



THE PERCENTAGE AND CAUSATIVE AGENTS OF HBV INFECTION IN JORDAN

Nawal S. Faris*

AL-Balqa' Applied University.

*Corresponding Author: Nawal S. Faris

AL-Balqa' Applied University.

Article Received on 30/10/2018

Article Revised on 20/11/2018

Article Accepted on 10/12/2018

ABSTRACT

Hepatitis B is a serious liver infection caused by the hepatitis B virus. For some people, hepatitis B infection becomes chronic, meaning it lasts more than six months. Hepatitis B is a common global health problem and is spreading rapidly in developing countries due to lack of health education, poverty and illiteracy. These infections can be transmitted through blood or body fluids, drug addiction, tattooing, through infected instruments, unsafe shave by barbers and sexual contact. Medical personnel are most exposed to these infections. There should be proper preventive measures to prevent its spread in the community. The aim of this study was to analyze the percentage of male and female infected with the HBV in Jordan during the period 2016-2017. The causes of the HBV infection were analyzed. This is a descriptive study carried out on 1800 adult patients in the Department of virology at Central Laboratory of the Ministry of Health in Amman the capital of Jordan using a Bioelisa HBs Ag as an immune enzymatic. We conclude that a total of 106 male patients gave positive results for HBsAg, with an overall prevalence of 8.8%. The total 54 female patients gave positive results for HBsAg, with an overall prevalence of 9%. The most common causes of HBV infection were blood transfusion, drug addiction, kidney dialysis, and unknown cause. So we conclude that viral hepatitis among the apparently healthy population of a relatively natural and pollution-free environment refers to an alarming condition about liver infections, particularly of HBV in Jordan.

KEYWORDS: Hepatitis B infection. in Jordan.

INTRODUCTION

Infection with hepatitis B affects the liver and results in a broad spectrum of disease outcomes. An infection with HBV can spontaneously resolve and lead to protective immunity, result in a chronic infection and, in rare cases, cause acute liver failure with a high risk of dying. People with chronic hepatitis B virus infection remain infectious to others and are at risk of serious liver disease such as liver cirrhosis or hepatocellular cancer (HCC) later in life^{2, 3}. HBV infection is widely present: approximately one third of the world's population has been exposed to the virus, and an estimated 350 million people are chronically infected^{4, 5}. More than 500 000 people die each year of hepatitis-B-related diseases^{4, 6}. Over the past decade, the possibilities for antiviral treatment of chronic HBV infection have greatly improved, e.g. there are now six registered drug therapies for chronic HBV, and several new registrations are expected in the near future. This offers the possibility of secondary prevention of HBV-related diseases as antiviral treatment can improve disease outcome^{9, 11}, even though concerns regarding the effectiveness of treatment on clinical outcomes and resistance exist and combination therapy may be warranted^{12, 13}. Evidence is accumulating that recently developed antiviral

therapies may provide a cost-effective intervention to reduce morbidity and mortality in patients with HBV¹⁻¹⁸. However, as hepatitis B is largely asymptomatic, many patients who might benefit from treatment remain undetected. This raises the question whether an active effort should be undertaken to identify chronic HBV carriers so that they can be offered treatment. This would benefit patients and reduce the burden of illness and costs for the health care system, as costly sequelae and deaths could be prevented among a large proportion of those infected^{19, 20}. In addition, this may reduce transmission of HBV through a reduction of the infected pool (by curing a proportion of cases through treatment), by reducing the viral load and therefore the infectivity of chronic carriers, and by offering increased opportunities to vaccinate susceptible contacts of identified HBV carriers. The improved options for antiviral treatment now offer the possibility of successful secondary prevention of HBV. This raises the question whether there is a need to extend screening for chronic HBV infection to those population subgroups with the highest prevalence. In order to promote national and European policies on secondary prevention of HBV, a systematic assessment of the need for HBV screening is required. This consists of at least two initial steps: an estimation of

HBV prevalence (including the burden of disease in European countries), and an assessment of the effectiveness of current national screening policies. Subsequent steps include an assessment of stakeholder perceptions, and the identification of possible interventions and resource implications, together with required monitoring programmes 21.

AIM OF STUDY

The aim of a study was to analyze the percentage of male and female infected with the HBV in Jordan during the period 2016-2016. The causes of the HBV infection was analyzed.

METHOD

From January 2016 till June 2017, a total of 1800 individuals (1200 males and 600 females)

Worked HBV tests at Central Laboratory of the Ministry of Health in Amman. Two blood samples were collected from each patient, in plain tube. Serum from the first tube was tested within two hours for ALT, AST, second tube was tested for HBV. A second-generation Enzyme-Linked Immuno-Sorbent Assay (ELISA) test system using the commercial bioelisa 4.0 is an immune enzymatic (Biokit) kit, which was used to screen all patients for antibodies to HBsAg, is an immune enzymatic method in which the wells of a microplate are coated with recombinant antigens representing epitopes of HBsAg. Serum samples are added to these wells. If antibodies specific for HBsAg were present in the sample, they will form stable complexes with the HBsAg on the well. Excess sample is removed by a wash step and a rabbit anti-human IgG conjugated with peroxidase is then added and allowed to incubate. The conjugate will bind to any antigen-antibody complexes formed.

