ORIGINAL RESEARCH PAPER

Microbiology

KEY WORDS: Hep B, Seroprevalence

PREVALENCE OF HEPATITIS B INFECTION IN A TERTIARY CARE HOPITAL IN PUNE

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ABSTRACT

Background: Hepatitis B virus (HBV) infection continues to be a serious public health problem globally and studying the prevalence of HBV infection in a geographical area will help in assessing magnitude of the problem. Hepatitis B surface antigen (HBsAg) is a strong indicator of true HBV infection rate in the community.
Methods: Detection of HBsAg was performed by CMIA and Immunochromatography 17500 sera samples were tested over a period of 1 year.
Result: Out of 17500 samples, 284 (1.62%) were positive for HBsAg. Positivity was more among males 180 (63.38 %) than females 104 (36.61 %) and the most common age group >60 years (24.29%)
Conclusion: The study helps to know the magnitude of viral transmission in the community & to know the at risk age groups. Seroprevalence of HBsAg is 1.62% which is in accordance with WHO and falls into intermediate zone of HBsAg prevalence.

INTRODUCTION: Hepatitis B virus (HBV) infection is a public health problem affecting a significant portion of the global population [1]. The global prevalence of HBV infection varies worldwide. India has intermediate endemicity of HBV infection, with population prevalence rate of around 4 % [2, 3]. Surveys for screening hepatitis B surface antigen (HBsAg) have been the most useful and simple mode of determining HBV infection rates [2]. We evaluated time trends in HBV epidemiology by evaluating the demographic characteristics of individuals who tested HBsAg positive over a period of 1 year at a tertiary care hospital in Pune.

The purpose of this study was to establish the current prevalence of hepatitis B virus among patients from tertiary care hospital in pune for detection of Hepatitis B infection.

Hepatitis B spreads vertically during child birth and horizontally by percutaneous or mucosal exposure to infected blood and various body fluids, as well as through saliva, menstrual, vaginal, and seminal fluids. Sexual transmission of hepatitis B may occur, particularly in unvaccinated men who have sex with men and heterosexual persons with multiple sex partners or contact with sex workers. Transmission of the virus may also occur through the reuse of needles and syringes either in health-care settings or among persons who inject drugs. In addition, infection can occur during medical, surgical and dental procedures, through tattooing, or through the use of razors and similar objects that are contaminated with infected blood [11]. The development of chronic infection is very common in infants infected from their mothers or before the age of 5 years.

Infection in adulthood leads to chronic hepatitis in less than 5% of cases. In 2015, hepatitis B resulted in 8,87, 000 deaths, mostly from complications (including cirrhosis and hepatocellular carcinoma). Hepatitis B is an important occupational hazard for health workers. However, it can be prevented by currently available safe and effective vaccine.

Method: This was a retrospective analysis conducted at the Department of Microbiology of a tertiary care hospital in Pune. Laboratory records between 1st January 2018 and 31st December 2018 were reviewed. A total of 17500 samples were tested for HBsAg using CMIA and ICT (Hepacard by Diagnostic Enterprises). Patients attending outpatient Department and Inpatient Department who were advised for HBsAg testing as a part of preoperative, antenatal and haemodialysis screening were included in the study. Results were evaluated according to total prevalence, age groups, sexes, and ward.

RESULTS: During the study period, from January 2018 to December 2019 the prevalence rates of HBV infection was 1.62% & more prevalent in male patients 63.38%. HBsAg reactivity was highest (24.29%) in >60 yrs of age group. Max incidence was seen from OPD followed by surgery IPD and followed by Medicine IPD.

Table 1: Prevalence Of Hepatitis B Infection Among Patients In Tertiary Care Hospital

	Total No Of Samples Received	No. Of Positive Samples	Percentage Of Positive Sample
HBsAG	17500	284	1.62%

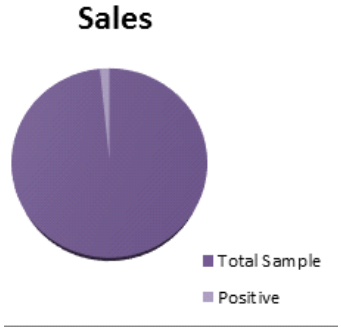

TABLE 2: AGE WISE DISTRIBUTION OF HBSAG POSITIVE CASES

Total No. Of Hbsag Positive Cases	<18 yrs	19-30 yrs	31-40 yrs	41-50 yrs	51-60 yrs	>60 yrs
n= 284	15 (5.28%)	50 (17.60%)	41 (14.43%)	55 (19.36%)	54 (19.01%)	69 (24.29%)

