

Sentinel Surveillance of HCV at Tertiary Care Hospital in Central India

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ABSTRACT

Background: Hepatitis C virus (HCV) is a major cause of liver diseases like chronic hepatitis, liver cirrhosis, and hepatocellular carcinoma (HCC). The prevalence of HCV infections is not uniform throughout India. Hence, the present study aimed to determine serological surveillance of HCV at tertiary care hospital in central India with a large population.

Material and Methods: Between March 2019 and September 2022, the study was conducted on 8832 screening of HCV infection at a tertiary care hospital, Indore Madhya Pradesh. All these underwent diagnosis of HCV by serological ELISA method.

Results: Total 126 cases were found positive for HCV infection. The seroprevalence was calculated as 1.4% (126/8832). The maximum (45.2%) positivity was observed in the sexually active group 19-39 years followed (33.3%) by the 40- 59 years age group. Although males were slightly more preponderant than females with HCV infection, statistically non-significant observed among them.

Conclusion: The data of the current study will be helpful in taking prevention and control measures against HCV infection.

Keywords: HCV, chronic hepatitis, prevalence

INTRODUCTION

Hepatitis is an inflammation of the liver caused by the Hepatitis C virus (HCV). The virus can cause both acute and chronic hepatitis, ranging in severity from a mild

illness to a serious, lifelong illness including liver cirrhosis and cancer.^[1] HCV is a blood-borne virus and most infection transmitted through exposure to infected blood and blood products, unsafe injection practices, unsafe health care practice, unscreened blood transfusions, injection drug use, and sexual.^[2]

HCV infection has been estimated, and the rate of prevalence occurs 2%–3%, with approximately 122–185 million HCV-infected persons worldwide.^[3] An estimated 58 million people live with chronic HCV infection and annually about 1.5 million new infections occur.^[2] In India, an estimated that the serological prevalence of HCV among community-based have 0.85%, blood donors have 0.44%, and 0.88% among pregnant women.^[4]

The chronic infection can be deadly if the progression of the disease is converted into cirrhosis and hepatocellular carcinoma. Even though antiviral medicines can cure more than 95% of persons with hepatitis C infection, it requires to early diagnosis and on-time full regimens of treatment.^[5] The prevalence of HCV infection is not uniform throughout India. Studies regarding the prevalence of HCV infections in India are heterogeneous in design/setting. Utmost of the studies have been based on the screening of voluntary blood donors in the blood bank, as a universal precaution before any surgical intervention and other high-risk groups.^[6]

The screening of HCV infection in the general population only gives an accurate index of the health burden of hepatitis C in the country. Community-based prevalence studies are difficult to conduct in a developing country because of socioeconomic hurdles and logistic difficulties.^[7]

The prophylactic vaccine is still unavailable, the HCV pandemic has to be controlled by treatment and prevention strategies, effective screening programs, and global access to treatment.^[8] Therefore, identifying the population with high-risk behavior for HCV transmission and formulating strategies for prevention of transmission remains the main stay of research. Here, we describe a prevalence-based study of hepatitis C infection from the central region of India. Thus, the present study aimed to report the seroprevalence of HCV infection at tertiary care hospital.

MATERIALS & METHODS

The present study was carried out in the Department of Microbiology, Index Medical College, Hospital and Research Centre, affiliated with Malwanchal University Indore Madhya Pradesh. Patients who registered at the OPDs or were admitted to different department of hospital and were advised to undergo HCV antibody testing included in the study. The blood samples were collected from March 2019 to September 2022.

Samples were transported aseptically and kept at the clean, dry place of the laboratory in sterile collection vials. Proper labelling was done with the patient's full name, gender, age, area, and date of collection. Vials containing samples were centrifuged and separated sera used for screening of anti-HCV antibodies. A total of 8832 blood samples were screened for the presence of anti-HCV antibodies in the patient's serum. The serum samples were primarily screened for antibodies HCV, using rapid card (lateral flow assays) rapid visual test manufactured by Polymed[®] HCV Antibody kit and Standard Q "SD Biosensor") the

positive serum samples were confirmed by ELISA to detect antibodies to HCV as per manufacturer instructions by Q-Lisa HCV ELISA (3rd Generation).

