

PREVALENCE OF HEPATITIS B AND HEPATITIS C VIRAL INFECTION IN THE RURAL POPULATION OF RAHIM YAR KHAN

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ABSTRACT

Background: Hepatitis B virus (HBV) and Hepatitis C virus (HCV) infections are major cause of end stage liver disorders including cirrhosis and hepatocellular carcinomas. World Health Organization (WHO) has ranked Pakistan amongst the most affected and at-risk nations for HBV and HCV infections. It is therefore important to determine HBV and HCV prevalence in various communities of Pakistan. **Objective:** To determine HBV and HCV seropositivity in rural population of Rahim Yar Khan. **Patients and Methods:** A total of 1999 adults (more than 30 years of age) from rural population of Rahim Yar Khan were included in the study from August 2011 to March 2012. Individuals under study were investigated for the levels of Hepatitis B surface antigen (HBsAg) and anti HCV antibody levels using Immunochromatographic strip test (ICT strip test). Additional information was collected in a pre-designed questionnaire that included demographic details and other factors such as occupation and level of education. Data was entered and analyzed by SPSS version 16. **Results:** Of the 1999 individuals investigated in this study, 53 (2.7%) individuals were positive for Hepatitis B surface antigen (HBsAg) and 476 (23.8%) were positive for anti HCV antibodies. Moreover, 13 individuals (0.7%) had co-viral infection as they were positive for both HBsAg and anti HCV antibodies. Among HBsAg positive individuals 60% were male, whereas, among Anti HCV positive individuals, 58% were females. Majority of the HBsAg and Anti HCV positive individuals were illiterate 58% and 63% respectively. 43% of the HBsAg positive individuals were self employed, whereas, 54% of the Anti HCV positive were house wives. **Conclusion:** This study has shown that HCV infection is more prevalent as compared to HBV in this part of the country. It is also noted that certain risk groups such as self employed individuals, housewives and those with low level of education are prone to HBV and HCV infections.

Key words: HBV, HCV, seroprevalence, hepatitis, Pakistan, end stage liver disorders, hepatocellular carcinoma

INTRODUCTION

Viral hepatitis is a major health burden all over the globe. According to WHO about 2 billion individuals have been infected with Hepatitis B virus (HBV), of these, 240 million have been suffering from chronic liver disorders.¹ Every year, 3-4 million people are infected with hepatitis C virus (HCV). About 150 million people are chronically infected and at risk of developing liver cirrhosis and/or liver cancer. More than 350,000 people die from hepatitis C related liver diseases every year. WHO has listed Pakistan in the most affected countries for HCV infection, second only to Egypt.² Indeed, a recent study delineated that the prevalence of HCV seropositivity in Pakistan is highest amongst its neighboring countries including India, Nepal, Iran and Afghanistan.^{3,4}

Various types of hepatitis causing viruses are known to date including HAV, HBV, HCV, HDV, HEV and HGV. Of these, HBV, HCV and HDV

infections lead to chronic infections while the others usually trigger acute pathology. Indeed, HBV and HCV infections are amongst the most common causes of end stage liver disorders including chronic liver diseases, cirrhosis and hepatocellular carcinoma amongst others.⁵ Hepatitis B virus is transmitted between people by direct blood-to-blood contact or semen and vaginal fluid of an infected person. In developing countries, common modes of transmission are perinatal, early childhood infections, unsafe injection practices, unsafe blood transfusions and unprotected sexual contact.¹ Common transmission mode of hepatitis C virus is via exposure to infectious blood. This can occur through receipt of contaminated blood transfusions, blood products and organ transplants, injections given with contaminated syringes and needle-stick injuries, injection drug use and being born to a hepatitis C-infected mother.²

Both viruses initially cause acute infection which is usually cleared away within 6-8 months. However, in a small percentage of individuals (20%) the infection becomes chronic and leads to disastrous outcomes such as end stage liver disorders. Due to several reasons, such as increased population, lack of literacy, mal-practice of blood transfusion and a high number of intra-venous drug users, Pakistan stands amongst the most affected nations with HBV and HCV infections.⁶ Even though several researchers

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have investigated the prevalence of HBV and HCV infections in various pockets of Pakistan, most of them are hospital based surveys in urban populations.^{3,5-7} In the present study, we have investigated the prevalence of HBV and HCV infection in rural population of Rahim Yar Khan (RYK), which is located in the southern Punjab adjacent to the borders of Sindh and Baluchistan. Ethnically it is mainly composed of Saraiki inhabitants, Punjabi settlers, small pockets of Sindhi, Pathan and Marwaris (low caste Hindu's living in the suburbs of villages), thus representing typical ethnic picture of rural Pakistan. The present study will not only contribute to the national statistics for prevalence of HBV and HCV infections but will also help to design screening and preventive programs for these infections in rural populations of Pakistan. So present study was conducted to determine the HBV and HCV seropositivity among adults in rural community of district Rahim Yar Khan.

