

## Original Article

### “SEROPREVALENCE OF HEPATITIS B SURFACE ANTIGEN AMONG PATIENT’S ATTENDING TERTIARY CARE CENTER IN KANPUR”

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**ABSTRACT:** Hepatitis B infection is a major global health problem. The aim of the study was to determine the seroprevalence of Hepatitis B surface antigen (HBsAg) of Hepatitis B virus (HBV) infection among patient’s attending a tertiary care center in Kanpur. **Materials & Methods:** Blood sample from 10800 patients were collected from June 2015 to May 2016 for detecting Hepatitis B surface antigen. Hepatitis B surface antigen was detected by using rapid card. **Result:** Among 10,800 patients, overall prevalence rate of HBsAg was 3.7%. HBsAg prevalence was significantly higher among male 62.1% and in adult age group. There was striking elevation of serum aminotransferase, specially ALT from mild to moderate increase of 3 to 10 fold to striking increase to >100 folds. **Conclusion:** Our results indicate high prevalence rate of hepatitis B virus infection, which is an important public health issue in this region. Effective program of active screening and vaccination of adolescent and young adults should be implemented, along with a universal immunization program.

## INTRODUCTION

HBV is an enveloped DNA virus transmitted vertically (mother to child), parenterally and sexually, which replicates in the liver and causes hepatic dysfunction. HBsAg is found on the surface of the virus. HBV infection leads to a wide range of liver diseases from acute hepatitis to chronic hepatitis, cirrhosis, and hepatocellular carcinoma (HCC).<sup>[1]</sup> The prevalence of Hepatitis B varies from country to country and there is a wide variation in the prevalence in different region of our country. Based on the prevalence of hepatitis B infection in the

general population, are classified as having high (8% or more), intermediate (2-7%), or low (less than 2%) HBV endemicity.<sup>[2]</sup> Approximately 45% of the world population live in hyper-endemic; 43% live in midendemic areas and 12% live in hypo-endemic areas<sup>[3,4]</sup>. The systemic review and meta-analysis of the prevalence of hepatitis B in India by confirms that in tribal and non-tribal populations of India, it is 15.9% and 2.4% respectively<sup>[4]</sup>. The diagnosis of HBV infection is based on a group of clinical, biochemical, histological, and serological viral markers.

Soon after discovery of the “Australia antigen”, Hepatitis B surface antigen (HBsAg) has been the prime diagnostic target for HBV.<sup>[5]</sup> Hepatitis B surface antigen is an important component of HBV infection, which indicate active HBV infection either acute or chronic.<sup>[6]</sup>

A hepatitis B vaccine has a high efficacy in prevention of HBV transmission and has brought about remarkable changes in global epidemiology of HBV infection. The first step in tackling the HBV disease burden in India is to have a more accurate assessment of the burden of the disease. Therefore, the present study was undertaken to estimate the prevalence of Hepatitis B infection which is essential for designing the strategies to control the disease.

## MATERIAL AND METHODS

The study was carried out from June 2015 to May 2016. The study was conducted in Rama Medical College Hospital & Research Centre in Kanpur. The study population was the patients who required screening of HBsAg. A total of 10800 patients, both male and female were analysed. Previous clinical history, immunization and demographic details was also collected from the patients at the time of collecting blood samples. The information include detailed occupational

history apart from general data like age, sex, socioeconomic status, marital status and awareness towards hepatitis B was in the questionnaire. The presence of HBsAg in serum was detected by rapid card test [HEPACARD, J.Mitra.co.pvt.ltd] according to the manufacturer’s instruction.

## RESULT

In the study total 10800 patients (7020 male & 3780 female) were studied. Serum sample were analysed by using rapid card (HEPACARD). Overall prevalence rate of was 3.1% (401 were positive among 10800 patients). [Table 1] Lack of awareness and carrier state seems to be the reason for this increased prevalence among the patients. Among 10800 patients, high seropositivity was found in males (249; 62.1%) and higher rate of positive cases were found in 21-40 age group. [Table 2] In hepatitis B infection there is elevation of liver enzymes, specially ALT (Alaninaminotransferase) [Table 3].