Ethical clearance

It was obtained from Institutional Ethical Committee: MU/Research/ EC/PhD/ 2019/53(a).

RESULTS

The seroprevalence of HCV infection was estimated 1.4% (126/8832) among all enrolled patients. Male patients predominated 71(56.3%) while female patients were 55(43.7%). The difference was not statistically significant within the seroprevalence among male and female ($p>0.05$). The mean age and standard deviation (Mean \pm SD) was 40.73 \pm 16.26 years seen for all seropositive subjects.

The age group demographic parameters of the ELISA-confirmed positive patients have been mentioned in table 1. Maximum positive cases 57 (45% positive cases) were in the age group of 19-39 years followed by the group 40-59 years of age (sexually active groups). The minimum positivity observed in the age group belonging to 0-18 years found in children/adolescents 06 cases (4.8%).

S.No	Age Groups	HCV Positive Cases	Percentage
1	0-18 Years	06	4.8%
2	19-39 yeas	57	45.2%
3	40-59 years	42	33.3%
4	\geq 60 years	21	16.7%
Total		126	100%

Table No. 01: Patients age group distribution and their rate of positivity.

DISCUSSION

The World Health Organization (WHO) has executed and set desire targets to eliminate HCV infection as a public health problem by 2030^[9] for achieving these targets, which include the reduction of new infections by 90% and deaths by 65%, there is a need to increase prevention strategies and access to treatment.

Although the anti-HCV vaccine yet unavailable, treatment for HCV has improved dramatically with the addition of

direct-acting antivirals (DAAs). The available therapy (DAAs) is highly effective and easy to take oral regimens, have minimal side effects, and about 90% achieve cure rates.^[10,11] Pertaining to establishing effective prevention and treatment programs, there is a need to understand the epidemiology and burden of disease in the country or community. However, such data are lacking in many countries, particularly in lower and middle-income groups/communities which contribute most of the burden.^[12]

In our country, limited population-based studies have been reported from a different region. The prevalence of HCV was estimated 1.4% in a group of people recruited from a medical camp held in Andhra Pradesh.^[13] In another South Indian Study, the prevalence was calculated 2.02% in a tribal population. A rural survey from Maharashtra showed a prevalence rate of 0.09%.^[14] A population-based study from West Bengal showed 0.87% seroprevalence.^[6] Similarly, the present study calculated that the prevalence of HCV infection was 1.4% at tertiary care hospitals of central India. Other Indian studies also supported our determined results. The seroprevalence of HCV varied among hospital-based populations with 1.57% from Cuttack^[15], 1.4% from AIIMS New Delhi^[16] Similarly, the study was carried out in hospital-based population by Sharma et. al.^[17] in 2007 from Jaipur reported 1.7% seroprevalence of HCV infection.

There was a male slightly (male 56.3% Vs female 43.7%) preponderance seen in this study. Although there was no statistically significant difference observed in the exposure rate of male and female. Similar to other studies a higher seroprevalence was found among males (0.62%) than among females (0.19%).^[18,19] A study from south India reported that there was no statistically significant difference in the exposure rates of males and females.^[20]

In the current study, the maximum HCV-positive susceptible age groups were 19 -39 years (45.77% positive cases) followed by

40-59 years (33.3% cases). They were sexually active group while minimum positivity 16.7% was found in 0-18 age group. This finding of older age predominance for HCV infection is similar to other studies in India and abroad.^[21, 22, 23] Global elimination of HCV requires a multipronged approach as mandated by the WHO. Strategy and prevention of new infections is of equal importance to screening, diagnosing, and treating the existing HCV pool. Every state needs to formulate a locally relevant healthcare policy targeting not only the high-risk population but also the general population to curb the transmission of HCV. Adopting the dual approach of depleting the reservoir of HCV and decreasing the incidence of new infection would help curtail the disease and decrease liver-related mortality attributable to HCV.^[24]

CONCLUSION

Information regarding the transmission of HCV should be provided to the public such as the nature of hepatitis C, benefits of early detection, steps to be taken if HCV positive, screening tests, and drug treatment centers. Persons with HCV positive should be advised to prevent themselves from further liver disorders and not to take new medicines without consulting a doctor. The data of the current study will be helpful in taking prevention and control measures against HCV infection.

Conflict of Interest: None

Ethical Approval: Approved

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