

Prevalence of Hepatitis B and C Virus Among Blood Donors in Sukkur

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Abstract

Objective: To find sero-prevalence of HBsAg and HCV antibody among healthy blood donors.

Place and Duration: Blood Transfusion Services, Ghulam Mohammad Mahar Medical College Sukkur from January 2008 to December 2010.

Materials and Methods: A total of 7085 blood donors were studied during the study period. Among these 99.9% were males and 0.1% were females. During the study period, all the blood donors were screened for Hepatitis B surface antigen (HBsAg) and anti-HCV antibodies. Screening was first done by using rapid immunochromatography kits and then positive cases were tested by ELISA (Enzyme Linked Immunosorbant Assay).

Results: 5.137% (n = 364) individuals were positive

for HCV antibodies, 3.782% (n = 268) individuals showed positivity for HBsAg and both (HBsAg and anti-HCV) were positive in 0.099% (n = 7).

Conclusion: It is concluded that HCV and HBV have become major problems in Sukkur like rest of the country and screening blood donors for both HCV and HBV should be done to prevent the disease escalation.

Keywords: Hepatitis B, Hepatitis C, Blood Donors, Blood Transfusion.

Introduction

Hepatitis B and C are major public health problems in developing countries.¹ HBV and HCV are the commonest causes of chronic liver disease in several regions of the world. The worldwide carrier rate of HBV is more than 350 million. These carriers provide a huge reservoir for HBV. It is estimated that HBV has infected over 2 billion individuals alive today at some point in their lives.² It is estimated that about 1 million people die each year from HBV related chronic liver disease.³

Hepatitis B and C are transmitted parenterally mainly as a result of blood to blood contact including injury with contaminated instruments and sharing of needles or by sexual contact and also through perinatal transmission from mother to child.⁴ HBV and HCV are the two established causes of post-transfusion hepatitis. Prevalence of transfusion – transmitted diseases is much lower in healthy voluntary blood donors as compared to professional blood donors.⁵ Both infec-

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tions can lead to an acute or silent course of liver disease progressing from liver impairment to liver failure, cirrhosis of liver and to hepatocellular carcinoma.

The infection rate of Hepatitis B and C is increasing day by day in Pakistan. The discovery of these serious hazards has brought a dramatic change in the behavior of patients and physicians about safe transfusion of blood.⁶

Various epidemiological studies have been conducted in the past that provide data about the seroprevalence of Hepatitis B and C viruses in different parts of the world. There are also few studies that have been conducted in different regions of Pakistan. In general, blood donors are members of a low risk behavior group.

This study was conducted to evaluate the prevalence of Hepatitis B and C in healthy blood donors.

Materials and Methods

The study was conducted at blood transfusion services, Ghulam Muhammad Medical College Sukkur from January 2008 to December 2010. All the blood donors (replacement/ voluntary) who donated blood during the study period were included in the study. The inclusion criteria followed were age 18 – 60 years, weight more than 50kg and a hemoglobin concentration above 12 g/dl.

A thorough medical history was taken to ensure that the donor is free of all communicable diseases. The exclusion criteria used were history of jaundice, malaria, drug addiction, anemia, and history of repeated transfusions and any evidence of cardiac, renal, or pulmonary disease.

Blood samples (5 ml) from donors were tested for Hepatitis B surface antigen (HBsAg) and antibodies against HCV, screening was first done by using rapid immunochromatography kits and then positive cases were tested by ELISA.

Table 1: HbsAg and anti-HCV prevalence in blood donors (n = 7085).

Serological Marker	Seropositive	Percentage
HBsAg	268	3.782%
Anti-HCV	364	5.137%

HBsAg + Anti-HCV	07	0.099%
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Results

A total of 7085 blood donors were screened for anti-HCV and HBsAg. Among these, 99.9% were males and 0.1% were females. 364 individuals (5.137%) were positive for anti-HCV, 268 individuals (3.782%) showed positively for HBsAg and 07 (0.099%) individuals were both anti-HCV and HBsAg positive (Table 1).

Discussion

The transfusion of blood is a life saving procedure and benefits thousands of patients worldwide. Serological testing of HBV and HCV is compulsory in blood banks routinely. These tests are must for safe blood transfusion. Blood donors include the adult population in the 18 – 60 year age group, so the prevalence in other age groups is missed in such studies. But it is generally accepted that the evaluation of donor's blood for seropositivity of HBV and HCV gives an idea for epidemiology of these infections in general population. Seroprevalence rate of HBsAg and anti-HCV antibodies varies in different regions of Pakistan as shown in Table 2.

The seroprevalence of HBV in healthy donors varies from 1.46% (HMC, Peshawar) to 8.4% (DHQ Hospital, Skardu) in different parts of our country. In our study it is 3.782%. Similarly the infection rate of HCV in our study is 5.137% and it varies from 0.27% (Nishtar Medical College, Multan) to 8.68% (Isra University, Hyderabad) in other parts of the country. Our study shows lower prevalence of Hepatitis B as compared to other studies 7, 9, 17, 19 and higher prevalence as compared to studies conducted by Zaidi A et al, Ahmed J et al from Peshawar, Ijaz AU et al, Sirhindi GA et al from Lahore and Asif N et al and Waheed U et al from Islamabad.

The seroprevalence of anti-HCV antibodies in our study is lower as compared to other studies from other areas of Pakistan. Seroprevalence of HCV is reported 8.68% from Hyderabad, 6.21% from Rawalpindi and 5.34% from Lahore. Our results are similar to study conducted by Asif N et al (5.14%) from Islamabad. Dual infection of Hepatitis B and C is very low. It is 0.099% in our study, result are slightly higher than study conducted by Nazar H et al (0.095%) from Karachi.

