Original article

SEROLOGICAL EVALUATION OF HEPATITIS B VIRUS IN OUT PATIENT DEPARTMENT PATIENTS OF A PRIVATE HOSPITAL IN NORTH-WEST INDIA

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ABSTRACT

Background: Globally, Hepatitis B is one of the most common infectious diseases. India has a strong private health care system which can be utilized for capturing a useful and large amount of clinical information.

Objective: To determine the seroprevalence of Hepatitis B surface antigen (HBsAg) in patients attending outpatient departments (OPDs) of a private hospital in Northwest India over a period of 2 years.

Methodology : A retrospective study (January 2010 - December 2011) was conducted on 9515 patients presenting to various OPDs of a 210 bedded private hospital in Jaipur , Rajasthan who submitted their serum sample to the lab for serological evaluation of Hepatitis B. HBsAg was screened by electrochemiluminescence and positive samples were cross checked by a rapid immunochromatography test.

Results: HBsAg seroprevalence was observed in 1.73% of the OPD population. It was observed to be 1.85% in males and 1. 52% in females. Highest HBsAg seroprevalence was noted in age group 51-60 years. Seroprevalence of HBsAg in Surgical OPDs was 0.84% and in Medical OPDs was 2.54 %.

Conclusion: The results of this study may not be a reflection of the situation in the Jaipur city population, but can be of assistance for the mapping of viral hepatitis prevalence and may be helpful in planning public health interventional strategies.

Keywords: seroprevalence, HBsAg, OPD patients

INTRODUCTION

Hepatitis B virus (HBV) infection is a major global health problem, especially in Asia, Africa, Southern Europe and Latin America. It is known to be the 10th leading cause of death and HBV related hepatocellular carcinoma is the 5th most frequent cancer worldwide. [1] About 30% of the world's population has serological evidence of current or past infection with HBV. The virus is transmitted by either per-cutaneous or mucous membrane contact with infected blood or other body fluid and is found in highest concentrations in blood and serous exudates. The primary routes of transmission are peri-natal, early childhood exposure, sexual contact, and per cutaneous exposure to blood or body fluids (i.e. injections, needle stick, blood transfusion).

Hepatitis B surface antigen (HBsAg) is the first serological hallmark of HBV infection. In India, HBsAg prevalence among general population ranges from 2%-8%. Indian population forms the second largest global pool of chronic HBV infections and the number of HBV carriers in India is estimated to be 50 million. [2]

A large proportion of patients suffering from Hepatitis B may be asymptomatic and can transmit the disease to healthy population. Studies have been conducted to estimate the prevalence of hepatitis B virus in selected group of people with higher risk factors such as blood donors, pregnant women, drug addicts and patients with liver disorders. However, there is paucity of information in India on the prevalence of HBV infections among general population .The patients presenting to the OPDs of a hospital are generally those seeking treatment for mostly community acquired ailments hence the estimation of seroprevalence of Hepatitis B surface antigen in such patients can be considered as a surrogate marker to represent the dynamics of virus transmission in the community. Such epidemiological data on HBV infection can additionally serve as a reference for public health action and planning, as well as for policy making.

METHODS

Between January 2010 and December 2011, a total of 9515 non repetitive, consecutive patients presenting to the various OPDs of Fortis Escorts Hospital in Jaipur City in Northwest India submitted their serum sample for Hepatitis B surface antigen screening to the Serology Lab. The samples were processed by electrochemiluminescence using Cobas e - 411analyser (Roche Diagnostics). The reactive samples were cross checked with rapid immunochromatography using Hepacard (Diagnostic Enterprises). In case of discrepancy in results by the two methodologies, the samples were finally confirmed at a reference lab employing Microparticle Enzyme Immuno-assay (Abbott Axysm). All the tests were performed and interpreted as per the manufacturer's instructions. The observations for this study were a retrospective compilation of test results and have been done following approval by the Institutional review board.

RESULTS

During the two years study period, a total of 9515 patients submitted their serum sample to the lab for Hepatitis B screening .Table -1 depicts the age and sex distribution of patients undergoing serological evaluation for Hepatitis B. Of the 9515 patients who underwent screening for HBsAg , 63.43%(6036) were males and 36.57% (3479) were females. The seroprevalence of hepatitis B surface antigen was observed in 1.73 % of the total OPD population screened. HBsAg seroprevalence was observed to be 1.85% in males and 1.52% in females. Highest HBsAg seroprevalence was noted in age group 51-60 years.

Table 1: Age and sex distribution of patients undergoing serological evaluation for Hepatitis B

Age (in years)	Males		Females		Total Patients	
	Tested	HBsAg +ve	Tested	HBsAg +ve	Tested	HBsAg +ve
0-10	83	0 (0.00)	45	2 (4.44)	128	2 (1.35)
11-20	129	3 (2.32)	63	3 (4.76)	192	6 (2.02)
21-30	714	17 (2.38)	764	13 (1.70)	1478	30 (15.53)
31-40	962	22 (2.29)	544	6 (1.10)	1506	28 (15.83)
41-50	1362	36 (2.64)	737	8 (1.08)	2099	44 (22.06)
51-60	1486	23 (1.54)	762	12 (1.57)	2248	35 (23.63)
61-70	919	8 (0.87)	423	7 (1.65)	1342	15 (14.10)
71-80	344	2 (0.58)	133	2 (1.50)	477	4 (5.01)
81-90	37	1 (2.70)	8	0 (0.00)	45	1 (0.47)
Total	**6036(63.43)**	**112(1.85)**	**3479(36.57)**	**53(1.52)**	**9515**	**165(1.73)**

Figures in parenthesis indicate percentage

Table -2 describes the OPD speciality- wise distribution of the patient population undergoing serological evaluation of Hepatitis B. Seroprevalence of HBsAg in surgical OPDs was 0.84% and in Medical OPDs was 2.54 %. Overall, highest HBsAg sero-positivity was noted in patients presenting to Pediatrics OPD (13.04%) followed by patients of the Gastroenterology OPD (11.51%). Of the 151 hospital employees screened for HBsAg as a part of employee health check up , 0.66% tested positive for Hepatitis B surface antigen. A total of 4873 patients underwent investigations under the health package scheme and 1.51% (74) tested positive for Hepatitis B surface antigen.

