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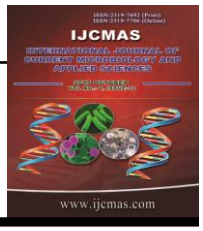

Original Research Article

Seroprevalence of Hepatitis C Virus in a Tertiary Care Centre in Vijaypur, Karnataka, India

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A B S T R A C T

Hepatitis C virus (HCV) can cause asymptomatic infection and chronic infection with HCV is one of the major causes of liver cirrhosis and hepatocellular carcinoma. According to World Health Organization (WHO) there are 180 million people affected with HCV worldwide and about 12.5 million carriers in India. The present study was undertaken to determine the prevalence of hepatitis C virus among hospital based general population in Vijaypur, a district of North Karnataka. Seroprevalence of hepatitis C virus was determined using a third generation ELISA. The study population comprised of six hundred individuals attending a tertiary care center in Vijaypur. The overall seroprevalence was found to be 2.6%. Out of 16 seropositive patients, 09 were males and 07 were females. Investigating seroprevalence of hepatitis C virus in the community provides an opportunity to investigate risk factors for transmission, the natural history of infection and effectiveness of preventive methodologies.

Introduction

Hepatitis is one of the major health problems in Asia. Hepatitis C virus (HCV) can cause asymptomatic infection and chronic infection with HCV is one of the major causes of liver cirrhosis and hepatocellular carcinoma. According to World Health Organization (WHO, 2009) there are 180 million people affected with HCV worldwide and about 12.5 million carriers in India. WHO estimated global prevalence of HCV is 3%.

There is a great variability in HCV's geographical distribution, transmission routes and other factors in the studied populations (Chandra *et al.*, 2003). High prevalence is found in developing countries with limited resources and facilities such as in Asia and Africa and low prevalence in developed nations such as in North America, North and West Europe and Australia.

Studies in India have revealed a seroprevalence of 1.8% of HCV infection among the general population (Gogos *et al.*, 2003). But the impact of HCV infection in India may still be just emerging with serious short comings in the country's blood banking system as well as the health administration's inability to curb reuse of unsterilized needles (Chandrasekharan *et al.*, 2000; Chattopadhyay, 2002; Mukhopadhya, 2008).

The high prevalence of HCV and the need to understand its epidemiology warrants periodic surveillance of the disease to determine specific healthcare measures for disease prevention and control. The present study was undertaken to estimate the seroprevalence of HCV in both sexes and different age groups in general population.

Materials and Methods

Study design and patients

The study was conducted in the Department of Microbiology, Al-Ameen Medical College, Hospital and Research Centre (AMC, H&RC), Vijaypur, Karnataka. The study protocol was approved by Institutional Ethical Committee of Al-Ameen Medical College, H&RC. A total of six hundred patients visiting various out-patient and in-patient departments of AMC, H&RC were included in the study. The duration of the study period was one year (from October 2014 to September 2015).

Specimen collection

Blood samples were drawn from the patients and serum was separated within two hours after blood sampling. All the serum samples were divided into 0.5 milliliter (ml) aliquots and stored at – 20°C.

Serum samples were collected from six different age groups (0-9 years, 10-19 years, 20–29 years, 30–39 years, 40–49 years and above 50 years). A minimum of 98 serum samples were collected from each age group.

Immunoassay

All the sera were tested for the presence of antibodies against HCV proteins by a third generation enzyme immunoassay kit (SD HCV ELISA). The tests were performed according to the manufacturer's instructions with adequate controls, and the absorbance of the solution in the wells were read at 450 nm within 15 minutes of final step by ELISA reader.

Results and Discussion

The global prevalence of HCV ranges between 0.2 and 2%. The prevalence of HCV in Greece is 0.5%, lower than the rate reported in USA (1.8%) and Mediterranean Europe (1–2.9%) studies. In India, it is estimated that 1.8–2.5 % of the population is presently infected by HCV (Chakravarti *et al.*, 2013). The prevalence of HCV infection varies from region to region because of local socioeconomic factors, which potentially influence the transmission.

The age and sex distribution among the hospital based general population is shown in the table 1 and 2.

Sixteen out of six hundred individuals tested positive for antibody to HCV (2.6%). The seroprevalence among males and females were 2.8% (09) and 2.5% (07) respectively. In the exposure rates of males and females there was no statistically significant difference. The highest seroprevalence was found among the age group 40-49 years both in males (6.9%) and females (6.7%).

Table.1 Age-wise prevalence of HCV in hospital based general population

Age group (Years)	Total anti-HCV positive (%)
0-9	0(0.0%)
10-19	0(0.0%)
20-29	3(0.5%)
30-39	4(0.66%)
40-49	7(1.16%)
≥50	2(0.33%)
Total	**16(2.6%)**

Table.2 Sex-wise prevalence of HCV in hospital based general population

Males (No.)	Anti-HCV positive (%)	Females (No.)	Total anti-HCV	Total anti-HCV positive (%)
53	0(0.0%)	45	0(0.0%)	0(0.0%)
48	0(0.0%)	50	0(0.0%)	0(0.0%)
55	2(3.6%)	46	1(2.2%)	3(3.0%)
54	2(3.7%)	48	2(4.2%)	4(3.9%)
58	4(6.9%)	45	3(6.7%)	7(6.8%)
55	1(1.8%)	43	1(2.3%)	2(2.0%)
323	**09(2.8%)**	**277**	**07(2.5%)**	**16(2.6%)**

In any seroprevalence estimation, the appropriate study subject would probably be a sample from the general population (Salmani and Peerapur, 2014). However, general population seroprevalence are rarely available and the prevalence in blood donors is often used. Blood donor groups are usually young adults, hence seroprevalence in other age groups, like children and aged cannot be estimated. A hospital based serological survey offers several advantages. Individuals attending a hospital undergo a battery of investigations that necessitate giving a blood sample. All the samples in the present study were collected after consent from patients and laboratories meant for other investigations. Hence no extra episode of venipuncture was needed for serum sampling. This saved time, manpower and cost.

In the present study, the seroprevalence of HCV among hospital based general population was found to be 2.6%. This is similar to other hospital based study done in 2002 by Mishra *et al* in contrast to a study done by Bhattacharya *et al* and prevalence in a specific geographical area. In India, seroprevalence of HCV among blood donors varies from 0.66% in Uttarakhand to 5.5% in Madurai. The high prevalence of alcoholism (leading to chronic liver disease) may have a contributory effect on the seroprevalence of HCV. In a study conducted in Patna the prevalence of HCV in chronic liver disease patients was found to be 5.4% which is significantly higher compared to prevalence

of HCV infection among hospital based general population.

The prevalence seems to increase with age because of continuing risk of exposure. In conformity with other studies, a higher prevalence was found among males (2.8%) than among females (2.5%). There is a scarcity of information on HCV prevalence particularly in developing counties like India. Our study on the prevalence of HCV infection among hospital based general population is sure to provide a useful insight to researchers working on HCV infection.

The general population should be educated about the virus and its modes of transmission. The large reservoir of HCV infection in the community provides an opportunity to investigate risk factors for transmission, the natural history of infection and effectiveness of preventive methodologies.

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