCR technique on the Cobas Ampliprep/Cobas Taq Man (Roche®). Data entry was done on EXCEL and statistical analysis was performed using SPSS version 18.0 software.

3. Results

During our study, we collected 104 patients followed for chronic hepatitis B, the prevalence of HBsAg during the study period was 1.03.

3.1. Distribution of infection by age

The average age of patients was 42 years (18 to 81 years). The age group between 46 and 53 years old was the most affected by HBV. The age groups 18-25 years, 67-74 years and 74-81 years were the least affected by HBV. (Figure 1).

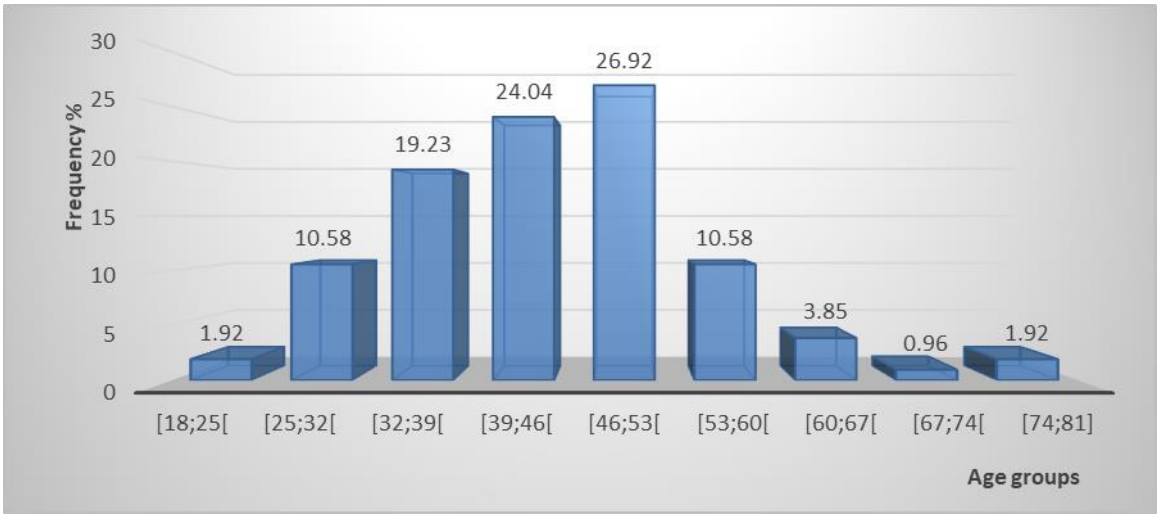

Figure 1 Distribution of patients infected with HBV according to age

3.2. Distribution of infection by sex

Of the 104 patients followed for chronic HBV, there were 74 men (71%) and 30 women (29%), i.e. an M/F sex ratio of 2.4 (Figure 2).

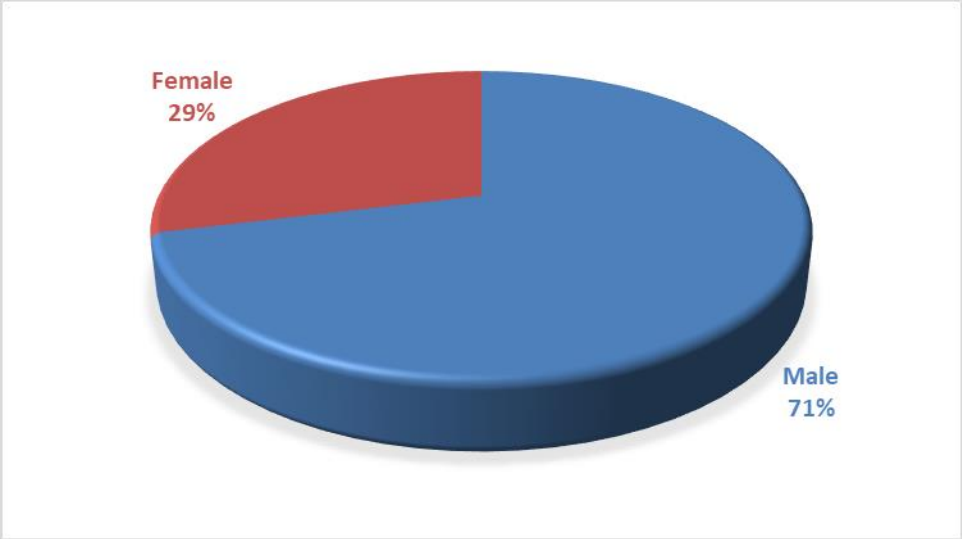

Figure 2 Distribution of patients infected with HBV according to sex.

