ORIGINAL ARTICLE

SEROPREVALENCE OF HEPATITIS B AND C AMONG BLOOD DONORS IN HYDERABAD, PAKISTAN

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ABSTRACT

Background: Hepatitis B virus (HBV) and hepatitis C virus (HCV) infections are the main transfusion-transmitted infections (TTIs) especially in developing countries like Pakistan. Hence it is mandatory to screen all blood donors for both important infections. The objective of the present study was to determine the prevalence of HCV and HBV seropositivity among blood donors at Hyderabad, Pakistan.

Material & Methods: Blood donations of 6 months period were studied to determine the prevalence of HBV and HCV seropositivity. During the study period, a total of 2696 blood donors were screened for the presence of Anti-HCV and Hepatitis B surface antigen (HBsAg) using chromatographic immunoassay kit as recommended by the manufacturer. HBV and HCV positivity were the two research variable. As nominal data, these were analyzed as number and percentage.

Results: A total of 2696 blood donation were collected during six month period from January 2012 to June 2012. The data revealed that 93 (3.45%) donors were positive for HCV and 49 (1.82) blood donors were positive for HBV. In addition, the prevalence of co-infection of HBV and HCV appeared very low in this study and only two (0.074%) donors were positive for both HCV and HBV.

Conclusion: Due to the high prevalence of the two main transfusion-transmitted infections of Hepatitis B virus (HBV) and hepatitis C virus (HCV) infections in our setup, it is mandatory to screen all blood donors for both these important infections and to adopt strict measures in selection of blood donors.

KEYWORDS: Hepatitis B; Hepatitis C; Prevalence; Transfusion; Blood donors.

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INTRODUCTION

Blood transfusion is an essential component of modern medicine and saves thousands of lives every day.[1] However, blood transfusions are associated with certain risks which may lead to adverse consequences. This enforces to adopt the strategies to identify, recruit and retain donors from low-risk populations. Hepatitis B and Hepatitis C infections are major public health problems globally, and particularly in developing countries such as Pakistan. HBV and HCV may spread through parenteral route including unsafe blood transfusion. Due to the fact that most of the individuals, infected with HBV and HCV, remain asymptomatic and hence a potential source of spread of these infections to others in the community.[2] Despite extensive promising research a true substitute for blood and blood components (RBC's, platelets, blood clotting factors) has been a challenge, therefore, blood donation would continue to serve the only source for blood and blood components.[3]

According to the WHO report, around 1.5 million units of blood products are transfused annually in Pakistan. Of this 15%, 75% and 10% come from professional donation, replacement (hidden payment) donation and voluntary unpaid donations, respectively.[4] The risk factors and epidemiological characteristics for transmission of infection vary across the country.[5]

The prevalence of HBV and HCV in various parts of country has been reported to vary according the localities. In different studies the prevalence of both infections has been estimated as 1.1%–6.2% for HBV and 2.06%–7.69% for HCV infections.[6-12] A substantial decrease, however, in HBV has been demonstrated, which can be an outcome of introduction of mass scale immunization program against HBV infection.[13] On the contrary, prevalence of HCV

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has increased owing to the lack of effective vaccine.

The Government of Pakistan in 2003 introduced a National Blood Policy to enable proper screening of blood prior to recommending it for transfusion.[14] The risk of transmission of hepatitis through blood transfusion has been reported to be high in Pakistani population possibly due to lack of appropriate screening of blood in past. In addition, late introduction of vaccination has also been reported to be associated in spread of HBV.[15]

The objective of this study was to determine the frequency of HCV and HBV infections among blood donors at Hyderabad, Pakistan. The findings of the present study should help in preventing spread of these diseases in the community through transfusion of safe blood.

MATERIAL AND METHODS

The retrospective cross-sectional study was carried out at the Blood Bank of Wali Bhai Rajputana Hospital (WBRH), Hyderabad, Pakistan with the approval of authorities of the hospital. The data of blood donors was collected for six months period from January 2012 to June 2012. The present study was based on archived records of Hospital Blood Bank. During the reported period, a total of 2696 blood donors attended the Blood Bank, and they all were screened for anti-HCV and HBsAg.

Prospective physically fit donors, who passed a history screen and pre-donation screening test for HBV and HCV within the age range of 18-50 years, were included in the study and allowed to donate blood. Donors having pervious exposure of HBV, HCV and HIV infections, jaundice within the past six months, or those individuals, who had donated blood within the past three months were excluded.

Blood samples were processed and samples were tested at the blood bank of WBRH using rapid chromatographic immunoassay kit.

Anti-HCV antibodies were detected using Hepatitis C Virus One Step Rapid Test (Diagnostar, UK) as per manufacturer's guidelines. Briefly, the test employs the principle of the double antigen-sandwich technique, in which the membrane on the kit device is coated with recombinant HCV antigen. Test specimen (serum) reacts with this antigen and produces a colored line indicating positive test, whilst absence of the line indicates negative result.