After a second wash, a solution of enzyme substrate and chromogen is added. This solution will develop a blue color if the sample is positive. The blue color changes to yellow after blocking the reaction with sulfuric acid. The intensity of color is proportional to HBsAg concentration in the sample. Wells containing negative samples remain colorless. Results of an assay are valid if the following criteria are accomplished: 1. Substrate blank: absorbance value must be less than or equal to 0.100. 2. Negative control: absorbance value must be less than 0.100 after subtracting the blank. 3. Low positive control: each individual absorbance value must not vary more than 30% over the mean of three replicates. The mean absorbance of low positive control must be higher than 0.200 after subtracting the blank. 4. High positive control: absorbance must be higher than or equal to 0.800 after subtracting the blank. 5. Ratio high positive control/Low positive control: must be higher than 2.5. 6. Ratio negative control/Low positive control: must be lower than 0.5. A repeatedly positive result is indicative of HBV infection. The clinical history of the patient were taken into consideration. Data were collected from the Central Laboratory database. Positive for virus-related antibody.

RESULTS

A total of 1800 patients (1200 males, 600 females) were tested for HBV infection, a total 106 male patients were gave positive results for HBsAg, with an overall prevalence of 8.8%. The total 54 female patients were gave positive results for HBsAg, with an overall prevalence of 9%. The most commonly caused of HBV infection was blood transfusion (41%), center for addiction (33%), kidney dialysis (12%), and unknown cause (12%).

Table 1: The seroprevalence of male and the most commonly caused of HBV infection.

Months	Male Number OF Abnormal results	Blood transfusion	Kidney dialysis	Centre for addiction	Unknown cause
January	11	6	0	3	2
February	7	2	2	2	1
March	11	7	2	1	1
April	10	3	1	4	2
May	8	2	1	3	2
June	11	5	2	4	0
July	7	1	1	4	1
August	7	2	1	3	1
September	6	3	0	2	1
October	8	4	1	3	0
November	12	4	2	4	2
December	8	5	0	3	0
Total	106	44	13	36	13

Table 2: The seroprevalence of female and the most commonly caused of HBV infection

Months	Female Number OF Abnormal results	Blood transfusion	Kidney dialysis	Centre for addiction	Unknown cause
January	6	3	1	1	1
February	2	1	0	1	0
March	6	3	2	0	1
April	5	2	1	1	1
May	3	2	1	0	0
June	7	3	2	1	1
July	3	1	0	0	2
August	4	1	1	1	1
September	5	2	1	1	1
October	5	4	0	0	1
November	6	2	2	1	1
December	2	1	1	0	0
Total	54	25	12	7	10

Table 3: Prevalence (%) of HBs Ag in the patients and expatriates.

HBs Ag	No of Test	No of positive results	% of positive results
Patients	1800	160	8.9
Expatriates	3618	14	0.38

Table 4: Prevalence of HBs Ag, antibodies to hepatitis B core antigen, Anti-HBs Ag, and HBe Ag.

Test name	No. of Test	No. of positive results	% of positive results
HBs Ag	1800	160	8.9
Anti-HBc	110	70	64
Anti-HBs Ag	470	246	52
HBe Ag	150	20	13
HBe Ab	111	65	58

DISCUSSION

The number of patients was infected with HBV infection in the Jordan from January 2016 till June 2017 refers to isolated high-risk groups. Thus, a published survey of HBV infection markers from a referral Central Laboratory of the Ministry of Health in Amman among patients and healthy controls, reported an HBsAg prevalence rate of 8.9%, an HBeAg prevalence rate of 64%, an anti-HBs Ag prevalence rate of 52.6%, and HBe Ag prevalence rate of 13%, and an HBe Ab prevalence rate of 58%, respectively (Shamliyan et al., 2008). The prevalence rates of HBV viral markers in the non-hospitalized patients are lower, come closer to the ones reported in their healthy control group. Furthermore, the seroprevalence in males was approximately the equal of that of females (8.8% vs 9%). The most commonly caused of HBV infection in male was blood transfusion (44%), compare to female was about 25% due to blood transfusion. The second cause of HBV in male and female was drug addiction, the seroprevalence of drug addiction in males was approximately the five times more than females (36% vs 7%). The increase of drug addiction in male due to culture in developing countries gives the male freedom to do anything compare to female. Also, increase the causes of HBV due to drug addiction should alarm the spread of this problem in developing countries, so should be proper preventive measures to

prevent its spread in the community. The other causes of HBV are approximately the same in male and female.

This study will discuss the epidemiology, modes of transmission, and prevention of HBV infection. The clinical manifestations and natural history of HBV infection are discussed separately. Public health response to hepatitis B while effective national strategies for HIV and hepatitis C have been adopted, the public health response to HBV is very limited and relies predominantly on universal infant hepatitis B vaccination. The number of people with hepatitis B is projected to increase due to continuing immigration from high endemic countries and sub-optimal vaccine coverage among high-risk populations (IDUs, MSM, Aboriginal and Torres Strait Islander peoples). To reduce the impact of hepatitis B infection, a national strategy should be developed focusing on enhanced HBV prevention, education and improvement of diagnosis, treatment and care. The implementation of hepatitis B prevention and education is crucial to increase public awareness of hepatitis B including the risk factors for transmission, measures for prevention, and the availability of therapy. These programs should be designed.

CONCLUSIONS

In conclusion, we believe that, viral hepatitis markers prevalence rates of the high-risk in community patients in Jordan during the period 2017, over estimate but reflect the situation in the general population of the Jordan. Additionally these data contribute to the mapping of viral hepatitis prevalence in this geographical area of middle east and therefore may be helpful in planning public health interventional strategies.

ACKNOWLEDGMENTS

Department of virology at Central Laboratory of the Ministry of Health in Amman the capital of Jordan

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