**Table 1: Seropositivity of Hepatitis B Surface Antigen (HBsAg antigen)**

Total sample for HBsAg screening	10800
Positive sample (%)	401 (3.7%)
Negative Sample (%)	10399 (96.3%)

**Table 2 - Age wise distribution among HBsAg positive patients**

Age	Positive cases	Negative cases
<20	36(8.9%)	
21-40	161(40.1%)	
41-60	148 (36.9%)	
>60	56(13.9%)	

**Table 3– Range of ALT Among Positive Cases**

Range of ALT (ULN=Upper Limit Of Normal)	No. of Positive Cases <i>n</i> (%)
<1X ULN	59(14.7%)
1-2X ULN	88(21.9%)
>2X ULN	254(63.3%)

## DISCUSSION

In the present study, prevalence of hepatitis B infection among patients attending tertiary care center is around 3.1% by using rapid card which is comparable to study conducted by Krishnaswamy et al.<sup>[7]</sup> Recent studies by Sayed et al<sup>[8]</sup>, Sood et al<sup>[9]</sup>, Behel et al.<sup>[10]</sup> and Gitanjali et al.<sup>[11]</sup> have reported a less prevalence of 1.63%, 0.87% and 2.6% respectively. While Atul et al.<sup>[12]</sup> reported high prevalence 4.7%. Other studies also conducted in India, showed a wide range of prevalence rate 1-2%<sup>[13]</sup>, 2.97<sup>[14]</sup> 12.8%<sup>[15]</sup>. In Uttar Pradesh HBsAg prevalence varies high to low 10.191<sup>[16]</sup>,

1.868<sup>[17]</sup>,4.348<sup>[18]</sup> similarly in Delhi prevalence reduced from 19.398 to 2.064<sup>[18,19]</sup>. Chaterjee et.al. found prevalence in west Bengal in different years 1.54 (2000), 2.68 (2005), 1.49 (2009)<sup>[20]</sup>. The data from various studies show wide geographic variations, which may represent differences in socio-economic status or cultural practices in different regions. Hence this region is in intermediate zone for HBV prevalence.

Among the adult age group 21-40, 40.1% were HBsAg positive similar to Xiaoqing Li et al.<sup>[21]</sup> found highest prevalence (72.9%) in 15-59 age groups in china, unlike other studies got more prevalence in <21 age groups<sup>[21]</sup>, 1-15 age group<sup>[22]</sup> and 15-20 age groups<sup>[23]</sup>.

Analysis by gender reveals that the seroprevalence of HBsAg among male is significantly higher than that found in female. Several studies in India found more prevalence in male in different years 1.82%<sup>[24]</sup>, 1.64%<sup>[25]</sup> and 21%<sup>[26]</sup>. Majority of other studies also report a higher HBV prevalence in males as compared to females.<sup>[8,9,10,11]</sup> Mazzur et al had suggested that the higher frequency of HBV carriers in males could result from behavioural differences between males and females; the life activities of males more often bring them into contact with hepatitis

virus and, as a consequence, they are more likely to become infected and become carriers.<sup>[27]</sup> In approx 15% of case AST level was normal (<1x ULN) and 63% having high AST level (>2x ULN). The results compared to the above studies, moreover, in our study showed that the prevalence rate of HBsAg positive patients was 3.1%. The present result shows that the prevalence percentage is increases due to lack of awareness of education and vaccination.

**Limitation:** The samples screened for HBsAg by rapid card test only, results were not confirmed by ELISA.

## CONCLUSION

This study showed Hepatitis B infections are important public health issue in this region that need to be addressed. It is important to carry out studies to reveal the epidemiology of HBV and identify high prevalence areas. Effective immunization programme will reduce the burden of infection in this country. So it is very important to concentrate on to implement programmes for the prevention and control of hepatitis B

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