PREVALENCE OF HEPATITIS B AND THE CONCENTRATION OF HEPATITIS B SURFACE ANTIBODY IN THE PATIENT VISITED NATIONAL HOSPITAL FOR TROPICAL DISEASES

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Background: Hepatitis B virus infection is currently a major health burden, especially in developing countries. The World Health Organization estimates that 296 million people are living with chronic hepatitis B, with 1.5 million new infections each year, of which 90% are undiagnosed and only about 2% of people are infected. Hepatitis B is treated with antiviral drugs. Achieving the goal of eliminating viral hepatitis by 2030 requires significantly increasing screening tests to find infected people and determining HBs antibody levels for vaccination is essential.

Objectives: Determine the prevalence of hepatitis B virus infection and the concentration of hepatitis B surface antibody (Anti-HBs/HBsAb) in patients visiting National Hospital for Tropical Diseases.

Methods and participants: Cross-sectional study on 576 patients examined at the National Hospital of Tropical Diseases from August 1, 2023 to August 31, 2023.

Results: Male accounted for 52.9%, average age: 38.24 ± 18.0 (years old). There were 62 patients infected with HBsAg (+) virus, accounting for 10.8%. The prevalence of HBV infection by age group of patients in the study was highest in the age group 60-86 years old at 16.1%, followed by the 16 - 39 year old group at 11.8%, the lowest was in the younger group. 16 years old 6.0%. The proportion of HBsAg (+) in men is 12.5% and in women was 9.3%. The proportion of people with anti-HBs (+) or anti-HBs concentration > 10mUI/l is 47%; 53.1% of patients had anti-HBs (-) or anti-HBs concentration < 10mUI/ml. The positive percentage of Anti-HBs in men is 47.1% and in women is 46.8%, the overall rate was 47%. The difference is not statistically significant. The highest proportion of Anti-HBs in the group of aged 60 - 86 is 52.6%, followed by the group under 40-59 years old accounting for 47.5%, the lowest in the group under 16 years old was 44.3%. The difference is statistically significant with $p < 0.05$.

Conclusion: The prevalence of Hepatitis B infection in patients visiting the National Hospital for Tropical Diseases was 10.8%. Hepatitis B vaccination is an effective method to prevent Hepatitis B virus infection.

Kewords: *Hepatitis B virus infection, Anti-HBs.*

BACKGROUND

Hepatitis B virus infection is currently a major health problem globally, especially in developing countries. The World Health Organization estimates that 296 million people are living with chronic hepatitis B, with 1.5 million new infections each year, of which 90% are undiagnosed and only about 2% of people are infected. Hepatitis B is treated with antiviral drugs. Hepatitis B has caused an estimated 820,000 deaths, mainly from cirrhosis and hepatocellular carcinoma (HCC)[1]. Achieving the goal of eliminating viral hepatitis by 2030 requires significantly increasing screening tests to find infected people and determining HBs antibody levels for vaccination is essential. Therefore, we carry out this topic with the objective:

(1) National Hospital for Tropical Diseases

Date of submission: *December 05, 2023*

Date of reviewed completion: *December 12, 2023*

Accepted date for polication: *December 15, 2023*

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Determine the prevlence of hepatitis B virus infection and the concentration of hepatitis B virus surface antibody (Anti-HBs/HBsAb) in patients visiting National Hospital for Tropical Diseases.

METHODS AND PARTICIPANTS

A cross-sectional study was conducted at National Hospital for Tropical Disease from August 01, 2023 to August 31, 2023. We included 575 patients who were indicated for Hepatitis B screening.

Data was analyzed using SPSS 16.0 software. Both descriptive and analytical statistics were applied.

RESULTS

A total of 576 patients participated in the study.

Characteristics of participants

Table 1. Age distribution

Age group	Number	Percent (%)
< 16	83	14.4
16 - 39	195	33.2
40 - 59	236	41.0
60 - 86	62	10.8
Total	**576**	**100**

Comments: The participants were aged 1 to 86. Patients aged from 40 - 59 accounted for the highest percentage (41%). Mean age was 38,24 ± 18,0 years..