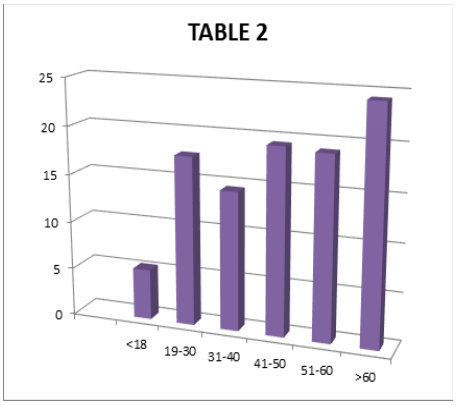

TABLE.3 SEX WISE DISTRIBUTION OF HBsAG POSITIVE CASES

Total No. Of Hbsag Positive Cases	MALES	FEMALES
n=284	180 (63.38%)	104 (36.61%)

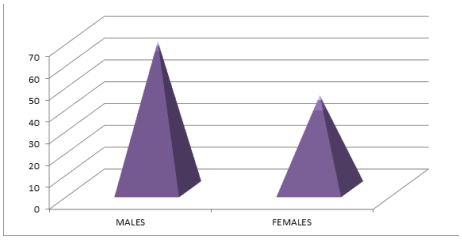

TABLE 4: WARD WISE DISTRIBUTION OF HBsAG POSITIVE CASES

WARD	No. Of Hbsag Positives	Percentage
OPD	104	36.61%
AMONG IPD		
SURGERY	44	15.49%
MEDICINE	42	14.70%
ICU	38	13.38%
OPHTHALMOLOGY	21	07.39%
ORTHOPAEDICS	14	04.92%
Obstetrics And Gynaecology	12	04.22%
PAEDIATRICS	05	01.76%
Emergency Department	03	01.05%
DIALYSIS	01	00.35%
TOTAL	284	01.62%

DISCUSSION & CONCLUSION:

In the present study the seroprevalence of HBsAg was found to be 1.62%. This is comparable to other Indian studies by Chakraborty et al., (2.64%) and Bhatta et al., (2.5%). Similar studies from Karnataka (Mindolli et al., 2015)[6], Tamilnadu (Vazhavandal et al., 2014)[7]and Rajasthan (Sood et al., 2010)[9]showed seroprevalence as 1.76%, 1.61% and 0.87% respectively. Overall the prevalence is 1-7% and the lifetime risk of infection ranges from 20-60%[10]. In this study male predominance was seen 63.38% which is comparable to study by Sandhu et al., 2014[5] in which 5.17% males and 1.66% females were seropositive. High seropositivity in males may be due to habits like multiple sexual partners, unprotected sexual activities, sharing of needles in IV drug abusers and tattooing. While, in females, high immune response helps in clearing of HBV more rapidly and efficiently (Sandhu et al., 2014)[5]. High prevalence of infection in adults may be due to higher chances of exposure to HBV due to sexual activity. In our study majority of HBV seropositive cases were mainly detected during routine preoperative, dialysis and antenatal care screening.

Acute HBV infection is characterized by the presence of HBsAg and immunoglobulin M (IgM) antibody to the core antigen, HBcAg. During the initial phase of infection, patients are also seropositive for hepatitis B e antigen (HBeAg). HBeAg is usually a marker of high levels of replication of the virus. The presence of HBeAg indicates that the blood and body fluids of the infected individual are highly infectious.

Chronic infection is characterized by the persistence of HBsAg for at least 6 months (with or without concurrent HBeAg). Persistence of HBsAg is the principal marker of risk for developing chronic liver disease and liver cancer (hepatocellular carcinoma) later in life.

There is no specific treatment for acute hepatitis B. Therefore, care is aimed at maintaining comfort and adequate nutritional balance, including replacement of fluids lost from vomiting and diarrhoea. WHO recommends the use of oral treatments - tenofovir or entecavir, because these are the most potent drugs to suppress hepatitis B virus.

Worldwide, in 2015, the estimated prevalence of HBV infection was 1.3%, compared with about 4.7% in the pre-vaccination era. In 2015, global coverage with the third dose of hepatitis B vaccine reached 84%, and global coverage with the birth dose of hepatitis B vaccine was 39%.

In March 2015, WHO launched its first "Guidelines for the prevention, care and treatment of persons living with chronic hepatitis B infection"[8]. In May 2016, The World Health Assembly adopted the first "Global Health Sector Strategy on Viral Hepatitis, 2016-2020". The strategy has a vision of eliminating viral hepatitis as a public health problem and this is encapsulated in the global targets of reducing new viral hepatitis infections by 90% and reducing deaths due to viral hepatitis by 65% by 2030.

WHO also organizes World Hepatitis Day on July 28 every year to increase awareness and understanding of viral hepatitis.

The ideal way to decrease HBV related deaths is to first prevent infection through vaccination & strategies related to reduction of transmission & to prevent progression of disease in those already infected[4]. An overall decline in the prevalence of the disease due to global infant and childhood vaccination programmes, post-exposure prophylaxis and anti-viral therapy has improved the prevailing condition in our country. National immunization programmes and Anti-viral therapy is responsible for decrease of HBV infection in our country.

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