



Prevalence of Hepatitis B in Patients with and without Liver Disease in Tertiary Care Hospital: A Study in Govt. Medical College, Thiruvananthapuram

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Abstract

Introduction: Hepatitis B is a serious and common infectious disease of the liver, affecting millions of people throughout the world. According to WHO every year there are over 4 million acute clinical cases of Hepatitis B and about 25% carriers. one million people a year, die from chronic active hepatitis, cirrhosis or primary liver cancer. There have been very few hospital based population studies on prevalence of Hepatitis B from Kerala and It is useful to assess the magnitude of disease and dynamics of disease transmission for its prevention and control.

Aim of the study: To study the prevalence rate of Hepatitis B virus Infection in a tertiary care hospital.

Objectives of the study: 1. To determine Age and Sex distribution of HBsAg positives 2. To determine the prevalence rate of HBsAg among patients without liver disease. 3. To determine the prevalence rate of HBsAg in patients with liver disease.

Materials and Methods: Blood samples from patients both IP/OP were subjected for HBsAg detection using third generation ELISA (ErbaLisa Kit). Test was carried out using standard procedure provided by the company in the Kit insert. The validity and interpretation of test performed was confirmed using positive control, negative control provided in the test kit.

Results: Among 7318 patients 256 were HBsAg positive thus showing prevalence rate of 3.5%. The study population have almost equal number of male and female population and male gender was found to be a risk factor for HBV infection (P value < 0.001; unadjusted OR: 2.262, 95% CI -1.695 to 3.016). High HBsAg positivity was seen in age group 41-50years (4.8%) followed by 31-40years (4.2%). Prevalence of HBV infection was found to be significantly associated with age group (N=73; p value=<0.0001). Among 7014 patients without liver disease 185 of them were HBsAg positive thus showing prevalence of 2.6% and higher among males with prevalence rate of 3.4% whereas in females with 1.5%. It is high in the age group 41-50 followed by 31-40. Among 304 patients presented with liver disease 71 were HBsAg positive thus showing prevalence rate of 23.3%.

Conclusion: According to the present study it is noted that there is 3.5% prevalence for HBsAg and it is higher among males than females. HBV infection is higher in age group 41- 50 years. Prevalence of HBsAg among patients without liver disease is 2.67% and among patients with liver disease is 23.4%. This is correlating with other studies conducted in the state of Kerala and other parts of India like Tamil Nadu, Andhra Pradesh, Uttar Pradesh, Delhi and also other parts of the world.

Keywords: Hepatitis B, Liver Disease.

Introduction

Hepatitis B is a serious and common infectious disease of the liver, affecting millions of people throughout the world (Knipe et. Al, 2005)¹ The pathological consequences of persistent HBV infection include chronic hepatic insufficiency, Cirrhosis and Hepatocellular carcinoma. In addition chronic carriers can transmit the disease for many years (Roberson W S,1995)². Infections often occur in early childhood when it is asymptomatic and often leads to the chronic carrier state. More than 2000 million people alive today have been infected with HBV at sometime in their lives. Of these 350 million remain infected chronically and become carriers of virus. Three quarter of worlds population live in areas where there are high levels of infection. Every year there are over 4 million acute clinical cases of Hepatitis B Infection, and about 25% of carriers, 1 million people a year, die from chronic active hepatitis, cirrhosis or primary liver cancer (WHO, 1998)³. The world can be divided into three areas when the presence of chronic HBV is high (> 8%), intermediate (2-8%), low (<2%)(Mahoney F J et.al,1999)⁴. According to world Health Organisation, India is at intermediate endemic level of HBV with surface antigen prevalence between 2% and 10% among population studied(Martha Bhaskar Roa, 2013)⁵. There have been very few hospital based population studies on prevalence of Hepatitis B from Kerala. The rate of seroprevalence is useful to assist the preventive strategies. To assess the magnitude and dynamics of disease transmission and for its prevention and control.

Aim of the Study

To study the prevalence rate of Hepatitis B virus Infection in Govt. Medical College, Trivandrum.

Objectives

1. To determine Age and Gender distribution of HBsAg positives
2. To determine the prevalence rate of HBsAg among patients without liver disease.

3. To determine the prevalence rate of HBsAg in patients with liver disease.

Materials and Methods

Study Design: Descriptive study

Study setting: Central Microbiology laboratory, Medical College Hospital, Thiruvananthapuram and Department of Gastroenterology, Govt. Medical college, Thiruvananthapuram.