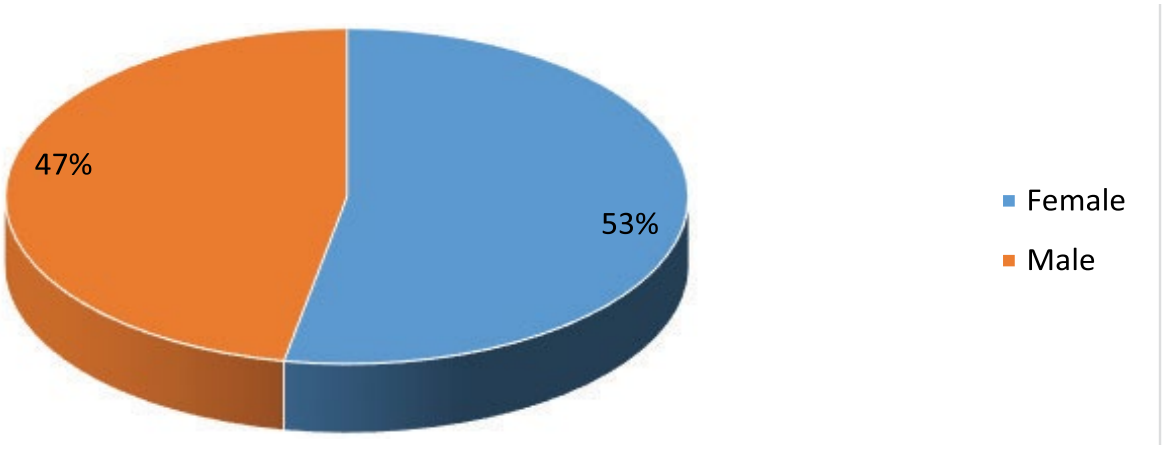

Figure 1. Gender distribution

Comments: No significant differences were found between male and female (P > 0,5).

Prevalence of patients with positive HBsAg

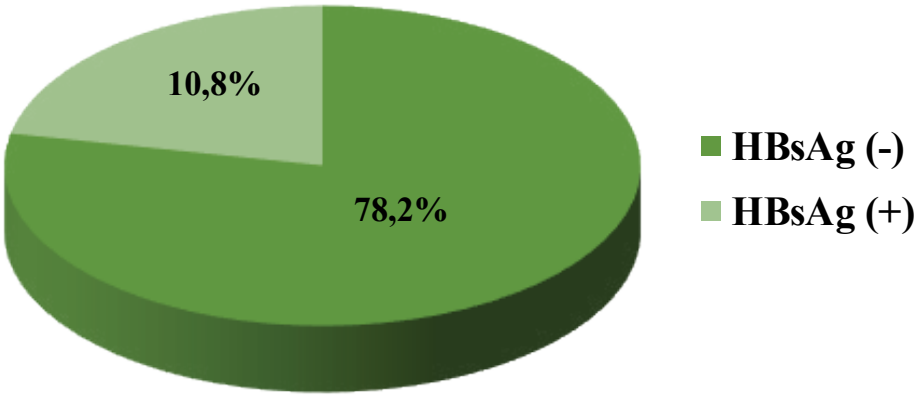

Figure 2. Percentage of HBsAg (+) patients

Comments: About a tenth of patient got positive HBsAg (10,8%).

Prevalence of hepatitis-B patient by age groups

Table 2. HBsAg (+) distribution by age groups

Age group	HBsAg				p
	Positive	Negative	Total	Percent (%) HBsAg (+)	
< 16	5	78	83	6.0	0.084
16 - 39	23	172	195	11.8	
40 - 59	24	212	236	10.2	
60 - 86	10	52	62	16.1	
Total	62	514	576	10.8	

Comments: No statistically significant difference was found in the percentage of positive Hepatitis-B among age groups.

Anti-HBs concentration of participants

Of the 576 patients, 526 patients (91.3%) were tested for anti-HBs.

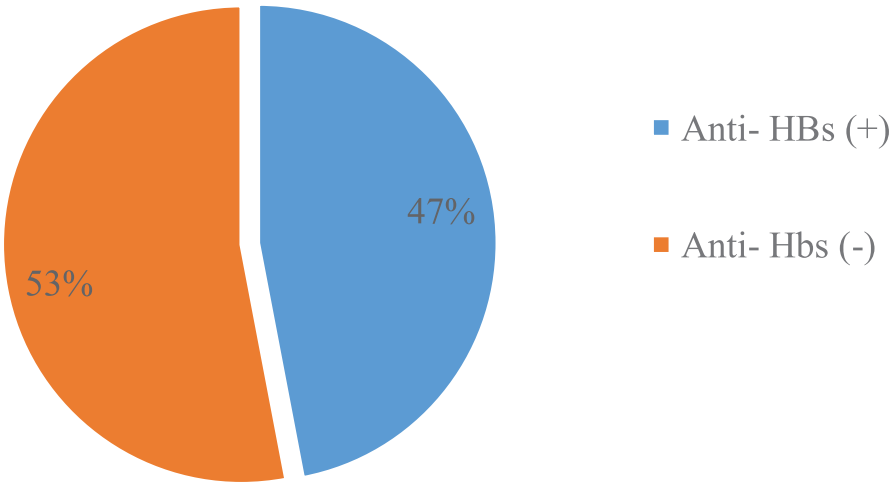

Figure 3. Proportion of positive anti-HBs

Comments: The proportion of people with anti-HBs (+) or anti-HBs concentration > 10 mUI/ml is 47%; 53% of patients have anti-HBs (-) or anti-HBs concentration < 10mUI/ml.

