SEROPREVALENCE OF HEPATITIS B SURFACE ANTIGEN AMONG PATIENTS ATTENDING A TERTIARY CARE HOSPITAL, TELANGANA, SOUTH INDIA

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ABSTRACT

Background: Hepatitis B virus (HBV) infection is a significant public health problem in India. The majority of disease cases progress silently and patients present in advanced stages like decompensated chronic liver disease or liver cancer. About two billion of the world's population have been exposed to HBV, of whom 350 million harbour it chronically. India falls in the intermediate endemicity zone (prevalence rate 2–7% by WHO), with a disease burden of about 50 million. Hepatitis B surface antigen (HBsAg) in the serum is the first serological marker to indicate active HBV infection either acute or chronic.

Objectives: The present study was therefore conducted with an aim to investigate the seroprevalence of HBsAg among patients (IPD and OPD) attending tertiary care hospital.

Materials and methods: The present cross sectional study was conducted at the rural based tertiary care teaching hospital, in Northern Telangana, India, from August 2017 to September 2018. The screening for HBsAg, in all the serum samples collected from patients attending hospital OPD and IPD, was performed using commercial rapid immunoassay kits (HEPACARD - Diagnostic Enterprises, H.P. India). The data of those, who were found to be positive for HBsAg was statistically analyzed with the chi-square test, and results were considered significant if the p value was <0.05.

Results: A total of 10304 patients were screened for HBsAg, among them 5381 (52.22%) were males and 4923 (47.78%) were females. High HBsAg seropositivity was observed in males 65 (0.63%) than females 31 (0.30%). The highest HBsAg seropositivity 24 (0.23%) was observed in 41-50 years age group.

Conclusion: The HBsAg seroprevalence was 0.93% in the present study. A high adult male seropositivity draws attention and demands health education about transmission of the HBV, early diagnosis by screening patients attending hospitals, and vaccination in early life as preventive measures.

Keywords: Hepatitis B surface antigen, OPD and IPD patients, seroprevalence, Hepatitis B virus

INTRODUCTION

Hepatitis B virus (HBV) is a double stranded DNA virus belonging to Hepadnaviridae family.[1,2] HBV is highly infectious, transmitted through percutaneous (puncture through the skin) and mucosal (semen and saliva) exposure to infectious blood and body fluids.[1-3] The majority of disease cases progress silently and patients present in advanced stages like decompensated chronic liver disease or liver cancer.[1,4]

About two billion people of the world's population have been exposed to the HBV, of whom 350 million harbour it chronically.[4] HBV prevalence is highest in Africa and Western Pacific region. WHO reports 2% hepatitis B prevalence among the general population in South East Asia Region.[3]

Hepatitis B is a significant public health problem in India. India falls in the intermediate endemicity zone (prevalence of 2–7% by WHO), with a HBV carrier burden of about 50 million.[1,3,4]

Clinically, hepatitis B from hepatitis caused by other viral agents cannot be differentiated. Hence, laboratory confirmation of the diagnosis is essential. HBsAg in the serum is the first serological marker to indicate active HBV infection either acute or chronic.[1,2] For reducing the incidence of chronic infections or carrier state, effective strategies like mandatory screening for HBsAg among hospital visiting patients and hepatitis B vaccination early in life are necessary. Hepatitis B vaccine is the mainstay to prevent HBV infection and related complications.[2,3]

The present study was therefore conducted to assess the extent of seroprevalence of HBsAg among patients (IPD and OPD) attending tertiary care hospital and this data can further be utilized for implementation of effective control programs.

MATERIALS AND METHODS

The present cross sectional study was conducted at the rural based tertiary care teaching hospital in Northern Telangana, India, from August 2017 to September 2018. The data recorded and maintained in the microbiology laboratory register was reviewed and analyzed for the study. In this period, total 10304 patients attending hospital (OPD and IPD) who underwent screening for HBsAg (in whom HBsAg detection was advised on the basis of clinical findings, demographic & risk factors, as a part of pre-operative screening & antenatal screening) were subjected to the study. After informed consent, blood samples were collected from patients. The screening for HBsAg, in all the serum samples collected from patients, was performed using commercial rapid immunoassay kits (HEPACARD - Diagnostic Enterprises, H.P. India), as per the manufacturer's instructions. The data of those, who were found to be positive for HBsAg were statistically analyzed with the chi-square test, and results were considered significant if the p value was <0.05.

RESULTS

A total of 10304 patients attending OPD and IPD of tertiary care hospital, 5381 males and 4923 females were included in the study. The overall seroprevalence of HBsAg was found to be 96 (0.93%). The seroprevalence of HBsAg was found high among males (0.63%) than females (0.30%). This difference was found to be statistically significant [Table 1].