PATIENTS AND METHODS

This study was conducted in rural areas of District, Rahim Yar Khan from to August 2011 to March 2012. A total of 1999 individuals were recruited in the study after informed consent. Of these, 792 were males and 1207 were females. All the individuals included were of more than 30 years of age, of either sex and various ethnic origins. Sera from these patients were investigated for the levels of HBsAg and anti HCV antibodies using Immunochromatographic strip test (ICT strip test). Based on the laboratory outputs, all the individuals were labeled as either positive or negative for HBV and HCV infections. Moreover, further information was collected on a pre-designed questionnaire that included demographic details and risk factors such as occupation and level of education. Data was analyzed using statistical package for social sciences, SPSS version 16.

RESULTS

Of the 1999 individuals included in the present report, a total of 542(26.46%) were positive for either HBV and/or HCV infection. Of these, 53 (2.7%) individuals were HBV positive, 476 (23.8%) were HCV positive, while 13 (0.65%) individuals were positive for both HBV and HCV infection (co-viral infection). Of the HBV positive

individuals, 32 (60%) were males and 21(40%) were females. Conversely, of the HCV positive individuals, 200 (42%) were males and 276 (58%) were females. Both HBV and HCV infections were common in self-employed individuals and house wives (Table I), suggesting that these two work groups are the most at-risk population for HBV and HCV infections in Rahim Yar Khan. Majority of the HBsAg and Anti HCV positive individuals were illiterate 58% and 63% respectively. 43% of the HBsAg positive individuals were self employed, whereas, 54% of the Anti HCV positive were house wives.

Table: I

Characteristics of patients (N=529)

	HBsAg positive	Anti – HCV positive
Gender		
Males	32 (60.3%)	200 (42%)
Females	21 (39.6%)	276 (58%)
Socio economic status		
Self employed	23 (43.3%)	168 (35.2%)
House wives	17 (32%)	261 (54.8%)
Employed	04 (7.5%)	37 (7.7%)
Others	9 (16.9%)	10 (2%)
Level of education		
Illiterate	31 (58.4%)	301 (63.2%)
Primary	12 (22.6%)	93 (19.5%)
Middle	01 (1.8%)	21 (4.4%)
Secondary	08 (15.1%)	54 (11.3%)
Graduate or above	01 (1.8%)	07(1.4%)

DISCUSSION

HBV and HCV infections are amongst the major health burdens all over the world. Alarmingly, Pakistan is ranked amongst the most affected and at-risk populations for these infections.^{1,2} In Pakistan, major risk factors for HBV and HCV infections include intra venous drug use, mal-practiced blood transfusions and accidental injuries such as caused by used blades at barber's shop.^{4,6,8} In 2004, Amin *et al* from Lahore reported a seroprevalence of 5.4% and 26.5% for HBV and HCV infections respectively in adult population. More recently, a couple of systemic reviews revealed that 4.3% and 4.9% of the general population in Pakistan are positive for HBV and HCV infections respectively.^{4,6} In our neighboring country, India, the prevalence of HBV and HCV infection has been reported to be 2.97% and 0.87% respectively.^{9,10} These data suggest that the seroprevalence of HBV and HCV infection vary according to the geographical location and/or presence or absence of certain risk factors. It is

therefore important to expand the characterization of HBV and HCV burden throughout Pakistan so that a better understanding of the prevalence and associated risk factors can be established.

In the present study, we have investigated rural communities from Rahim Yar Khan a thickly populated area of Pakistan. Our study demonstrates a seroprevalence of 2.7% and 23.8% for HBV and HCV infections within the rural areas of RYK, indicating that HCV infections are more common in the population under study. A similar observation has also been reported by Mohammad *et al* where they found increased prevalence of HCV infection in Pakistani population compared to HBV infection.¹¹ There were slight gender differences with HBV being more prevalent in males and HCV in females. These findings are in concert with the observations reported by W. Thomas stating that HBV infections (and associated end stage liver diseases) are more common in males.^{12,13} However for HCV infection, our findings are in contrast to the existing literature where the infection is reported to be more common in males.¹³ Interestingly, a small population was also found to have co-infection with both HBV and HCV. Interaction of HBV and HCV during a co-infection has recently attained focus due to altered clinical outcome and treatment modalities.¹⁴ It is therefore important to diagnose the prevalence of co-infection in Pakistan to prevent the hazards associated with this type of viral hepatitis.

The study also identified that HBV and HCV infections were most prevalent in farmers and housewives. These results are in line with the existing literature where these two occupations were reported to be most commonly affected groups in the same order in southern parts of Khyber Pakhtunkhwa, Pakistan.¹¹

Moreover, we found that literacy and level of education were inversely related to the prevalence of HBV and HCV infections. A large group of individuals infected with HBV and HCV were illiterate and therefore unaware of the causative and preventive factors associated with these viruses. Recently, a similar study conducted by Mohammad *et al* in southern parts of Khyber Pakhtunkhwa, Pakistan have also reported that lack of education was directly related with the prevalence of HBV and HCV infections.¹¹

Moreover, Mujeeb *et al* have reported that literate blood donors are less at-risk to develop HBV and HCV infections compared to the illiterate donors, indicating that level of education affects the infection rate.¹⁵

CONCLUSION

In conclusion, the present study showed that there is high prevalence of HCV as compared to HBV among adults of general rural population of Rahim Yar Khan. Moreover, we have identified certain “at risk” groups for these infections. We recommend further studies with this objectives in various pockets of Pakistan and to bring into place appropriate screening, preventive and informative programs to reduce the prevalence of these infections in Pakistan.

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