Table 2: OPD speciality wise distribution of patient population undergoing serological evaluation for Hepatitis B

OPD specialty	Patients	
	Screened	HBsAg+ve
Surgical OPDs	**1428**	**12 (0.84)**
Pediatric surgery	21	0 (0.00)
General surgery	105	0 (0.00)
Gastrointestinal surgery	55	3 (5.45)
Plastic surgery	52	0 (0.00)
Neurosurgery	22	0 (0.00)
Gynecology / obstetrics	527	4 (0.75)
Cardiothoracic vascular surgery	54	0 (0.00)
Urology	85	0 (0.00)
Orthopedics	410	4 (0.97)
ENT	94	1 (1.06)
Ophthalmology	3	0 (0.00)
Medical OPDs	**3063**	**78 (2.54)**
Pediatrics	23	3 (13.04)
Neurology	17	0 (0.00)
Nephrology	160	2 (1.25)
Gastroenterology	165	19 (11.51)
Cardiology	2003	30 (1.49)
Internal medicine	608	24 (3.94)
Pulmonary Medicine	18	0 (0.00)
Endocrinology	68	0 (0.00)
Dermatology	1	0 (0.00)
Employee health check	**151**	**1 (0.66)**
Composite health package	**4873**	**74 (1.51)**

Figures in parenthesis indicate percentage

DISCUSSION

In India, the point prevalence of hepatitis B in non-tribal populations is 3.07% and among the tribal populations is 11.85%. [3] The prevalence of hepatitis B surface antigen in our OPD population was observed to be 1.73%. A study on OPD patients attending a Medical College Hospital in Faisalabad, Pakistan reported seroprevalence of HBsAg as 1.55%. [4] However, another recent study from Pakistan has reported a high seroprevalence (12.12%) of HBsAg among OPD patients. [5] Estrada JY *et al* (2001) reported 26.7% of the OPD patients attending a medical centre in Manila, Philippines to be Hepatitis B surface antigen carriers. [6].

In this study, HBsAg seroprevalence in surgical OPDs and medical OPDs was observed to be 0.84% and 2.54% respectively. The seroprevalence of HBsAg among the patients attending surgical OPD in Rawalpindi was 2.28%. [7] A study on 9564 medial OPD patients of a district headquarter hospital in Pakistan reported HBsAg seroprevalence as 1.47%. [8]

A previous study on hospital based population in Jaipur city reported HBsAg seroprevalence as 0. 84%. [9] A recent study conducted in a tertiary care hospital in South India found HBsAg seroprevalence to be 1. 06%.[10] Quadri *et al* . (2013) have reported the HBsAg seroprevalence as 1.63% in a hospital based population in Bijapur, Karnataka. [11] Aliya N *et al*. (2013) have reported a HBsAg seroprevalence of 4.8% in a hospital based population in Bhopal.[12]HBsAg carrier status among urban population of Ahmedabad city was observed as 1.42 %.[13] HBsAg prevalence rates may differ considerably within a country, depending on various local ethnic, socioeconomic, cultural, geographic, religious and other factors.

HBsAg seroprevalence in our study was observed to be 1.85% in males and 1.52% in females. Prevalence of hepatitis-B surface antigen (HBsAg) in Solapur District, Maharashtra State was 1.82% in males and 1.17% in females. [14] Our findings suggest that sex difference in HBsAg prevalence appears to be due to a difference in viral exposure with men being more exposed as a result of inherently more active lifestyle or behavior.

The highest HBsAg sero-positivity in this study was noted amongst patients presenting to Pediatrics OPD (13.04%). Similar to our findings, a recent study from a tertiary care centre in Northern India reported highest sero-positivity for HBsAg in patients from Paediatric wards. [15] The HBsAg positivity in children below 15 years in India has been reported to range from 1.3 - 12.7%. [16]

In this study, 0.66% of the hospital staff screened; tested positive for hepatitis B surface antigen. A recent study from AIIMS, New Delhi found 0.4% of healthcare staff to be HBsAg positive. [17] Such a finding can be attributed to our hospital's policy of Hepatitis B screening; vaccination and serological response checkups of all healthcare workers.

HBsAg seroprevalence of 1.51% was noted in patients undergoing investigations under the composite health package scheme. This is most closely representative of rates in general population as these were asymptomatic and apparently healthy individuals undergoing routine health checks. Such individuals are likely to unknowingly serve as a reservoir for continuous transmission of hepatitis B to family members. Studies have reported that intra-familial horizon-

tal transmission is important for HBV transmission in the Indian community. [18]

CONCLUSION

The results of this study may not be a reflection of the situation in the Jaipur city population, but can contribute to the mapping of viral hepatitis prevalence and may be helpful in planning public health interventional strategies. More long term population based surveillance studies with extended serology of Hepatitis B virus infection are needed to more accurately assess the hepatitis B true disease burden, the impact of vaccination and to guide prioritization of scarce healthcare resources

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