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Trends in Seroprevalence of Hepatitis B Virus Infection among General Population: A Study from Chennai, Tamil Nadu, India.

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ABSTRACT

Hepatitis B virus (HBV) infection remains a major global public health problem, despite the availability of effective vaccine and improvements in antiviral therapy. About 350 million people become chronic carriers of the virus and over 1 million die annually from HBV associated liver disease and a significant number of the chronic carriers may develop liver cirrhosis or hepatocellular carcinoma. A total of 951 participants (568 males and 383 females) from areas around our hospital were included in the study. Blood was collected from participants and sera were separated. Samples which showed positive for HBsAg by rapid test were tested for HBsAg by ELISA technique. Of the 951 samples, 40 (4.2%) were positive for HBsAg. High prevalence was recorded in males 25/951 (2.6%) than females 15/951 (1.6%). More number of positive cases (11/951 (1.2%)) were fall in the age group of 30-39. Data on HBV prevalence at country level are needed to estimate disease burden and to formulate health and vaccine policy.

Keywords: Hepatitis, Hepatitis B virus, liver cirrhosis, hepatocellular carcinoma

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INTRODUCTION

Hepatitis B virus (HBV) infection remains a major global public health problem, despite the availability of effective vaccine and improvements in antiviral therapy. Acute and chronic HBV infection is a leading cause of liver disease worldwide with about 350 million people become chronic carriers of the virus and over 1 million die annually from HBV associated liver disease and a significant number of the chronic carriers may develop liver cirrhosis or hepatocellular carcinoma [1]. HBV spreads predominantly by percutaneous or mucosal exposure to infected blood and other body fluids [2]. The modes of transmission and prevalence of HBV vary geographically. Behaviours such as intravenous drug abuse, sexually active heterosexuals or homosexuals, infants/children in highly endemic areas and infants born to infected mothers increase the risk for contracting HBV [3, 4]. Disease due to HBV is preventable and it is essential to establish its significance and distribution among the population in order to evaluate the need for implementing preventive measures. There is no published report on the prevalence of HBV from this part of our country. Hence, the present study was conducted to determine the prevalence of HBV in an apparently healthy population in order to propose strategies of prevention.

MATERIALS AND METHODS

The study was carried out in March 2014 at Department of Hepatology, Rajiv Gandhi Government General Hospital, Chennai, India. Institutional ethical clearance was obtained to conduct this study. A total of 951 individuals from areas around our hospital were included in the study. All individuals residing in the locations were invited to participate in the study. A week before commencement of the study, the venue and date of the study camp was announced to the public via loud speaker and local newspapers. Volunteers who gave past history of jaundice or any other chronic liver disease, with known HBsAg positive status, were excluded from the study. Informed consent was obtained and 5ml of venous blood was collected from participants and sera were separated and stored at -80°C until tested for HBV. HBsAg screening was done by a two stage testing. In the first stage, samples were tested for HBsAg using the commercially available rapid test kit (Reliable Prodetect Biomedicals Pvt. Ltd., Shimla (HP), India) and the results were interpreted according to the manufacturer's protocol. Secondly, all the samples which gave positive result in the rapid test were tested using the commercially available Erba Lisa ELISA kit (Transasia Bio-Medicals Ltd, Daman). Samples showing repeat test reactivity on both rapid and ELISA methods were considered positive and were included for calculation of seroprevalence.

RESULTS AND DISCUSSION

A total of 951 individuals were included in this study, which includes 568/951 (59.7%) males and 383/951 (40.3%) females. Of the 951 participants, 40 (4.2%) were tested positive for HBsAg. Gender wise prevalence was determined in this study and the high prevalence was recorded in males 25/951 (2.6%) and then females 15/951 (1.6%) (Table 1). This study is in line with other studies [5, 6] which reported that more male were infected with HBV than female. High prevalence, 11/951 (1.2%) was recorded in the age group of 30-39 and 10/951 (1.1%) in the age group of ≥ 60 (Table 2). None of the individuals below 20 years of age were positive for HBsAg.

Table 1: Gender wise prevalence of Hepatitis B virus (n=951)

Gender	Positive (%)	Negative (%)	Total (%)
Male	25 (2.6)	543 (57.1)	568 (59.7)
Female	15 (1.6)	368 (38.7)	383 (40.3)
Total (%)	40 (4.2)	911 (95.8)	951 (100)

Table 2: Age wise prevalence of Hepatitis B virus (n=951)

Age	Positive (%)	Negative (%)	Total (%)
<20	0 (0)	55 (5.8)	55 (5.8)
20-29	3 (0.3)	135 (14.2)	138 (14.5)
30-39	11 (1.2)	195 (20.5)	206 (21.7)
40-49	9 (0.9)	234 (24.6)	243 (25.5)
50-59	7 (0.7)	192 (20.2)	199 (20.9)
≥ 60	10 (1.1)	100 (10.5)	110 (11.6)
Total (%)	40 (4.2)	911 (95.8)	951 (100)

The HBV prevalence in South-East Asia (Bangladesh, Bhutan, North Korea, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, Thailand and Timor-Leste) ranges from 1-10% [7]. In India, HBsAg prevalence among general population ranges from 2% to 8% [8] and our study result also fall within this prevalence range. In 1990, a study from Tamil Nadu documented HBsAg in 1.37% and 2.96% of voluntary and replacement donors respectively [9]. In 2000, another study from Tamil Nadu reported increased HBsAg prevalence (4%) among healthy individuals [10], which is in agreement with our study result.

CONCLUSION

HBV infection is an important cause of morbidity and mortality worldwide. The results of this study revealed that the prevalence of HBV infection among general population was 4.2%. HBV infection was predominantly found in males than females. Similarly adults in the age group of 30-39 had high rate of infection. The increasing number of individuals with HBV infection, and the widespread global differences in HBV prevalence necessitate targeted approaches to tackle HBV-related mortality and morbidity. Data on HBV infection prevalence at country level are needed to estimate disease burden and to formulate health and vaccine policy.

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