ORIGINAL RESEARCH

Evaluation of prevalence of hepatitis C virus in a known population

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ABSTRACT

Background: Current antiviral regimens can cure up to 95% of persons with HCV infection and thus reduce the risk of death from cancer and liver cirrhosis, as well as the number of new infections. This means that screening and timely treatment of chronic hepatitis C (CHC) are the most promising measures in combating the epidemic of this infection. Eastern Europe and Central Asia (EECA) are among the regions with the highest prevalence of HCV infection. This study was conducted to assess the prevalence of hepatitis C virus in a known area. **Material and methods:** The study comprised a total of 500 participants. An automated chemiluminescent microparticle immunoassay was used to screen plasma samples for anti-HCV antibodies. The determination of Anti-HCV results relied on the signal-to-cutoff ratio (S/CO), with a threshold of S/CO ≥ 1.00 automatically classifying it as reactive using the Architect i1000SR platform. Prevlance of hepatitis C infection was recorded. All the results were subjected to statistical analysis using SPSS software.**Results:** Overall prevalence of Hepatitis C infection was 7.2 percent. Among these 36 patients, majority proportion were females (n=21). Most of the subjects with hepatitis C infection were of rural residence and belonged to the age group of more than 50 years. **Conclusion:** From the results of this study, it is evident that the prevalence of the disease was higher among the females as compared to males.

Keywords: hepatitis C, Screening, Age cohorts, HCV antigen test.

INTRODUCTION

The estimated global prevalence of HCV infection is 2.2%, corresponding to about 130000000 HCV-positive persons worldwide. Because many countries lack data, this estimate is based on weighted averages for regions rather than individual countries. Region-specific estimates range from < 1.0% in Northern Europe to > 2.9% in Northern Africa. The lowest prevalence (0.01%-0.1%) has been reported from countries in the United Kingdom and Scandinavia; the highest prevalence (15%-20%) has been reported from Egypt. An estimated 27% of cirrhosis and 25% of HCC worldwide occur in HCV-infected people.[1-4]
Current antiviral regimens can cure up to 95% of persons with HCV infection and thus reduce the risk of death from cancer and liver cirrhosis, as well as the number of new infections.[5] This means that screening and timely treatment of chronic hepatitis C (CHC) are the most promising measures in combating the epidemic of this infection. Eastern Europe and Central Asia (EECA) are among the regions with the highest prevalence of HCV infection.[6, 7] Within the EECA, Russia has the highest absolute number of infections and, together with Egypt, China, India, Nigeria and Pakistan, accounts for more than half of the global HCV burden.[8] Hence, this study was conducted to assess the prevalence of hepatitis C virus in a known area.

MATERIAL AND METHODS

The study comprised a total of 500 participants. Complete demographic and clinical details of all the patients was obtained. A questionnaire was made and complete medical history of all the patients was recorded separately. Blood samples were obtained from all the patients. An automated chemiluminescent microparticle immunoassay was used to screen plasma samples for anti-HCV antibodies. The determination of Anti-HCV results relied on the signal-to-cutoff ratio (S/CO), with a threshold of S/CO ≥ 1.00 automatically classifying it as reactive using the Architect i1000SR platform. The reactive samples underwent further testing. Prevlance of hepatitis C infection was recorded. All the results were subjected to statistical analysis using SPSS software.

RESULTS

A total of 500 subjects were analysed. Mean age of the subjects was 47.9 years. Out of 500 subjects

screened, 297 subjects were males while the remaining 203 subjects were females. Hepatitis C virus infection was seen in 36 patients. Hence; overall prevalence of Hepatitis C infection was 7.2 percent. Among these 36 patients, majority proportion were females (n=21). Most of the subjects with hepatitis C infection were of rural residence and belonged to the age group of more than 50 years.

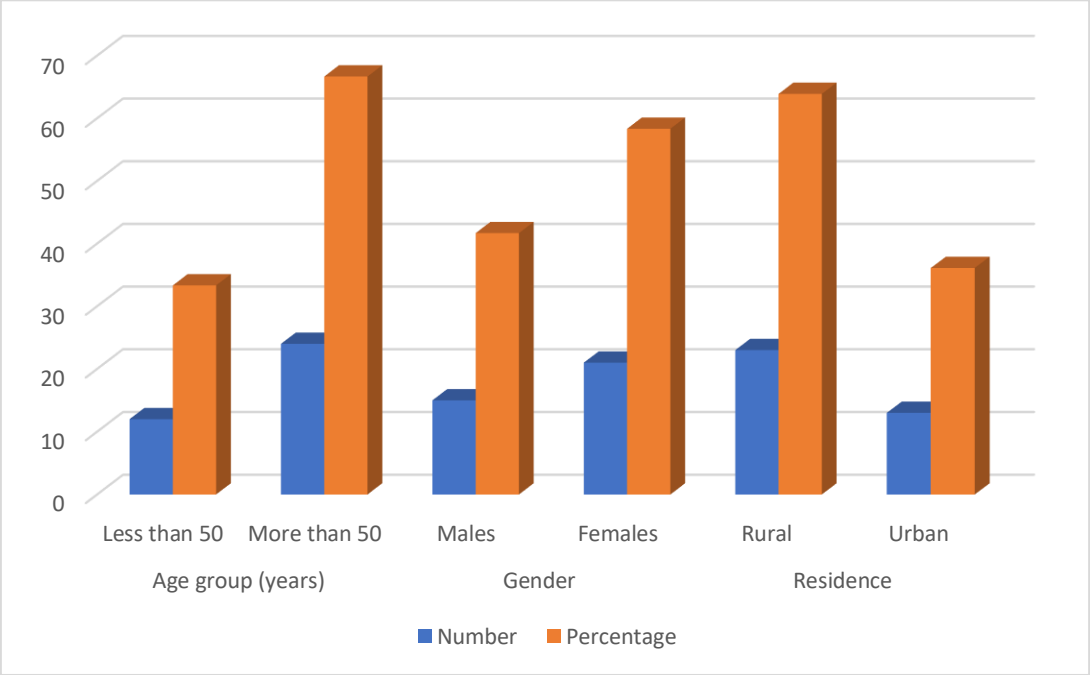
Table 1: Prevalence of hepatitis C infection

