



SEROPREVALENCE OF HEPATITIS B VIRUS INFECTION AND ASSOCIATED LIVER FUNCTION ABNORMALITY IN A TERTIARY CARE CENTRE.

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ABSTRACT

Infection with hepatitis-B virus has been a significant cause of morbidity claiming more than a million lives every year. Viral hepatitis is increasingly being recognized as a public health problem in India. Hepatitis B surface Antigen (HBsAg) positivity in the general population ranges from 1.1% to 12.2%, with an average prevalence of 3-4%.¹ Based on some regional level studies, it is estimated that in India, approximately 40 million people are chronically infected with Hepatitis B2. Aim : The present study was designed to investigate the seroprevalence of hepatitis-B infection. Methods: A total of 100 patients blood samples were collected aseptically and analyzed. The samples were subjected to the ARCHITECT HBsAg Qualitative assay chemiluminescent microparticle immunoassay (CMIA).All positive were retested with duplicate and confirmed with Xpert® HBV Viral Load Cepheid machine. Results: The study revealed 3/100 (3%) seroprevalence of HBsAg. Higher prevalence of HbsAg was found among males .The age specific prevalence was more in 41-60 years age group (2/3). Abnormal liver function tests was observed in 20% cases irrespective of their HBsAg status. Conclusion: Chronic HBV infection leads to an increased risk of death from liver cirrhosis and/or liver cancer. In resource limited and high HBV-burden settings, persons are often diagnosed with HBV only when they present for the first time with Hepato Cellular Carcinoms. A variety of tests are required to establish a diagnosis of viral hepatitis and its further management. These include estimation of liver enzymes and specific serological tests and molecular tests (HBV DNA).

KEYWORDS :

INTRODUCTION :

Hepatitis B virus (HBV) infection is a serious public health problem in world.. HBV infection accounts for 5,00,000 to 1.2 million deaths each year³ and is the 10th leading cause of death. People with chronic hepatitis B are at increased risk of developing hepatic decompensation, cirrhosis, and hepatocellular carcinoma. Chronic hepatitis B (CHB) – defined as persistence of hepatitis B surface antigen (HBsAg) for six months or more after acute infection with HBV– is a major public health problem. Based on the prevalence of HBsAg, different areas of the world are classified as high (≥8%), intermediate (2-7%) or low (<2%) HBV endemicity. Published literature suggests that India falls under the category of intermediate zone with nearly 3%-4% of the population infected by the virus⁴. Chronic HBV infection accounts for 40% of Hepato-cellular Carcinoma (HCC) and 20-30% cases of cirrhosis in India.⁵ Routine assessment of HBsAg-positive persons is needed to guide HBV management and indicate the need for treatment. This generally includes assessment of: measuring aminotransferase levels to help determine liver inflammation by non-invasive tests (NITs) such as aspartate aminotransferase (AST) etc. Serum HBV DNA levels/viral load quantified by real-time PCR correlate with disease progression and are used for decisions to treat and subsequent monitoring. Since majority of infected people remain asymptomatic, and often present with advanced disease, early diagnosis is critical to timely initiation and scale up of treatment for viral hepatitis B.. There are conflicting reports on the prevalence rates of HBsAg in India. Adequate data on age, sex and prevalence is also lacking. Therefore the present study was undertaken to estimate the age, sex and prevalence of HBsAg indirectly providing a good estimate of HBV burden in the country.

MATERIALS AND METHODS:

To assess the local prevalence of HBsAg, a retrospective analysis of all blood specimens for HBsAg testing over a month period giving a total of 100 individual patients [66 male, 34 female], in August 2022 received at our centre, Hyderabad, Telangana was done.

1. All samples were initially screened by ARCHITECT HBsAg

Qualitative assay which is a chemiluminescent microparticle immunoassay (CMIA) for the qualitative detection of hepatitis B surface antigen (HBsAg) in human serum and plasma.

The ARCHITECT System calculates an ARCHITECT HBsAg Qualitative result based on the ratio of the sample RLU to the cut off RLU (S/CO) for each specimen and control.

S/CO = Sample RLU/Cutoff RLU

Interpretation of Results:

Initial Result (S/CO) < 1.00 NON - REACTIVE. (No retest required)

S/CO :- ≥ 1.00 REACTIVE. (Retest in duplicate)

Hepacard-Hbsag Rapid Card Test:-

For additional verification, all HBsAg positive sample were tested with HEPACARD which is a one step immunoassay based on the antigen capture, or “sandwich” principle

Xpert® HBV Viral Load (Cepheid) :

It was used for detection and quantitation of Hepatitis B virus (HBV).

Apart from HBsAg, HCV and HIV testing was also done for samples by the above same methods CMIA,RAPID CARD TESTING AND GENEXPERT analyzer.

RESULTS:

A total number of 100 patients were studied.

Number of HBsAg positive :3

SEROPREVALENCE OF HBsAg positive

Total No.of patients	No.of HBsAg positive	Positive %
100	3	3%

Number of HCV positive :-2

Number of HIV positive :- 2

Age Distribution:

Table 1: Age Distribution Among The Study Population

AGE GROUP (IN YEARS)	NUMBER
< 20	5
21-40	26
41-60	45
61-80	23
>80	1
Total	100

66.6% HBsAg positive were found in 41-60 years group (2/3,66.67%) and 33.3% were seen in age group 21-40.

Among 100 samples collected,66 samples were of Male patients and 34 samples were of females.In our study ,all three HBsAg positives were male.

SEX DISTRIBUTION

Gender	No	Positive %
Male	66	100
Female	34	-

Abnormal liver function tests (Elevated serum bilirubin, SGPT,SGOT,ALP) were seen in 20% patients irrespective of HBsAg pathology.

DISCUSSION

Hepatitis-B is found throughout the world. In developing countries like India, it still remains as a major cause of morbidity and mortality in both children and adults. The causative factors varies from region to region with a wide range of demographic factors contributing to the varying etiological picture. The study showed 3% seroprevalence of HBsAg .It should be appreciated though that the seroprevalence of HBsAg of 3% as reported in the present study is regarded as being of moderate level of HBV infection as per the WHO. The WHO therefore recommends universal immunization of all infants to be adopted by all countries irrespective of HBsAg prevalence 6.The frequency of HBsAg seropositivity was found to be lower than that reported in Tamil Nadu 24.5%7, Madras 5.5% 8, Vellore 7.17% 9. The rate was comparable to that reported from Lucknow 2.2% 10, North India 2.5% 11, Mumbai 2.02% 12, Pakistan 2.21% 13, Calcutta 2.8% 14 and Bangladesh 2.4% 15 Whereas Brazil 1.9% 16, Iran 1.07% 17, Turkey1.5% 18 and US Community 0.15% 19, showed lower HBsAg positivity in comparison to the present study.

With respect to sex related prevalence, this study showed higher prevalence of HBsAg in males comparable with other studies which also demonstrated a higher prevalence of HBsAg among the male population 20, 21, 22, 23, 24.

The present study revealed significant trend of HBV seropositivity with relation to age. The positivity for HBsAg increased with age. It was more in age group 41-60 years. This is comparable with the study conducted by Jayaram et al 25. Some other studies have shown similar results 26,27,28,29.

CONCLUSION:

In conclusion, 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. Further, future surveillance studies warranting investigations for this viral infection in a broader population would enable us to determine strategies for combating the threats caused by hepatitis-B virus. In addition, epidemiologic studies like the present one from different states of India would be helpful to estimate real statistics of hepatitis-B infection in India.

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