Seroprevalence rate of HBsAg and anti-HCV antibodies varies in different countries (Fig. I & II). Prevalence of HBsAg was found as 3.4% in Georgia, 1.5%

Table 2: Prevalence of Hepatitis B&C among blood donors reported in local literature published during last few years.

Author and Year	Place of Study	Anti-HCV	HBsAg
Mumtaz S et al 2002 ⁷	Islamic International Medical College Rawalpindi	6.21%	5.86%
Khattak MF et al 2002 ⁸	AFIT, Rawalpindi	4.0%	3.3%
Fayyaz KM et al 2002 ⁹	Quaid-e-Azam Medical College, Bahawalpur	--	7.53%
Ali N et al 2003 ¹⁰	CMH, Quetta	1.87%	--
Zaidi A et al 2004 ¹¹	Hayatabad Medical Complex, Peshawar	1.34%	1.46%
Sirhindi GA et al 2005 ¹²	Sheikh Zayed Postgraduate Medical Institute Lahore	4.16%	3.36%
Mehmood MA et al 2004 ¹³	Nishtar Medical College / Hospital Multan	0.27%	3.37%
Asif N et al 2004 ¹⁴	Shifa International Hospital Islamabad	5.14%	2.51%
Ahmed J et al 2004 ¹⁵	Rehman Medical Institute Peshawar	2.2%	1.9%
Chaudhry IA et al 2006 ⁶	Fauji Foundation Hospital, Rawalpindi	2.52%	2.45%
Ujjan ID et al 2006 ¹⁶	Isra University Hospital, Hyderabad	8.68%	3.65%
Aziz MS 2006 ¹⁷	DHQ Hospital Skardu	1.1%	8.4%
Ijaz AU et al 2007 ¹⁸	Ghurki Trust Teaching Hospital, Lahore	5.34	1.52
Azam M et al 2007 ¹⁹	Baqai Medical University, Karachi	4.36%	4.5%
Nazar H et al 2008 ²⁰	Baqai Medical University, Karachi	2.068%	1.710%
Waheed U et al 2009 ²¹	Blood Transfusion Services, PIMS Islamabad	3.31%	1.92%
Present Study 2010	Ghulam Muhammad Mahar Medical College Hospital Sukkur	5.137%	3.782%

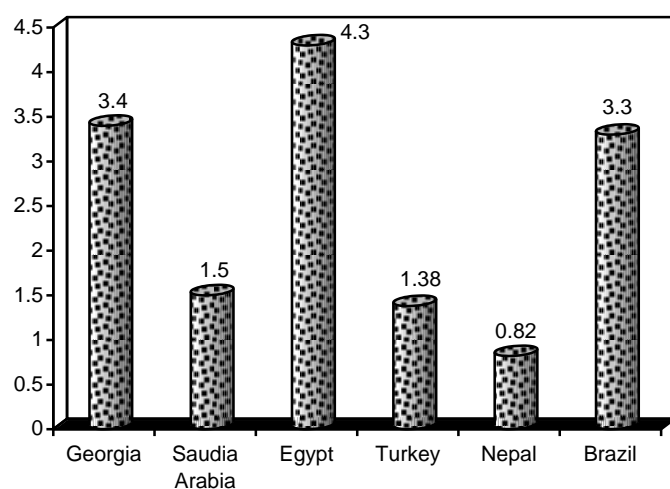


Figure 1: Percentage prevalence of HBV in various countries.

in Kingdom of Saudi Arabia, 4.3% in Egypt, 1.38% in Turkey, 0.82% in Nepal and 3.3% in Brazil.²²⁻²⁶ On the other hand, the

anti-HCV antibodies prevalence rate in same countries was found to be 6.9%, 0.4%, 2.7%, 0.35%, 0.47% and 5.9% respectively.²²⁻²⁷

Conclusion

It is concluded from the study that seroprevalence of Hepatitis C is higher in donors than in Hepatitis B infection. The reason might be the vaccination programmes and increased public health awareness that lowered this rate.

Our study is in contrast to many other studies which show higher prevalence of Hepatitis B in our country. Prevention is the most important aspect on which we all need to work hard. Blood is one of the main sources of transmission of Hepatitis B and C, hence donor selection is of paramount importance.

rtance. With vigilant donor's selection and use of sterilized syringes and medical instruments, spread of Hepatitis B and C could be minimized.

It is suggested that more attention should be given paid providing health education concerning risk factors and prevention of Hepatitis B and C infections to the general public.

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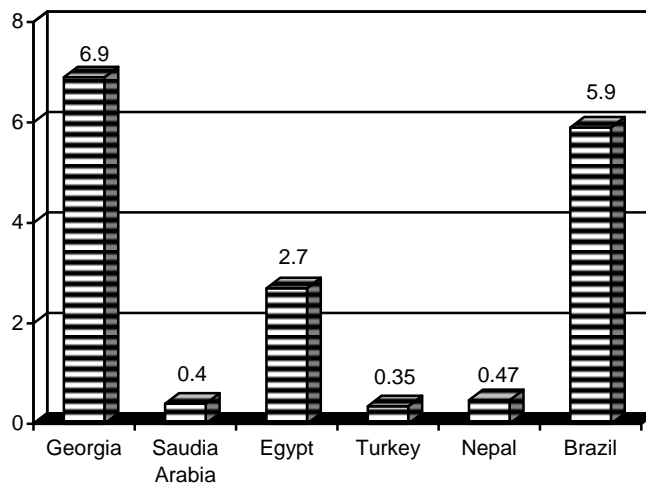


Figure 1: Percentage prevalence of HCV in various countries.

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