

Frequency of Transfusion Transmitted Infection Among Blood Donors at Specialized Tertiary Care Hospital in Bangladesh

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Abstract

Background: Blood transfusion is associated with a number of complications. Transfusion transmitted infections (TTI) are one of the major health problem in Bangladesh. **Objective:** The objective of the present study was to assess the status of transfusion transmitted infections among the apparently healthy donors. **Methods:** This study we carried out among 585 blood donors in the transfusion medicine department from April 2013 to March 2014 at National Institute of Neurosciences (NINS) and Hospital in Dhaka, Bangladesh. All the samples were screened for hepatitis B surface antigen (HBsAg), hepatitis C virus (HCV), human immunodeficiency virus (HIV) 1 and 2, venereal disease research laboratory test (VDRL) and malaria to see the prevalence of TTI. **Results:** Prevalence of hepatitis B virus (HBV), HCV, and syphilis were 1.20, 0.68 and 0.34% respectively. No blood donor tested showed positivity for malarial parasite and HIV. **Conclusion:** Mandatory screening of donated blood and use of sensitive screening test should be done to reduce TTI in Bangladesh. [J Natl Inst Neurosci Bangladesh 2015;1(1): 12-14]

Keywords: Transfusion transmitted infection, Blood donors, Prevalence, HPV, HPV.

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Introduction

Neurological illness has been found associated with transfusion of blood and blood components saves millions of lives world wide each year. It is well-known that blood transfusion is associated with a large number of complications. In developing countries like Bangladesh blood safety remains an issue of major concern. Now-a-days in Bangladesh routine screening of healthy blood donors is done for hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV), syphilis and malaria. These strategies have been extremely effective, but transmission of diseases still occurs^{1,2}.

Hepatitis-B virus infection results in broad spectrum of disease from sub-clinical infection to fulminate hepatitis. It can progress to chronic active hepatitis, cirrhosis of liver and hepatocellular carcinoma. Globally more than one million deaths occur from complication of HBV infection every year³. Hepatitis C Virus (HCV) is emerging as one of the major

health problem in Bangladesh. About 3% of the world's population is infected by this virus accounting a total of 170 million HCV infected persons globally⁴. The long-term risk of developing cirrhosis and hepatocellular carcinoma is greater in HCV-infected individual than those infected with HBV.

HIV is one of the human retroviruses that preferentially infects and kills helper (CD4) T lymphocytes, resulting in the loss of cell mediated immunity and a high probability that the host will develop opportunistic infections⁵. *Treponema pallidum* causes syphilis. *T. pallidum* is transmitted from spirochete containing lesions of skin or mucous membrane (eg, genitalia, mouth & rectum) of an infected person to other persons by intimate contact. It can also be transmitted from pregnant women to their fetuses⁶.

Malaria is caused by four *Plasmodia* species of which *P. vivax* and *P. falciparum* are more common causes of malaria in Bangladesh. Worldwide malaria is one of the

most common infectious diseases and a leading cause of death. This study was undertaken to know the prevalence of TTI among blood donors.

Methodology

This retrospective study was carried out in the department of Transfusion Medicine between April 2013 to March 2014 for a period of one year at National Institute of Neurosciences and Hospital in Dhaka, Bangladesh. Blood samples were collected in pre-labeled pilot tube during collection of blood. Serum was separated from the clotted blood. The study included all the donors pretested blood grouping, Rh factor and cross matching with the blood of their respective recipient admitted in different wards of NINS. Detection of HBsAg, anti HCV and anti HIV were done by ICT. For screening of syphilis Rapid Precipitation Reaction (RPR) was carried out. Detection of malaria was done by ICT method.

Results

The total number of blood donors was 585. 379 (64.8%) were relative donor and 206 (35.2%) were voluntary donor. Most donors were male (90.6%) and rest 55 (9.4%) were female. The age range of the donors was from 18 to 57 years (table 1).

Table 1: Distribution of blood donors by age groups

Age group (years)	Frequency	Percentage
18-27	285	49
28-37	224	38
38-47	70	12
48-57	6	1

Prevalence of hepatitis B virus (HBV), HCV, and syphilis were 1.20, 0.68 and 0.34% respectively. No blood donor tested showed positivity for malarial parasite and HIV.

Table 2: Distribution of blood donors by sex

Sex	Frequency	Percentage
Male	530	90.6
Female	55	9.4

Discussion

Studies in the West have shown that the estimated risk of transfusion-transmitted HIV, HCV and to a lesser extent HBV infection via blood products is very low⁷⁻⁸. This is not same in developing countries, like Bangladesh. In the present study, the prevalence of HBsAg was 1.196%. The prevalence of HBsAg in a study in Khulna Medical College Hospital, Khulna was 1.39%⁹. In another study in Sir Salimullah Medical College, Dhaka the prevalence was 2.19%¹⁰. Seroprevalence of HBsAg in various other Indian studies has been shown to range between 1.86 and 4%¹¹⁻¹². Seroprevalence of HBsAg in various studies in Pakistan has been shown to range between 1.55 and 8.4%¹³⁻¹⁴.

In the present study the prevalence of seropositivity for anti-HCV was 0.684%. The prevalence of anti-HCV in a study in Khulna Medical College Hospital, Khulna was 0.024%⁹.

Table 3: Distribution of blood donors by occupation

Occupation	Frequency	Percentage
Student	199	34
Service	209	36
Business	89	15
Others	88	15
Total	585	100

In another study in Sir Salimullah Medical College, Dhaka the prevalence was 0.25%¹⁰. The global prevalence of chronic HCV-infection is estimated to be approaching 3%. Extremely low anti-HCV prevalence 0% has been reported among the blood donors in UK and Scandinavia. The highest prevalence (28%) has been reported in Egypt¹⁵. Indian studies indicate that seroprevalence of HCV ranges between 0.4 and 1.09%¹¹⁻¹². Several studies in Pakistan showed that the seroprevalence of HCV ranges between 0.07 and 4.9%¹³⁻¹⁴.

Table 4: Distribution of blood donors by types

Type of blood donor	Frequency	Percentage
Voluntary	206	35.2
Relative	379	64.8

The prevalence of HIV seropositivity was 0.0%. The prevalence of HIV in a study in Khulna Medical College Hospital, Khulna was 0.008%⁹. In another study in Sir Salimullah Medical College, Dhaka the prevalence was 0.08%¹⁰. The HIV seroprevalence in Indian scenario has been reported between 0.2 and 1%¹⁶⁻¹⁷. Two studies in Pakistan showed the prevalence of HIV 0.0%¹³⁻¹⁴.

In the present study, the VDRL reactivity was 0.341%. The prevalence of HBsAg in a study in Khulna Medical College Hospital, Khulna was 0.00%⁹. In another study in Sir Salimullah Medical College, Dhaka the prevalence was 0.17%¹⁰.

Table 5: Positive cases among the donors of Transfusion Medicine Unit of NINS (n=585)

Screening Tests	Frequency	Percentage
HBV (HBsAg)	7	1.196
Anti HCV	4	0.684
VDRL (RPR)	2	0.341
Malarial parasite	0	0.00
Anti HIV	0	0.00

Conclusion

In the present study, incidence of HBsAg seropositivity was found to be the highest as compared with other transfusion-transmitted infection. HIV infection is a major public health problem world wide but it is still not common in Bangladesh, so attention should be paid toward the prevention of Hepatitis B and C virus as well as HIV.

Therefore, with the implementation of strict donor selection criteria, mandatory screening of donated blood and use of sensitive laboratory screening tests, it may be possible to reduce the incidence of TTI in Bangladesh.

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