3.3. Distribution of infection according to initial symptoms

The asymptomatic form was found in 65.38% of cases. The most frequently reported clinical sign in our study was general fatigue (19.23%) followed by jaundice (5.77%).

3.4. Distribution of infection according to risk factors

The most common risk factors were dental care (69.23%), surgical history (22.12%) and blood transfusions (9.62%) (Figure 3).

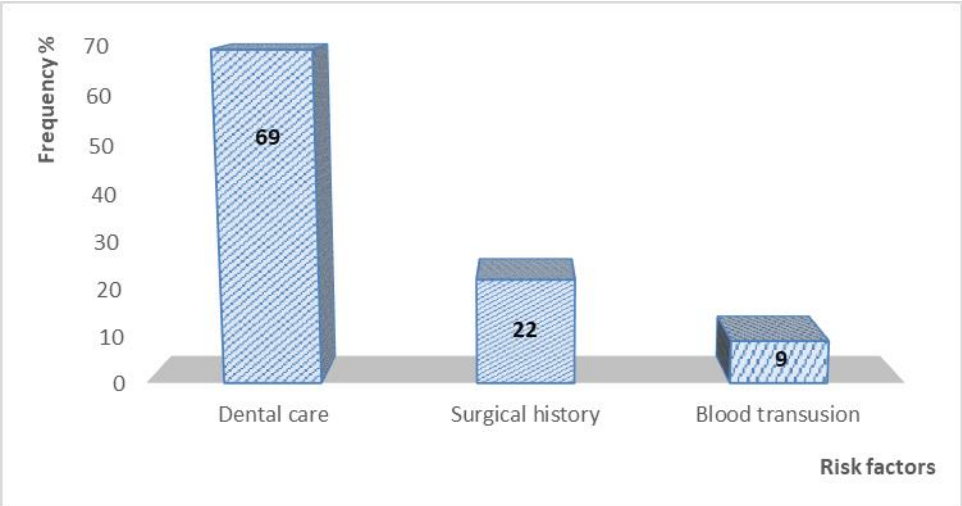

Figure 3 Distribution of patients infected with HBV according to risk factors

3.5. Distribution of infection according to viral load

Viral loads varied between 1 and 9 log, A low viral load (1 to 3 log) was found in 64% of infected people, 28% had a viral load between 3 and 5log, 5% between 5 and 7log and 3% beyond 7log.

