SEROPREVALENCE OF HEPATITIS B SURFACE ANTIGEN IN AN URBAN POPULATION OF NORTH EASTERN STATE

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ABSTRACT

Hepatitis B is a major public health problem worldwide due to its chronic manifestations like chronic hepatitis, cirrhosis and hepatocellular carcinoma. The most complete data providing a picture of hepatitis B disease burden come from seroprevalence study. Over the last several decades researchers have conducted many studies in different parts of India, but information and studies are very limited in North Eastern zone. Keeping this in mind, this study was undertaken to look for prevalence of Hepatitis B virus in an urban population of southeast Assam. This community based study was conducted from September 2013 to August 2015. A total of 688 blood samples were collected from 21 municipal wards of Silchar town and all samples were subjected to ELISA for detecting Hepatitis B Surface Antigen. Out of 688 samples, only 20 (2.9%) were reactive, which is in accordance with Indian scenario.

KEYWORDS

Prevalence, Hepatitis B Surface Antigen, Urban Population.

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INTRODUCTION

Hepatitis B is a major public health problem worldwide. Approximately, 30% of world's population or about 2 billion persons have serological evidence of either current or past infection with Hepatitis B virus.¹ This infection is a leading cause of morbidity and mortality, not only because of acute illness but due to its chronic sequel like chronic hepatitis, cirrhosis and hepatocellular carcinoma accounting for more than a million death annually worldwide.^{2,3} The prevalence of chronic HBV infection in India ranges from 2-10% as shown by different studies.¹

The countries with diverse ethnic groups may have markedly different HBV prevalence in different groups.⁴ Over the last several decades numerous researchers have conducted seroprevalence studies of HBV in India.¹ Many of this studies are based on hospital patients,² antenatal clinical patients,^{3,4} or voluntary blood donors.⁵ which do not really represent the general population. Keeping this in mind, this study was undertaken to look for prevalence in an urban community population of South East Assam to give some picture of HBV prevalence in this geographical area.

MATERIALS AND METHODS

This community based study was conducted during the period from September 2013 to August 2015. Institutional ethical clearance and permission for sample collection from Deputy Commissioner, Cachar District, Assam, was obtained before samples collection. Blood samples were collected from general population of Silchar town. Of the 28 Municipal wards or clusters of Silchar town, Cachar, Assam, 21 Clusters were selected by using "Proportionate to Population" (PPS) cluster technique.

Approximately 700 samples were decided to be collected (Statistically significant); so 30 to 35 samples were collected from each cluster. House to house survey was conducted and socio-demographic information was recorded. Total 688 samples were collected from apparently healthy persons of the household after getting informed consent. People with a history of Hepatitis B vaccination were excluded from study.

All blood samples were transported to Department of Microbiology, Silchar Medical College, by maintaining proper cold chain and were preserved in deep freeze (-80°C). All specimens were subjected to Hepatitis B Surface Antigen ELISA test (ErbaLisa Hepatitis B). All reactive samples were repeat tested using the same ELISA kit. Samples showing repeat test reactivity were considered positive and were included for calculation of seroprevalence. Statistical analysis of the test results was done.

RESULTS

All specimens were subjected to Hepatitis B Surface Antigen ELISA test. Out of 688 samples, 20 were reactive which were further confirmed by repeat ELISA test. The overall prevalence was found to be 2.9% in this urban population. The prevalence of HBsAg among male subjects (3.3%, 15/458) was higher than that among female subjects (2.2%, 5/230). The majority of seropositive subjects were older than 35 years of age.

No. of Samples tested	Hepatitis B Surface Antigen ELISA Test		Prevalence of Hepatitis B Surface Antigen
	Reactive	Non-Reactive	
688	20	668	2.9%

Table 1: Prevalence of Hepatitis B Surface Antigen in the study population (n=688)

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Age	Hepatitis B Surface Antigen Prevalence				Total
	Positive		Negative		
	Nos.	%	Nos.	%	Nos.
15-20	2	3	62	97	64
20-30	3	2.5	117	97.5	120
30-40	6	2.7	210	97.2	216
40-50	3	3	109	97.3	112
>50	6	3.4	170	96.6	176
Table 2: Prevalence of Hepatitis B Surface Antigen with respect to the age of subjects studied (n=688)					

Sex	Hepatitis B Surface Antigen ELISA Test		Prevalence of Hepatitis B Surface Antigen
	No. of samples tested	Reactive	
Male	458	15	3.3%
Female	230	5	2.2%

Table 3: Prevalence of Hepatitis B Surface Antigen with respect to sex of subjects studied (688)

DISCUSSION

This study is the first community based study of Hepatitis B Surface antigen prevalence in urban population of South East Assam. Statistically significant population sample was obtained by using suitable sampling methodology. The findings of the study indicate that the overall seroprevalence rate is 2.9%, which is in accordance with the other parts of the country which has reported to vary from 2% to 7%.¹ Similar observations were noted in another community based study done in our neighbouring state West Bengal by Chowdhury et al.⁽⁶⁾ and they reported prevalence rate of 2.97%. A higher prevalence of HBsAg (5.7%) was found in a large community based study done in Tamil Nadu.⁷ Prevalence studies done in two urban population of South India had shown 3.3% (Rajahmundry) and 4.2% (Bangalore) respectively.⁸ A lower prevalence of 1.42% was found in an urban population based study of Ahmedabad city.⁹

A higher prevalence of HBsAg in males than in females is found in the present study. In another urban population based study more prevalence was found among male.⁹ A significant higher prevalence in males is also reported in other studies.^{5,10,11} The majority subjects having seropositive status are more than 35 years of age in the present study. In another community based study done in West Bengal also reported that positivity rate peaks in middle age.⁶ Paediatric age groups were not included in this study, but the major spread of Hepatitis B virus in the community occurs during childhood

and with familial contact. Keeping this in mind further studies need to be done to assess vertical transmission. A large community based study is also required considering the diversity of social and cultural factors in the country, specially in North Eastern Zone.

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