Study Population: The study population included all the patients attending (Both OP and IP) Govt. Medical college Hospital, Trivandrum.

Study Period: Period of six months from July 2013- December 2013.

Inclusion criteria

All blood samples received in central microbiology laboratory and serology laboratory associated with Gastroenterology Department in Govt. Medical college, Trivandrum for HBsAg detection.

Exclusion Criteria: Haemolysed, Icteric, Lipaemic Blood samples were excluded from the study.

Sample size: 6617.

Methodology

5ml of blood sample collected aseptically without anticoagulants from patients attending either Op/IP was received in the laboratory for HBsAg detection. These blood samples were allow to clot and centrifuged by standard procedure to separate serum. These serum samples were subjected for HBsAg detection using third generation ELISA (ErbaLisa Kit). Test was carried out using standard procedure provided by the company in the Kit insert. The validity and interpretation of test performed was confirmed using positive control, negative control provided in the test kit. Quality control of the test was done using internal quality control samples. Reproducibility of the test was checked by testing positive serum sample in duplicate wells. And the cut off value was calculated using the formula $0.1 + NCx$.

Interpretation of Results

Non Reactive- samples with optical density less than the cut off value were considered non Reactive

Reactive – Samples with optical density equal to or more than the cut off value considered as reactive.

Results

A total of 7318 serum samples of patients attending various outpatients departments and inpatients in medical college hospital were subjected for the test.

By statistical Analysis the mean age for the study is 43.2+-19.8years.The study population Table 1 and chart 1 have 58% males and 42% females with maximum number of patients coming under the age group of 41-50.The study population have almost equal number of male and females, male gender is found to be a risk factor for HBV infection (P value < 0.001; unadjusted OR: 2.262, 95% CI -1.695 to 3.016).

Among 7318 serum 256 of of them were showing HBsAg showing positive Table 2. prevalence to be 3.5%.

It is clear Table 3 and table 4. that the high HBsAg positivity seen in age group 41-50 (4.8%) followed by 31-40 (4.2%). Prevalence of HBV infection was found to be significantly associated with age group (N=73; p value=<0.0001).

Among 7038 patients without liver disease 185 of the patients were HBsAg positive Table 5. Thus showing prevalence of HBsAg in patients without chronic liver disease is 2.6%.Here the study population Table 6. have 58% males and 42% females . The HBsAg prevalence for males is 3.4% and females is 1.5%.Thus table 7. showing the high prevalence of HBsAg in the age group 41-50 followed by 31-40years respectively. Among 304 patients with liver disease 71 were showing HBsAg positive table 8. Thus showing prevalence of HBsAg in patients with liver disease as 23.3%.

Table 1. Age & gender distribution of study population

Age	Male	Female	Total	%
0-10	99	71	170	2.3
11-20	269	205	474	6.5
21-30	714	521	1235	16.9
31-40	731	719	1450	19.8
41-50	836	722	1558	21.3
51-60	837	437	1274	17.4
61-70	548	272	820	11.2
≥71	231	106	337	4.6
Total	4236	3053	7318	100

Table 2. Number of HBsAg Positives

	HBsAg	
	Frequency	Percentage
Positive	256	3.5
Negative	7026	96.5
ToTal	7318	100

Table 3. Gender Distribution of HBsAg Positives and Negatives

Sex	HBsAg	
	Positive(%)	Negative
Male	193(4.5%)	4072
Female	63 (2%)	2990
Total	256	7062

Table 4. Age and Gender Distribution of HBsAg Positives and Negatives

Age (yrs)	HBsAg Positives			HBsAg Negatives		
	Male (%)	Female(%)	Total(%)	Male	Female	Total
0-10	1(1)	0	1(0.5)	98	71	169
11-20	9(3.3)	3(1.4)	12(2.5)	260	202	462
21-30	34(4.7)	13(2.4)	47(3.8)	680	508	1188
31-40	48(6.5)	21(2.9)	62(4.8)	683	705	1388
41-50	55(6.5)	21(2.9)	76(4.8)	81	701	1482
51-60	31(3.7)	7(1.6)	38(2.6)	806	430	1236
61-70	11(2)	3(1.1)	14(1.7)	537	269	806
≥ 71	4(1.7)	2(1.8)	6(1.7)	227	104	331
Total	193	63	256	4072	2990	7062

Table 5. Prevalence of HBsAg in patients without Liver Disease

	HBsAg	
	Frequency	Percentage
Positive	185	2.6
Negative	6829	97.4
Total	7014	100

Table 6. Age and Gender distribution of HBsAg Positive and Negative patients without liver disease.