Table 4. Anti-HBs concentration distribution

Anti- HBs concentration (mUI/ml)	Number	Percent (%)
< 10	279	53.1
10 - 100	89	16.9
101 - 1000	102	19.4
> 1000	56	10.6
Total	**562**	**100%**

Comments: Group of the patients with HBsAb < 10 mUI/ml made up the highest percentage (53,1%). Group of the patients with HBsAb > 1000 mUI/ml accounted for 10,6%.

The average concentration of HBsAb was 189.8 ± 332.5

Table 5. Anti-HBs (+) distribution by gender

Gender	Anti - HBs				p
	Positive	Negative	Total	Percent (%) HBsAg (+)	
Male	117	141	248	47.2	0.053
Female	130	148	278	46.8	
Total	**247**	**279**	**526**	**47.0**	

Comments: No significant differences were found between positive Anti-HBs over gender.

Table 6. Anti -HBs (+) distribution by age group

Age group	Anti- HBs (+)				p
	Positive	Negative	Total	Percent (%) HBsAg (+)	
<16	35	44	79	44.3	0.046
16 - 39	85	101	186	45.7	
40 - 59	97	107	204	47.5	
60 - 86	30	27	57	52.6	
Total	**247**	**279**	**526**	**47.0**	

Comments: There was a significant difference in age groups about prevalence of Anti-HBs (+), p = 0.046. The highest percentage of patients. The group with the highest Anti-HBs proportion was the group over 60 years old (52.6%) and the lowest was the group under 16 years old (44.3%).

DISCUSSIONS

In this study, patients aged from 40 - 59 accounted for the highest percentage (41%). The participants were aged 1 to 86.

This finding is consistent with others study such as: Thai Thi Thanh Phong et al. (2020)[2] and Nguyen Van Dung et al[3].

The prevalence of patients infected with hepatitis B virus (HGB) in male was 52.8%, higher than 47.2% in women. Doan Thanh (2018) et al. showed that the proportion of men and women is 58.04% and 41.96%, respectively.

Research results on 576 patients examined at National Hospital for Tropical Diseases at the time of the study showed that 62 patients were infected with HBsAg (+) virus, accounting for 10.8%.

Our results are quite consistent with the epidemiological situation of hepatitis B virus infection in Vietnam because according to the World

Health Organization, Vietnam is in a high endemic area of 8 - 20% along with other countries in the Southeast Asia region[4].

According to table 3, the rate of HBV infection by age group of patients in the study was highest in the age group 60 - 86 years old, accounting for 16.1%, followed by the group 16 - 39 years old (11.8%). especially the group under 16 years old 6.0%, this difference is not statistically significant (p > 0.05).

Le Thi Diem Trinh et al. (2021) showed that the proportion of hepatitis B infection is highest in the age group 16-29 years old, followed by 11.8% in 50 - 60 year olds. A possible explanation for this might be vaccination to prevent Hepatitis B is a highly effective method. Patients have also improved their knowledge and measures to prevent Hepatitis B virus infection, so the rate of Hepatitis B infection is decreasing with age group. HBsAb is an antibody against the envelope antigen of the hepatitis B virus. HBsAb is detected in 80% of patients with hepatitis B, appearing after the antigen is no longer in the blood or after a few months, the titer decreases gradually over time. The person who able to resist HBV infection needs to have HBsAb concentration > 10mUI/l.

The rate of patients infected with Hepatitis B visiting the National Hospital for Tropical Diseases was 10.8%. The proportion of people with anti-HBs (+) or anti-HBs concentration > 10mUI/l is 47%; 53.1% of patients had anti-HBs (-) or anti-HBs concentration < 10mUI/ml. Thus, more than half of the patients who come to the clinic do not have antibodies in their blood to fight HBV infection, so it is necessary to propagate vaccination more widely.

The positive rate of Anti-HBs in men is 47.1% and in women is 46.8%, the overall rate is 47%. The difference is not statistically significant.

The highest proportion of Anti-HBs was in the 60 - 86% group (52.6%), followed by the 40 - 59 year old group accounting for 47.5%, and under 16 years old accounting for the lowest rate at 44.3%. Statistically significant with p < 0.05. It can be seen that the vaccinated age group still has more than one protective antibody, so quantitative testing of HBsAb after vaccination is necessary.

CONCLUSIONS

The research has also shown that: The rate of Hepatitis B infection is 10.8%, the rate of hepatitis B infection does not differ between age groups and genders with p > 0.05.

The proportion of participants with anti-HBs (+) or anti-HBs concentration > 10mUI/l was 47%; 53.1% of patients had anti-HBs (-) or anti-HBs concentration < 10mUI/ml. The rate of Anti-HBs is higher in the 60 - 86% group at 52.6%, the lowest in the under 16 year old group is 44.3%. The difference is statistically significant with p < 0.05.

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