



Original Research Article

Seropositivity of Hepatitis B Surface Antigen in Tertiary Care Hospital, Central India

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ABSTRACT

Keywords

Hepatitis B surface antigen

The aim of this study was to determine seropositivity of Hepatitis B surface antigen (HBs Ag) as a serological marker for the viral infection among general population in Chirayu Medical College & Hospital Bhopal. Study was carried out from January 2014 to April 2015. A total of 2274 were screened for Hepatitis B surface antigen by rapid immunochromatographic test (ICT). Out of 2274, 109 (4.79%) samples were screened positive for Hepatitis B surface antigen. Seropositivity was seen more in males (73.39%) as compared to females (26.60%). In endemic country like India, where diagnostic facilities are poor at peripheral areas ICT make an excellent tool in addressing this potentially fatal, epidemic prone infection that has become an important public health problem in our country. One can never forget the fact that ICT-based tests could be the only support available. Routine screening, health education and HBV vaccination are adopted to reduce morbidity & mortality of HBV infection in community.

Introduction

Hepatitis B virus (HBV) is the prototype member of the Hepadnaviridae (hepatotropic DNA virus) family. Hepadna viruses have a strong preference for infecting liver cells, but small amounts of hepadnaviral DNA can be found in kidney, pancreas and mononuclear cells. However, infection at these sites is not linked to extrahepatic disease. HBV virions are double shelled particles, 40-42 nm in diameter, with an outer lipoprotein envelope that contains three related envelope glycoproteins (or surface antigens). The most abundant protein on the virion surface is the 24 kDa HBsAg or S protein.¹

HBV is estimated to be responsible for chronic infection in at least 300 million individuals and is the ninth major cause of mortality. About 4% of the population is estimated to be carriers of HBV, giving a total pool of approximately 36 million carriers in India. HBV is reported to be responsible for 70% of cases of chronic hepatitis and 80% of cases of cirrhosis of the liver. About 80% of Indian patients with hepatocellular carcinoma have hepatitis virus associated liver disease.²

According to WHO, a third of the world's population (2 billion people) have been

infected with HBV, and about 5% are chronically infected. The prevalence of HBsAg positivity in the Far East (South east Asia, China, the Phillipines, Indonesia), the Middle East, Africa, and parts of South America ranges from 8-15%.³

Diagnosis of HBV infection is usually through serological and virological markers. Hepatitis B surface antigen (HBs Ag) is the hall mark of HBV infection and is the first serological marker to appear in acute HBV infection and persistence of HBs Ag for more than 6 months suggest chronic HBV infection.⁴

With this background, study was conducted to know the seropositivity of Hepatitis B surface antigen by rapid immunochromatographic test.

Materials and Methods

The Prospective Hospital Based Study was conducted in the Department of Microbiology, from January 2014 to April 2015. A total of 2274 were screened for Hepatitis B surface antigen by rapid immunochromatographic test (ICT) test manufactured by Diagnostic Enterprises.

Results and Discussion

Out of 2274,109 (4.79%) samples were screened positive for Hepatitis B surface

antigen.(Table No: 1). Seropositivity was seen more in males (73.39%) as compared to females (26.60%). (Table No: 2)

The overall seropositivity of HBsAg in the present study was 4.79% which is consistent with the overall positivity rate in India 4%, with a little difference. Various studies have documented the seropositivity from as low as 1% to as high as 15%. Bhattacharya et al reported seropositivity of hepatitis B virus infection of about 1.66% in West Bengal, Kolkata which was low in compare with other studies in different parts of India.⁵ while study conducted by Behal R et al documented 2.25% .⁶ Chandrasekaran et al also documented the seropositivity of 7%.⁷ Williams et al documented the seropositivity of Hepatitis B infection 7.4%.⁸ Martha Baskar Rao reported 7.6% patients of seropositivity for Hepatitis B,⁹while Kurein et al documented 5.7%.¹⁰ A study of hepatitis B surface antigen carried out by Reddy et al found the seropositivity of Hepatitis B infection in 4.40%¹¹while Chandra M et al documented 4.80%.¹² Therefore this study shows comparable findings of hepatitis B infection with the different authors from different parts of India.

In the present study, seropositivity was found more in males (73.39%) than in females (26.60%).

Table.1 Seropositivity of Hepatitis B Surface Antigen (n=2274)

	Samples	Percentage
Sample screened positive for Hepatitis B surface antigen	109	4.79%
Total	2274	100%

Table.2 Sex-wise distribution (n=109)

Gender	Sample screened positive for Hepatitis B surface antigen	Percentage
Male	80	73.39%
Female	29	26.60%
Total	109	100%

Datta et al had found that the HBsAg positivity rate of 35.3% in male and 19.3% in female¹³, while P.Jain et al also found that the positivity of HbsAg was more prevalent among males 62.54% in comparison to female 23.22%.¹⁴ Quamer S, et al explained the probable cause of females are suffering from Hepatitis B infection less than male because females probably clear HBV more efficiently in comparison to males.¹⁵

In endemic country like India, where diagnostic facilities are poor in peripheral areas, rapid immunochromatographic tests make an excellent tool in addressing this potentially fatal, epidemic prone infection that has become an important public health problem in our country. One can never forget the fact that ICT-based tests could be the only support available. Routine screening, health education and HBV vaccinations are the methods adopted to reduce the morbidity & mortality of HBV infection in the community.

Limitation of the study: The samples screened positive for HBsAg by rapid immunochromatographic test were not confirmed by ELISA as this facility was not available.

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