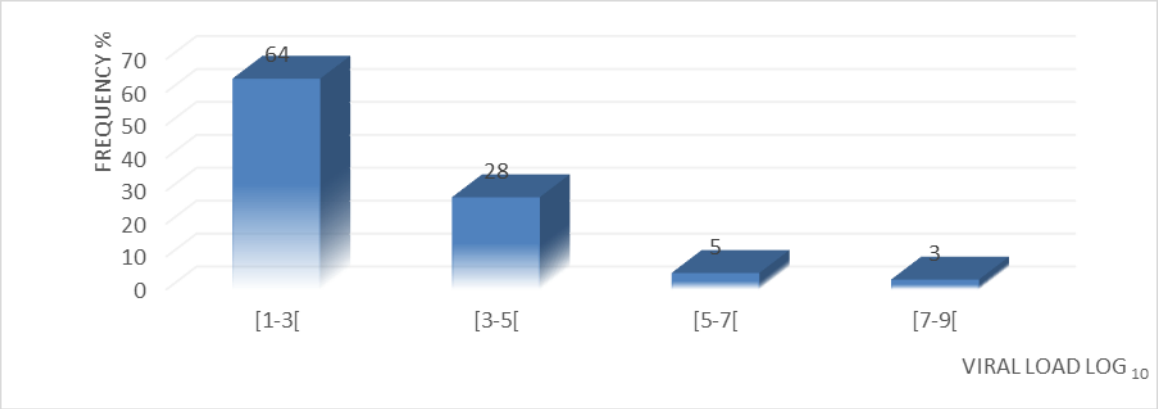

Figure 4 Distribution of patients infected with HBV according to viral load

4. Discussion

The mean age of HBV-infected patients in our study was 42 years. It should be noted, however, that if the attack of the adult by this infection is characteristic, it is not exclusive and all ages can be affected. In addition, we have shown that HBV infection decreases in the elderly, this decrease is probably due to less social activity. Our results are consistent with those of Khan et al. **[2]** who confirmed in 2011 in Pakistan, that the rate of HBV infection is higher in young people, due to their greater exposures and their interaction within society compared to the elderly **[3].** Our results are also in agreement with the study by Abedi et al. **[4]** which suggest an important role of horizontal transmission **[5].** The 18-25 age group is not very infected. This could be due to the fact that this class includes in its majority children who have benefited from systematic vaccination from a young age. It has been described that in Morocco, the vaccination coverage of children under 1 year old increased from 33% in 2000 to 93% in 2005 **[5].**

The results obtained show that HBV infection is more frequent in men with a sex ratio M/F of 2.4. These results go in parallel with a study made in 2008 **[6]** which aimed to determine, through the study of a series of observations of patient's chronic carriers of HBV, the epidemiological, clinical and evolutionary aspects of disease. The results of this study show that the majority of chronic carriers of HBV (73%) are male. This also goes in the same direction as other studies showing that men are more carriers of the virus than women, whether in countries with high endemicity such as China **[7]** or in countries with low endemicity such as France **[8]**. This male predominance could be explained on the one hand by a question of susceptibility to infection according to gender and/or the difference in immune response to infection and on the other hand by the lifestyle of the most often in contact with risk factors.

In our study, fatigue was the main symptom (19.23%). The asymptomatic forms represented (65.38%) of the cases of our patients, this high rate would be explained by the fact that chronic hepatitis B is asymptomatic in most cases and only becomes symptomatic in rare situations and in the event of complications. In Algeria, in about 70% of cases, chronic hepatitis B is asymptomatic, or manifests with non-specific signs (asthenia, abdominal pain, arthralgia). The physical examination may be normal, even at an advanced stage **[9].**

The most frequent risk factors in our study are dental care (69%) and surgical ATCD (22%). In France, the average individual risk of having contracted an HBV infection following dental care, due to the lack of sterilization of the rotating instrument holders between each patient, was estimated in 2009 at 1/516,000 against 1 /420 million for HIV **[10].** According to the study by Arboleda et al. **[11]** in 1995, patients treated by lay dentists were 2.6 times more likely to be infected with HBV than those who had received dental treatment by trained professionals. These high rates in this cohort are explained by an insufficiency or even a lack of respect for the basic universal rules for the prevention of infections in healthcare environments on the one hand and on the other hand by the use of certain socio-cultural practices with high risks. Indeed, care-associated transmission of HBV is due to non-compliance with aseptic techniques and recommended control practices **[12].**

The results obtained show an unequal distribution of the viral load, with the dominance of the intervals [1-3[and [3-5[log. Patients with viral loads belonging to the interval [1-3[log, are low loads (10 to 10^3 copies), they are inactive carriers, this phase is characterized by low or undetectable DNA and transaminase levels always normal **[13].** The second interval [3-5[log or 10^3 to 10^5 copies shows intermediate viral loads corresponding to immunoactivation from the inactive HBV carrier. And finally, the third interval [5-7[log or 10^5 to 10^7 copies present high viral loads

corresponding to immunotolerance. In the immunotolerance phase, the HBV antigen is always present. The last interval [7-9[log or 10^7 to 10^9 copies, corresponds to very high viral loads, this stage reflects an immunotolerance phase, observed more frequently in subjects infected in adulthood and having a viral infection B acquired at birth or in the first years of life **[14]**.

5. Conclusion

Epidemiological studies are of major importance, since they make it possible to give a precise image of the extent of the problem in our country.

In March 2015, WHO launched its first guidelines for the prevention, care and treatment of people with chronic HBV infection. These recommendations include:

- To promote simple and non-invasive diagnostic tests to assess the stage of liver disease and the relevance of treatment for the patient;
- Giving priority treatment to people whose liver disease has reached the most advanced stage and who are therefore at greater risk of death;
- It is recommended to give preference to the use of nucleoside or nucleotide analogues which are very difficult to lend themselves to the emergence of drug resistance (tenofovir and entecavir, and also entecavir in children aged 2 to 11 years) for first and second intentions.
- Finally, the prevention, in particular by immunization, respecting the universal recommendations for the use of medical and paramedical equipment as well as education and awareness, is the only guarantee to put an end to the spread of this virus.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

All authors declare that they have no conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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