Age group (yrs)	HBs Ag Positive			HBsAg Negative		
	Male(%)	Female(%)	Total(%)	Male	Female	Total
0-10	1(1)	0(0)	1(0.6)	98	69	167
11-20	8(3)	3(1.5)	11(2.4)	251	196	447
21-30	21(3.1)	9(1.7)	30(2.5)	656	499	1155
31-40	33(4.7)	10(1.4)	43(3.1)	658	689	1347
41-50	42(5.3)	14(2)	56(3.7)	746	686	1432
51-60	25(3.1)	5(1.1)	30(2.4)	762	420	1182
61-70	6(1.1)	2(0.7)	8(1)	518	264	782
≥70	4(1.8)	2(6(213	104	317
Total	140	45	185	3902	2927	6829

Table 7. Gender Distribution of HBsAg positives among patients without Liver Disease.

SEX	HBsAg	
	Positive (%)	Negative
Male	140(3.4)	3902
Female	45(1.5)	2927
Total	185	6829

Table 8.Prevalence of HisAg among patients with Liver Disease

	HBsAg	
	Frequency	Percentage
Positive	71	23.3
Negative	233	76.7
Total	304	100

Discussion

Humans are the only reservoir for blood borne viruses like Hepatitis B (HBV) and Hepatitis C (HCV). They are of utmost concern because of their prolonged viremia and latent or carrier state. They are transmitted parentally, vertically or sexually and cause fatal acute and chronic life threatening disorders. HBV prevalence in India is between 2-8% i.e under intermediate level. This study included 7318 patients samples, of which 7014 patients were without liver disease and 304 patients with liver disease received in central microbiology laboratory, Govt. Medical College, Trivandrum and serology laboratory, Department of Gastroenterology, Govt. Medical college Trivandrum.

In the whole study population the prevalence rate of HBsAg is 3.5% (table 2). This study correlates with studies conducted by (Mathai et. Al, 2002)⁶ in hospital based population of Kerala with a prevalence rate of 3.1% and (Nagarekha Kulkarni,2012)⁷ among blood donors of Delhi between 2005-2009 with a prevalence rate of 3.2% and (Shantanu Prakash et.al, 2013)⁸ study conducted at Lucknow Uttar Pradesh among haemodialysis patients with prevalence rate of 3.2% . whereas community based study conducted by(T Kurien et. al, 2004)⁹ at Vellore, Tamil Nadu showed HBsAg prevalence rate of 5.7%.

Prevalence of HBsAg are high in males compared to females with 4.5% and 2% respectively (table3)

which is correlating with other studies (Shantanu Prakash et.al,2013)⁸and (T Kurien et.al, 2004)⁹. High prevalence rate is seen in the age group 41-50 (4.8%) followed by 31-40(4.2%) respectively (table 4).

Prevalence rate of HBsAg among patients without liver disease is 2.67% (Table 5). This is correlating with study conducted by (S Gulia et. al, 2010)¹⁰ blood donors of Andhra Pradesh with prevalence rates of 2.45% in replacement donors and 2.54% in voluntary donors respectively. And also correlating with the study conducted in patients attending surgical OPD in Rawalpindi, Pakistan, (Chaudhary I A,2007)¹¹with prevalence rate of 2.28%.

Prevalence rate of HBsAg among patients with liver disease is 23.4% (Table 8). This almost correlates with other studies (Chaudhary et. al, 2005)¹² showed prevalence rate of 11% in acute hepatitis and 25% in chronic hepatitis at Kolkatta and (Singh et. al, 2007)¹¹ reported prevalence rate of 30% in patients with liver disease. Another study by (M I Al Muslih et. al, 2001)¹³ from Yemen showed prevalence rate of 33% in patients with liver diseases.

Prevalence rate of HBV in males and females with liver disease are 23.7% and 22.2% respectively. And high prevalence of HBsAg is seen in the age group of 21-30 followed by 31-40 years.

Conclusion

According to the present study it is noted that there is 3.5% prevalence for HBsAg and prevalence rate is higher among males than females. HBV infection is higher in age group 41- 50 years. Prevalence of HBsAg among patients without liver disease is 2.67% and among patients with liver disease is 23.4%. these all findings are correlating with other studies conducted in the state of Kerala and other parts of India like Tamil Nadu, Andhra Pradesh, Uttar Pradesh, Delhi and also other parts of the world.

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