

Seroprevalence of Hepatitis B Surface Antigen (HBSAg) among Patients Attending Tertiary Care Teaching Hospital in Solapur, Maharashtra

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Abstract: *Background:* Hepatitis B virus (HBV) infection continues to be serious public health problem in India as well as globally. HBV is a DNA virus which is member of Hepadnaviridae. HBV is capsulated and bears surface antigen (HBSAg), which is one of the earliest markers to appear during the course of infection. Aim of the present study is to find out the seroprevalence of Hepatitis B surface antigen among patients attending tertiary care hospital in Solapur, Maharashtra. *Material and Method:* This is a cross sectional study carried out in a tertiary care hospital in Solapur between Jan 2017 to Dec 2018. Data collection was done from laboratory register of patient tested for surface antigen of HBV. Permission for the study was taken from concerned authorities. *Results:* A total of 10, 884 patients were tested for HBSAg between Jan 2017 to Dec 2017, from which 152 (1.39%) were found to be positive. While between Jan 2018 to Dec 2018 a total of 6892 patients were tested for HBSAg of which 97 (1.40%) were found positive for surface antigen of HBV. Therefore prevalence rate of HBSAg for the year 2017 was 1.39% and that of year 2018 was 1.40%. On data analysis between Jan 2017 to Dec 2018, it was seen that males were more commonly infected by HBV infection in comparison to females. Most common age group affected in both genders was age group between 15 to 45 years, followed by 46-59 years and age group more than 60 years.

Keywords: Hepatitis B virus, DNA virus, Hepadnaviridae, Hepatitis B surface antigen.

1. Introduction

Hepatitis B virus (HBV) infection is a serious public health problem worldwide. The infection may vary from self-limiting asymptomatic hepatitis to acute fulminant hepatitis and chronic hepatitis which may lead to further complications like liver cirrhosis and hepatocellular carcinoma especially if the patient is co-infected with Hepatitis D (HDV) virus or suffering from pre-existing hepato-biliary pathology^{1, 2, 3}.

Prevalence of HBV infection is variable world-wide. WHO (world Health Organization) has classified HBV prevalence in to high (>8%), intermediate (2-7%) and low endemic area (<2%). India has intermediate to high endemicity for hepatitis B infection³. Prevalence of HBV infection in India is around 3-4%⁴. As per the recent estimates, 10 million new cases occur and nearly 350-400 million of people become chronic carrier annually all over the world⁴.

The aim of the present study is to know the seroprevalence of hepatitis B surface antigen among patients attending tertiary care teaching hospital in Solapur which will help in understanding demographic variants and magnitude of problem in the community.

2. Material and Methods

The study is a cross sectional study conducted at a tertiary care teaching hospital in Solapur. Data collection was done from laboratory records of patients that have been tested for surface antigen of HBV using rapid immunochromatographic test kit by ASPEN between Jan 2017 to Dec 2018. Patient's age, sex, clinical details were collected for which permission was taken from concerned authorities. Statistical Analysis was done using Microsoft Excel 2010.

A venous blood sample of 5 ml was collected from each patient using all aseptic precautions. Blood sample was allowed to stand for 45-60 minutes at room temperature for formation of clot. Serum was separated after centrifugation. Serum samples were subjected to rapid screen test for qualitative detection of HBSAg using immunochromatographic assay by ASPEN, (Rapid test kit for HBSAg) manufactured by ASPEN Laboratories Pvt. Ltd. The test was done as per manufacturer's instruction.

3. Results

A total of 10, 884 patients were tested for HBSAg between Jan 2017 to Dec 2017, from which 152 (1.39%) were found to be positive for surface antigen of HBV. Between Jan 2018 to Dec 2018 a total of 6892 patients were tested for HBSAg of which 97 (1.40%) were found

positive for surface antigen of HBV. Therefore prevalence rate of HBSAg for the year 2017 was 1.39% and that of year 2018 was 1.40%. On data analysis between Jan 2017 to Dec 2017, it was seen that males 98 (64.47%) were more commonly infected by HBV infection in comparison to females 54 (35.52%). Most common age group affected in both genders was age group between 15 to 45 years, followed by 46-59 years and age group more than 60 years. Few cases were also reported from age group of 0-14 years indicating vertical transmission of the virus as shown in table-1

Table 1: Age and Gender wise distribution of patients with surface antigen positive between Jan 2017 to Dec 2017

AGE GROUP (Years)	MALE (n-98) (%)	FEMALE (n=54) (%)	Total (n=152) (%)
0-14	2 (2.04)	6 (11.11)	8 (5.3)
15-45	52 (53.06)	20 (37.03)	72 (47.4)
46-59	31 (32)	16 (29.62)	47 (31)
>60	13 (13.3)	12 (22.22)	25 (16.44)
Total (n=152)	98	54	152
Total (%)	64.5	35.50	100

In the present study total sample tested for surface antigen from Jan 2018 to Dec 2018 using rapid test kits by ASPEN were 6892. Out of which 97 (1.40%) patients were found to be HBSAg positive. Among 97 positive patients males were 56 (57.73%) while females were 41 (42.3%) were females. Most common age group affected was 15-45 years followed by 46-59 years and age group more than 60 years. Least number of cases was reported in the age group of 0-14 years as shown in table-2

Table 2: Age and Gender wise distribution of patients with surface antigen positive between Jan 2018 to Dec 2018

AGE GROUP (Years)	MALE (n-56) (%)	FEMALE (n=41) (%)	Total (n=97) (%)
0-14	9 (16.07)	4 (10)	13(13.4)
15-45	23 (41.07)	21 (51.21)	44 (45.4)
46-59	14 (25)	10 (24.4)	24 (25)
>60	10 (18)	6 (14.63)	16 (16.50)
Total (n=97)	56	41	97
Total (%)	57.73	42.26	100

4. Discussion

In the present study seroprevalence of HBSAg positive patients between Jan 2017 to Dec 2017 and from Jan 2018 to Dec 2018 was found to be 1.39% and 1.40% respectively. Table-1 and table-2 shows that males were more commonly infected by HBV infection in comparison to females. Most common age group affected in both genders was age group between 15 to 45 years, followed by 46-59 years and age group more than 60 years. Few cases were also reported from age group of 0-14 years indicating vertical transmission of the virus. Studies done by Rokade HG et al⁵, Triputi B et al⁶, Naik et al⁷, Behal et al⁸, Gokale et al⁹ and Bula et al and WHO reports¹⁰ are in concordance to the present study as all of them have

shown higher male preponderance for HBV infection in males as compared to females and most common age group affected in both genders was age group between 15 to 45 years, followed by 46-59 years and age group more than 60 years. Male preponderance and most common age group affected between 15 to 45 years followed by 46-59 years may be attributed to more exposure of males to outside environment and more active lifestyle and more likelihood for IV drug abuse, exposure to multiple sex partners and other high risk behavior are more common in this age group.

The present study indicates that focus should be directed to decrease the seroprevalence of HBV infection in the community.

5. Conclusion

The present study is a hospital based study which helps in estimation of disease burden in the community and serves as a good reference for future studies. Preventive interventions should be targeted to age group more than 15 years as more cases have been reported in this age group.

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