Hepatitis C infection	Number	Percentage
Present	36	7.2
Absent	464	92.8
Total	500	100

Table 2: Demographic details of patients with hepatitis C infection

Variable		Number	Percentage
Age group (years)	Less than 50	12	33.33
	More than 50	24	66.67
Gender	Males	15	41.67
	Females	21	58.33
Residence	Rural	23	63.89
	Urban	13	36.11

Graph 1: Demographic details of patients with hepatitis C infection



DISCUSSION

Hepatitis C virus infection represents a worldwide health care problem. Once infected with HCV, only 20% of individuals can spontaneously remove the virus, and chronic hepatitis C may gradually. progress to cirrhosis, hepatocellular carcinoma, and other serious liver diseases.[9] An epidemiology survey of hepatitis C infection is important for prevention and treatment of the disease. The HCV prevalence studies carried out in China during the past decades had limited geographical scope, different time frames, applied diverse methodologies, and predominantly focused on hospital-based studies and high-risk population groups including those who gave a blood donation or received a blood transfusion, drug abusers, individuals with HIV, patients receiving dialysis, and sex workers.[10- 12]

The screening of blood donors, which began in the early 1990s, has reduced the spread of hepatitis C virus (HCV) in the population. The most effective preventative measures for HCV include the screening and testing of blood and organ donors, the implementation of practices in healthcare settings and a strong education programme. Bruggmann et al in a recent systematic review, show that in selected countries (Australia, Austria, Belgium, Brazil, Canada, Czech Republic, Denmark, Egypt, England, France, Germany, Portugal, Spain, Sweden, Switzerland, Turkey) the viremic prevalence varied widely between countries, ranging from 0.3% in

Austria, England and Germany to 8.5% in Egypt. A subsequent systematic review, considering 15 countries, shows that a viremic prevalence ranged from 0.13% in the Netherlands to 2.91% in Russia.[13-16] Hence, this study was conducted to assess the prevalence of hepatitis C virus in a known area.

A total of 500 subjects were analysed. Mean age of the subjects was 47.9 years. Out of 500 subjects screened, 297 subjects were males while the remaining 203 subjects were females. Hepatitis C virus infection was seen in 36 patients. Hence; overall prevalence of Hepatitis C infection was 7.2 percent. Sood A et al[15] conducted a population-based seroepidemiologic survey to estimate the prevalence of hepatitis C in Punjab state of northern India. A house-to-house survey was conducted in a defined population of 26,273 subjects. Information was gathered according to a predesigned questionnaire with socio-demographic characteristics (age, gender and substance abuse), family history of HCV infection, general health status, associated co-infection, immunization history and potential risk factors for HCV transmission. At the time of clinical evaluation, blood was tested for anti-HCV and those found positive were tested for HCV RNA. Among 5,258 subjects screened, 272 were found to be anti-HCV positive (prevalence rate of 5.2 %); highest prevalence being noticed in 41-60 years age group. Anti-HCV positive rates were not different among males and females. Sixty-seven subjects (1.3 %) were found to be HBsAg positive; four of these being co-infected (5.9 %). Various risk factors for acquiring HCV infection identified were history of surgery, dental treatment and unprotected sex. Other associations were strong family history of HCV positivity, alcohol consumption and diabetes mellitus.[15]

In the present study, among these 36 patients, majority proportion were females (n=21). Most of the subjects with hepatitis C infection were of rural residence and belonged to the age group of more than 50 years. Alter et al, in a previous study, performed tests for antibody to HCV (anti-HCV) on serum samples from 21,241 persons six years old or older who participated in the third National Health and Nutrition Examination Survey, conducted during 1988 through 1994. The overall prevalence of anti-HCV was 1.8 percent, corresponding to an estimated 3.9 million persons nationwide (95 percent confidence interval, 3.1 million to 4.8 million) with HCV infection. Sixty-five percent of the persons with HCV infection were 30 to 49 years old. Seventy-four percent were positive for HCV RNA, indicating that an estimated 2.7 million persons in the United States (95 percent confidence interval, 2.4 million to 3.0 million) were chronically infected, of whom 73.7 percent were infected with genotype 1 (56.7 percent with genotype 1a, and 17.0 percent with genotype 1b). Among subjects 17 to 59 years of age, the strongest factors independently associated with HCV infection were illegal drug use and high-risk sexual behavior. Other factors independently associated with infection included poverty, having had 12 or fewer years of education, and having been divorced or separated. Neither sex nor racial-ethnic group was independently associated with HCV infection.[16]

CONCLUSION

From the results of this study, it is evident that the prevalence of the disease was higher among the females as compared to males.

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