The overall HBsAg seropositivity was high in age group 41-50 years followed by 31-40 years and 51-60 years, however males showed high seropositivity in 31-40 years age groups and females in 41-50 years. Lowest HBsAg seropositivity was found in 1-10 years age group. There was statistically significant difference between age groups and HBsAg seropositivity [Table 2].

The high HBsAg seropositivity was seen in IPD (0.97%) patients than OPD (0.77%) patients; however this difference was not statistically significant [Table 3].

Table 1: Gender-wise distribution of HBsAg seropositivity

Gender	Total number of samples tested (%)	Total number of HBsAg positive (%)	p value
Male	5381 (52.22)	65 (0.63)	0.002495
Female	4923 (47.78)	31 (0.30)	(statistically
Total	**10304 (100)**	**96 (0.93)**	significant)

Table 2: Age-wise distribution of HBsAg seropositivity

Age group (years)	Male		Female		Total		p value
	Tested	HBsAg positive	Tested	HBsAg positive	Tested	HBsAg positive (%)	
1-10	296	01	198	-	494	01 (0.01)	
11-20	497	02	483	02	980	04 (0.04)	0.007656
21-30	672	05	1521	04	2193	09 (0.09)	
31-40	708	**14**	801	04	1509	18 (0.17)	(statistically
41-50	1055	13	713	**11**	1768	**24 (0.23)**	significant)
51-60	1039	13	564	05	1603	18 (0.17)	
61-70	756	13	411	02	1167	15 (0.15)	
71-80	306	04	189	03	495	07 (0.07)	
>81	52	-	43	-	95	-	
Total	5381	65	4923	31	**10304**	**96 (0.93)**	

Table 3: Department-wise distribution of HBsAg seropositivity

Department	Total number of samples tested	Total number of HBsAg positive (%)	p value
IPD	8482	82 (0.97)	0.4279 (statistically not significant)
OPD	1822	14 (0.77)	
Total	10304	96 (0.93)	

DISCUSSION

Prevalence of HBV infection differs in different regions of the world. According to WHO, India has been placed into the intermediate endemicity zone of Hepatitis B (2-7%).[3] In the present study, the HBsAg seroprevalence was found to be 0.93%, which corresponds with the study conducted by Mathur P et al[5] from Rajasthan who reported 0.94%. Few studies have reported low as well as high seroprevalence rate of HBsAg than the present study [Table 4]. This wide variation of HBsAg seroprevalence in different regions of country may be due to difference in sample size, methodology used for detection of HBV serological markers, age groups, and population (urban or rural) studied.

Table 4: HBsAg seroprevalence reported by different studies

Study	Year	Location	Sample size	Prevalence
Present study	2018	Karimnagar, Telangana	10304	0.93%
Payal mathur et al[5]	2016	Ajmer, Rajasthan	28920	0.94%
Sood and Malvankar[6]	2010	Jaipur, Rajasthan	3196	0.87%
Singh K et al[8]	2009	Coastal Karnataka	30428	0.62%
Quadri SA et al[9]	2013	Bijapur, Karnataka	4283	1.63%
Ingale H et al[10]	2017	Mumbai, Maharashtra	21782	2.42%
Bhatta CP et al[7]	2003	Kathmandu, Nepal	200	2.5%

Higher HBsAg seropositivity was observed in males compared to females. This finding is in concordance with studies done by Mathur P et al[5], Sood S et al[6], Quadri SA et al[9]. The reason for high prevalence in males might be due to multiple sexual partners, unprotected sexual practices, sharing of syringes among IV drug abusers. However, high immune response in females may help to clear the HBV more efficiently and rapidly as compared to males.[11]

In the present study, HBsAg seropositivity was highest in 41-50 years age group followed by 31-40 years and 51-60 years age groups. This could be due to unsafe sexual practices. Highest HBsAg seropositivity was reported in different age group by various studies. Ingale H et al[10] has observed highest seropositivity in 31-45 years age group, Mathur P et al[5] has reported highest seropositivity in 31-40 years age group and Quadri SA et al[9] has reported highest HBsAg seropositivity in 51-60 years age group.

CONCLUSION

The seroprevalence of HBsAg was 0.93% among hospital attending population in the present study. High adult male seropositivity draws attention and demands health education about transmission of the HBV, early diagnosis by screening patients attending hospitals, and vaccination in early life as preventive measures. This data would also help in evaluation of the effectiveness of vaccination programs and formulation of various healthcare strategies for the management and prevention of HBV infection.

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