

SEROPREVALENCE OF HEPATITIS B AND C VIRUS IN VOLUNTARY BLOOD DONORS AT TERTIARY CARE HOSPITAL OF BANNU, PAKISTAN

Mir Attaullah Khan¹, Walayat Shah*², Khalid Javed³

¹ Department of Pathology, Bannu Medical College, Bannu

² Institute of Basic Medical Science, Khyber Medical University Peshawar

³ Department of Pathology, Khyber Girls Medical College Peshawar

Address for correspondence:
Walayat Shah PhD
Assistant Professor
Department of Histopathology,
Institute of Basic Medical Sciences,
Khyber Medical University,
Peshawar, Pakistan.
E-mail: walayats.ibms@kmu.edu.pk

ABSTRACT

Background: After the introduction of blood banks, blood transfusion has become very common which can transmit many infections including hepatitis B and C viral infections. This study is aimed determine the seroprevalance of hepatitis B and C virus in voluntary un-paid blood donors and to make recommendations for safe blood transfusions.

Methodology: This retrospective chart review study was conducted at Khalifa Gul Nawaz Teaching Hospital (KGNTH), Bannu, between 1st April 2011 and 31st March 2015. A total of 3650 voluntary blood donors were included in the study. All the blood samples were screened for hepatitis B surface antigen (HBSAg) and anti hepatitis C virus (AntiHCV) antibodies by enzyme linked immuno-sorbent assay (ELISA) before accepting the blood donation. Ages of donors ranged from 18-52 years. Males outnumbered the females.

Results: Out of 3650 donors 61 (1.67%) were positive for HBSAg and 38 (1.04%) were positive for Anti-HCV.

Conclusion: Although the seroprevalence of hepatitis B and C virus was low in this study but still it is of utmost importance to continue screening donated blood with highly sensitive and specific tests to ensure the safety of blood for recipient.

Key words: Hepatitis B, Hepatitis C, Blood donors

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INTRODUCTION

Blood transfusion is a life saving step in the care and management of most seriously ill patients¹. The use of blood for various purposes has been recorded since 1930². At present due to development of blood banks and better storage techniques it is used widely for saving lives of the patients². Several infections like hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV), malarial parasite and syphilis can be transmitted through unsafe blood transfusion^{2,3} especially in those countries where these diseases are endemic due to limited resources⁴. Due to this risk, World Health organization (WHO) has recommended that all donors should be screened for these infections before accepting their blood donations³. Hepatitis B and C can also be transmitted by intravenous injections, sexual contacts and perinatally from mother to child.⁵

Both hepatitis B and C are common infections and are considered as major public health problem throughout the world³. According to WHO estimation, 350 and 170 million people are infected worldwide with hepatitis B and C respectively⁶. Among them most of the people belong to the developing countries like Pakistan. These countries being resource deficient bear tremendous morbidity and mortality^{3,5,7} in the form of acute liver disease or chronic liver damage resulting in cirrhosis, hepatocellular carcinoma and deaths^{5,7,8}.

Due to danger of these various infections to be transmitted through blood and blood products, safe blood transfusion has gained a great importance. The term "safe blood transfusion" refers to rational and judicious use of blood and blood products as per recommendations of WHO². This study aimed to determine the seroprevalance of hepatitis B and C in unpaid, voluntary blood donors reporting to our setup.

METHODOLOGY

This study was conducted to determine seroprevalence of hepatitis B and C virus from southern districts of Khyber Pakhtunkhwa and North Waziristan agency. Donation record of all donors reporting to blood bank of KGNTH from 1st April 2011 to 31st March 2015 was analyzed. Age, sex, address, donor identification, type of donor (paid or voluntary), hemoglobin and weight were recorded.

Healthy voluntary blood donors of age 18 to 60 years with body weight above 45 kg, who were found to be seronegative or positive for both hepatitis B and C or any one of them without any previous knowledge of seropositivity at the time of donation qualified for donation.

Professional donors, already known positive cases and donors having fever, low weight (< 45kg), low Hb%, age less than 18 years or more than 60 years, history of IV drug abuse, blood donation in last three months or jaundice in previous 12 months were excluded. Similarly persons belonging to high risk groups such as patients from thalassemia clinics, sexually transmitted diseases clinics, dialysis patients, sex workers and pregnant

women were also excluded. The data shows only those donors who were accepted for blood donation before screening their blood for HBSAg and Anti HCV.

The screening of hepatitis B and C virus was done by ELISA method by using HBSAg ELISA version1 and Anti HCV ELISA version 1 kits manufactured by Autobio Diag-nostics Co; LTD China. Both of the kits were used as per instructions of the manufacturer. Both external controls as well as those provided by the manufacturer were used for accuracy of the results. Positive samples were double checked with the same method.

