



SEROPREVALENCE OF HBV & HCV IN GENERAL POPULATION

Microbiology

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ABSTRACT

Introduction: Hepatitis is an infection-induced liver inflammation that is a major public health issue. Hepatitis is caused by viruses including HAV, HBV, HCV, HDV, and HEV. The aim of this study was to estimate the sero-prevalence of HBV and HCV infection among patients, who had been treated for various diagnoses in different departments of a tertiary care hospital in Maharashtra, India. **Materials And Methods:** This is a prospective cross sectional study conducted to study the prevalence of HBV and HCV infection in the general population in the state of Maharashtra. The study period was of 18 months. **Results:** A total number of 12236 patients were included in this study. About 210 (1.71%) out of 12236 patients were sero-positive for HBsAg and 30 (0.24%) patients were sero-positive for HCV. About 112(53.33%) male and 98(46.66%) females were HBsAg positive. About 9(30%) male and 21(70%) female were HCV positive. **Conclusion:** The prevalence of HBV was 1.71% and HCV was 0.24% in the general population of Maharashtra. This seroprevalence is low as compared to WHO estimates and previous reports from India. Males contributed to higher prevalence with HBV infection. Whereas the prevalence of HCV was more in females. Availability of sufficient recent estimates of HBV or HCV prevalence is necessary to evaluate control measures and health care planning.

KEYWORDS

HBV, HCV, Seroprevalence

INTRODUCTION

Hepatitis is an infection-induced liver inflammation that is a major public health issue. Hepatitis is caused by viruses including HAV, HBV, HCV, HDV, and HEV. HAV and HEV are waterborne viruses, while HBV, HCV, and HDV are blood borne viruses.¹ According to regional studies, roughly 40 million people in India are chronically infected with Hepatitis B, whereas 6-12 million have Hepatitis C. Chronic HBV infection accounts for 40% of hepatocellular carcinoma (HCC) and 20-30% of cases of cirrhosis in India. Chronic HCV infection is responsible for 12-32 percent of HCC and 12-20 percent of cirrhosis.² Hepatitis B is expected to have killed 1.1 million people by 2022. Without appropriate intervention, the number of fatalities from HBV infection is projected to reach 1.14 million by 2034.³

HBV and HCV infections are commonly transmitted through blood transfusions, intravenous drug use, tooth extraction, tattooing, and promiscuous behavior. The transmission of hepatitis B and hepatitis C infection in healthcare workers is mainly through needle stick injury and is a matter of increasing concern.

Viral hepatitis and tuberculosis were the second leading causes of death among communicable diseases in 2022, after COVID-19.⁵ According to the latest WHO estimates, India, which falls in the South-East Asia region, has a prevalence rate of 3% chronic HBV patients and 0.5% chronic HCV patients in general population.⁵

The hepatitis B surface antigen (HBsAg) in serum is the first biomarker to be identified in the blood and is indicative of either acute or chronic active HBV infection but frequently goes unidentified. Hepatitis B surface antigen (HBsAg) appears 1-7 weeks before the appearance of biochemical markers of liver disease and remains even after 3 weeks after the onset of disease. The patients generally do not get completely rid from the virus and become carriers leading to chronic infection.¹ Study on the prevalence of HBV and HCV infection is needed to understand its epidemiology and to create strategies to improve public health which may help in the disease prevention and control. The aim of this study was to estimate the sero-prevalence of HBV and HCV infection among patients, who had been treated for various diagnoses in different departments of a tertiary care hospital in Maharashtra, India.

MATERIALS AND METHODS:

This is a prospective cross sectional study conducted to study the prevalence of HBV and HCV infection in the general population in the state of Maharashtra. The study period was of 18 months. Ethical clearance was taken.

Samples collected from the patients were found to be positive for

HBsAg or Anti HCV antibody on Enzyme linked immunosorbent assay (ELISA) test. Five milliliter of blood was collected and serum was separated which was divided into two aliquots; one was used for HBsAg and the other was used for anti-HCV antibody for ELISA testing.

The test was repeated in duplicates, and the results were reconfirmed in case of reactive positive result. The data was analyzed, and graphs were formulated respectively.

RESULTS:

A total number of 12236 patients were included in this study. About 210 (1.71%) out of 12236 patients were sero-positive for HBsAg and 30 (0.24%) patients were sero-positive for HCV. (Table 1)

Table No.1: Seroprevalence of HBsAg and HCV patients.

Sero positive patients	HBsAg positive	HCV positive
240 (1.96%)	210 (1.71%)	30 (0.24%)

Table No.2: Distribution of HBsAg positive patients according to gender.

HBsAg positive patients	Frequency	Percentage
Male	112	53.33
Female	98	46.66
Total	210	100.00

About 112(53.33%) male and 98(46.66%) females were HBsAg positive. (Table 2)

Table No.3: Distribution of HCV positive patients according to gender.

HCV positive patients	Frequency	Percentage
Male	9	30.00
Female	21	70.00
Total	30	100.00

About 9(30%) male and 21(70%) female were HCV positive. (Table 3)

DISCUSSION:

There are data on the prevalence of HBV and/or HCV infection among blood donors and patients with specific clinical problems, but there is limited information on the general population in India. A study on the prevalence of HBV and HCV infection is necessary to better understand their epidemiology and develop strategies for disease prevention and control.

HBV prevalence in different population has been shown to vary widely from 0.1% in the developed countries to 20% in the developing nations. In our study the overall prevalence of HBV was 1.71% which

is slightly lower than the hepatitis B prevalence of 2.4% according to global Hepatitis report, 2024.⁵ A study conducted from South India showed a HBV seroprevalence of 1.61% which is similar to findings of our study.⁶ Studies from West Bengal and Kanpur showed that 2.97% (227/7653) and 2.25% (450/20000) were positive for HBsAg, respectively.^{7,8,9} Whereas a study from Haryana and Tamil Nadu reported a prevalence of 5.23% and 5.7% respectively.^{7,10,12} A study conducted in Ladakh region of Northern India showed a seroprevalence of 4.2%.¹¹

There are a few researches on HCV prevalence in India's general population. In our study the overall prevalence of HCV in general population was 0.24%. Similar findings have been reported from studies conducted in Maharashtra with a prevalence of 0.46%.¹³ Community-based studies from West Bengal, Andhra Pradesh, and Arunachal Pradesh indicated HCV prevalence of 0.87%, 1.4%, and 7.89%, respectively; the first two had lower prevalence than our study, while Arunachal Pradesh had a higher prevalence.^{14,15,16} A study conducted from Punjab showed a higher prevalence of 5.2% as compared to our study.¹⁷ Another study conducted in general population in Vijaypur, India showed a seroprevalence of 2.6% which is higher as compared to our study.¹⁸

CONCLUSION

The prevalence of HBV was 1.71% and HCV was 0.24% in the general population of Maharashtra. This seroprevalence is low as compared to WHO estimates and previous reports from India. Males contributed to higher prevalence with HBV infection. Whereas the prevalence of HCV was more in females. Availability of sufficient recent estimates of HBV or HCV prevalence is necessary to evaluate control measures and health care planning.

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