

Seroprevalence of Hepatitis B Virus among Patients at a Tertiary Care Centre in North Karnataka, India

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ABSTRACT

Infection with the Hepatitis B Virus (HBV) is a global health problem. Epidemiological studies worldwide show wide variations in the prevalence patterns of the Hepatitis B infections. Early detection can contribute substantially to the timely diagnosis of the patients with acute illnesses and to an early treatment and hence, it can limit the transmission of the infection. The aim of the study was to determine seroprevalence of hepatitis B infection among different age and sex groups. The study was conducted in the Department of Microbiology of a tertiary care hospital, HSK Hospital, Bagalkot, North Karnataka during the period 2016 – 2017. Out of 3604 sera which were studied, 96 (2.66%) were sero-positive cases. Among the positive cases (96), the seroprevalence in males and females were 72% (69) and 28% (27) respectively and the frequency of HBV among age groups 0-20, 21-40, 41-60, >60 was 2% (2), 41% (40), 33% (32), 23% (22) respectively. Among the positive cases, a majority were in the age group of 21 to 40 years, with a male preponderance ($p < 0.05$). The results of the present study hint at the importance of presenting integrated information and educational programs among these target groups, for preventing and controlling HBV transmission.

Keywords

HBV infection,
Risk factors,
HBsAg detection,
Seroprevalence.

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Introduction

Hepatitis B virus (HBV) infection is one of the major global health problems. Of the approximately 2 billion people, who have been infected worldwide more than 350 million are chronic carriers of HBV (1).

Countries are classified on the basis of endemicity of hepatitis B virus (HBV) infection into high (8% or more), intermediate (2- 7%) or low (less than 2%) incidence countries. The prevalence of chronic HBV infection in India ranges from 2% to 10% as shown by different studies (1, 2, 3). India therefore comes under the intermediate to high endemicity category.

HBV infection is predominantly acquired at an early age in developing countries, which includes vertical transmission from mother to child, perinatal transmission, and horizontal transmission from child to child. However HBV can also be transmitted sexually (both homo and hetero sexual) accounts for a majority of the transmission occurring in adult life (4).

The clinical spectrum of HBV infection ranges from subclinical to acute symptomatic hepatitis or rarely fulminant hepatitis during the acute phase, inactive carrier state to chronic hepatitis. HBsAg is the first

seromarker to indicate active HBV infection either acute or chronic. It would appear in patient's serum usually 2-10 weeks after being infected with HBV before liver enzymes are increased or clinical symptoms appear (2).

Sero-surveys are one of the primary methods to determine the prevalence of HBsAg. There are very few studies which are available regarding the prevalence of HBV among the patients in the northern part of Karnataka. Hence the present study was undertaken to estimate the seroprevalence of HBV in both sexes and different age groups in our hospital.

Materials and Methods

The present study was carried out in patients attending outpatient and inpatient departments of our tertiary care hospital, Bagalkot, India.

These tests were done as part of preoperative screening, antenatal screening, screening on haemodialysis patients, on patients suspected to have HBV infection after getting a verbal consent. The sera were screened for the presence of HBsAg by a rapid immunochromatographic (ICT) test.

Those found positive on screening test were confirmed by third generation ELISA kits (Hepalisa; J Mitra and Co. Pvt. Ltd., New Delhi, India) according to the manufacturers protocol. The results were analyzed using chi-square test.

Results and Discussion

Out of 3604 individuals screened between August 2016 to January 2017, 96 (2.66%) were HBsAg positive. The age and sex wise distribution of individuals were shown in table 1. Among the positive cases (96), the seroprevalence in males and females was 72% (69) and 28% (27) respectively and the

frequency of HBV among age groups 0-20, 21-40, 41-60, >60 was 2% (2), 41% (40), 33% (32), 23% (22) respectively. Highest prevalence was observed among subjects of 21-40 years age group, followed by 41-60 years age group with male preponderance ($p < 0.05$).

In the present study, the seroprevalence was found to be 2.66%. In a study conducted in a hospital-based population at Kathmandu Medical College Hospital, Nepal, the prevalence rate was found to be 2.5% (5). Chowdhury A reported that 3-4% of the Indian population is HBV infected with the highest prevalence among the aborigines of Andaman as well as from Arunachal Pradesh (6). In our study, there was an increase in the prevalence among the male population as compared to that in females. Dutta *et al.*, has found that the HBsAg positivity rate 35.3% in male and 19.3% in female. They observed that hepatitis B infection is more common in male although the sample size was small (7).

In another study of P. Jain *et al.*, also found that the positivity of HbsAg was more prevalent among males 62.54% in comparison to female 23.22% (8). Another observation by Quadri *et al.*, documented that the prevalence of HBsAg is higher in males than females (9). Quamer *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 (10).

The incidence was highest among 21-40 years age group and lowest among 0-20 years. Thus these data indicate that the prevention of perinatally transmitted HBV in this locality by immunization and improvements in living standards of South Indian population. In contrast to our study, Singh *et al.*, reported highest incidence among <5 years and then a progressive decline thereafter (11).

Table.1 Age and sex distribution of patients testing for HBsAg

Age of patients in years	Males		Females		Total	
	Tested	Positive	Tested	Positive	Tested	Positive
0 - 20	75	2	23	0	98	2
21 – 40	1088	29	398	11	1486	40
41 – 60	938	25	255	7	1193	32
>60	489	13	338	9	827	22
Total	2590	69	1014	27	3604	96

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. Routine screening, health education and HBV vaccinations are the methods adopted to reduce the morbidity and mortality of HBV infection in the community.

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