RESULTS

A total of 3650 voluntary healthy donors were included in this study. Out of them 3580 were males and only 70 were females. Age wise they ranged from 18-52 years. Maximum number of blood donors was in third decade (21-30 years) of their lives (Figure-1). Among the total donors included in the study (n=3650) 61 (1.67%) were positive for HBSAg and 38 (1.04%) were positive for AntiHCV. Samples of 03 (0.08 %) donors showed seropositivity for both HBSAg and Anti HCV (Table-1). The data was analyzed by using Microsoft excel 2007, for

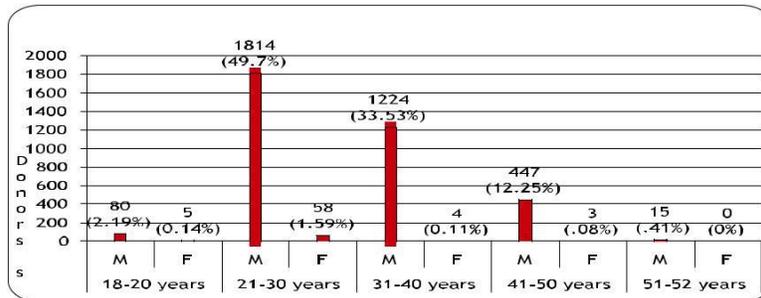


Figure-1 Age and gender wise distribution of blood donors (n=3650)

Table- 1 Seroprevalance of HBSAg and Anti HCV in blood donors (n=3650)

Serological marker	Number of Seropositive donors (n=102)	Prevalence of HBSAg and Anti HCV (n=3650)	Gender wise breakup of Seropositive donors	Gender wise Percent-age of Seropositive donors
HBSAg	61 (59.8%)	1.67 %	Male = 58	56.86%
			Female=03	2.94%
Anti HCV	38 (37.26%)	1.04 %	Male=36	35.30%
			Female=02	1.96%
HBSAg + Anti HCV	03 (2.94%)	0.08 %	Male=03	2.94%
			Female=0	00%
Total	102 (100%)	2.79 %	102	100%

determining frequencies and percentages.

DISCUSSION

Our study shows seropositivity of HBSAg and anti HCV in healthy voluntary donors to be 1.67% and 1.04% respectively. The prevalence of HBSAg in our study is lower as compared to other studies conducted by Butashvili et al.⁹, El-Gelany et al.¹⁰, Khattak et al.¹¹, where it was 3.4%, 4.3%, and 3.3% respectively. Similarly prevalence of Anti HCV in healthy blood donors is also low in our study as compared to prevalence shown by other studies conducted by Butashvili et al.⁹, El-Gelany et al.¹⁰, Ijaz et al.¹², Khattak et al.¹¹ and Usman et al.³ where it is 6.9%, 2.7%, 5.34%, 4% and 3.31 % respectively, clearly in excess to the results of our study.

Main reasons for such a high prevalence of Hepatitis B and C in healthy blood donors may be transfusions of blood and blood products from unscreened donors who have used intravenous drugs, unsafe syringes for injections, unsafe prickers for tattooing, involved in unsafe sex or lacked awareness especially in rural population about the disease and mode of its spread¹³.

Some of the studies conducted by Ahmad et al.¹⁴, Ayoola et al.¹⁵ Nazar et al.⁵, Shah et al.² and Waheed et al.³ show results of HBSAg seroprevalence in close comparison to ours, that is, 1.46%, 1.5%, 1.71%, 1.97 and 1.92 % respectively. Similarly studies conducted by Muneer et al.¹⁶ and Al-Gani et al.¹⁷ show similar results for Anti-HCV seropositivity as shown by our study, that is, 1.1% and 0.9 % respectively.

Similarly several studies show lower prevalence of HBSAg and anti-HCV. Study conducted by Nwokeukwu et al.¹ shows prevalence of HBSAg to be 0.3% in healthy blood donors. Studies conducted by Mehmood et al.¹⁸, Dayan et al.¹⁹, Nwokeukwu et al.¹ and Sonia et al.²⁰ show low prevalence of anti-HCV in healthy blood donors, that is, 0.27%, 0.64%, 0.2% and 0.27% respectively.

Prevalence of dual seropositivity of both HBSA and anti-HCV was 0.08 % in our study which is in closing approximate to the result of study conducted by Nazar et al.⁵ where it was .095%.

CONCLUSION

The lower prevalence of hepatitis in our study as well as mentioned in other studies reveal a decline in the incidence of both hepatitis B and C. This may be attribut-

ed to the greater awareness about hepatitis infections, blood screening before transfusion, use of disposable syringes and good healthcare measures.

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