HBsAg was detected using Hepatitis Surface Antigen Rapid Test (Diagnostar, UK) as recommended by manufacturer. The test is based on the principle of the double antibody-sandwich technique. The membrane in test device is pre-coated with anti-HBsAg antibodies. The specimen reacts with particles coated with anti-HBsAg antibodies, and generation of colored line in test region of device indicates a positive result and absence of this line indicates negative result.

HBV and HCV positivity were the two research variable. As nominal data, these were analyzed as number and percentage.

RESULTS

A total of 2696 blood donation were collected during six month period from January 2012 to June 2012. The data revealed that 93 (3.45%) donors were positive for HCV and 49 (1.82) blood donors were positive for HBV. (Figure 1)

In addition, the prevalence of co-infection of HBV and HCV appeared very low in this study and only two (0.074%) donors were positive for both HCV

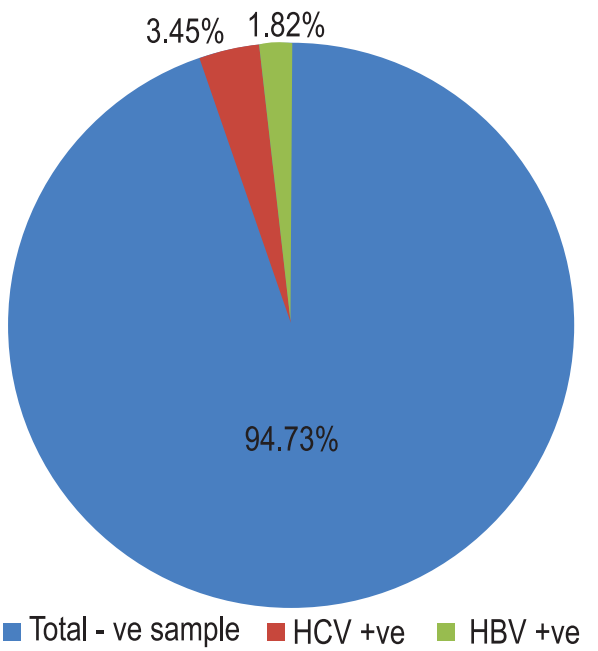

Fig. 1: Prevalence of Hepatitis B and C among Blood donors in Hyderabad

Table 1: Month wise Seroprevalence of HCV and HBV among blood donors.

Month	HCV	(%)	HBV	(%)	Total donors
January	14	3.04	7	1.52	461
February	19	4.77	4	1.01	398
March	13	3.42	5	1.32	380
April	15	2.53	12	2.02	593
May	13	2.35	8	1.44	554
June	19	6.13	13	4.19	310
Total	93	3.45	49	1.82	2696

and HBV.

Month wise breakup of the prevalence of HBV and HCV is given in Table 1.

DISCUSSION

The present study described the frequency of HCV and HBV among healthy blood donors in Hyderabad, Pakistan. In our study, the prevalence of HCV antibodies and HBsAg turned out to be 3.45% and 1.82%, respectively. The results demonstrate a relatively low rate of HBV than that of HCV prevalence. The overall prevalence of both HCV and HBV also indicated a dropping trend as compared to various other similar studies conducted in Sindh, Pakistan during last decade.[6-8,9] A previous study carried out by Ujjan et al., in Hyderabad reported that 3.65 % of the donors were HBsAg reactive while 8.68 % were positive for Anti-HCV antibodies,[16] suggesting a clear decrease in the prevalence as compared to the results of current study. In another study conducted by Nazer et al. from Karachi demonstrated 2.068 % prevalence of Anti-HCV and HBsAg was shown positive in 1.71% of the studied blood donors.[10] Manzoor et al documented 6659 blood donors from Lahore and reported 7.69% prevalence for Hepatitis C and 1.70% for Hepatitis B.[11]

The results of present study are in agreement with the previously published data demonstrating high prevalence of HCV and comparatively low prevalence of HBV.[8,11,12] A possible explanation for the decrease in HBV prevalence amongst the donor population could be due to the fact that in 95% of the cases, healthy adults when exposed to HBV infection tend to recover completely, whereas if exposed to HCV infection, they remain infected in 85 % of the cases.[17,18] In developing countries, such as Pakistan, it appears to be very difficult to prevent the transmission of infectious disease through blood transfusion because of the lack of resources despite the effective policies and strategies. HBV and HCV infections are thus still prevailing and regarded as a major concern to policy makers, in making blood supply a risk free. Strict measures such as use of sensitive screening tests, improved strategies of donor selection criteria, and proper awareness about the risk factors associated can ensure the elimination, or at least reduction, of the risk of acquiring TTIs.[19]

CONCLUSION

Due to the high prevalence of the two main transfusion-transmitted infections (TTIs) of Hepatitis B virus (HBV) and hepatitis C virus (HCV) infections in our setup, it is mandatory to screen all blood donors for both these important infections and to adopt strict measures in selection of blood donors.

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CONFLICT OF INTEREST
Authors declare no conflict of interest.
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None declared.