Research Article

Prevalence of Hepatitis B, C and HIV Viruses in Blood Donors at Patel Hospital

Adnan Ali Rana[1], Zahid Ali[1], Fahad Amin[1], Nimra Sharif[2]
[1]MPhil students Humdard University, Karachi.
[2]Research Assistant IoBM, Karachi.

Received: 9 January 2019
Revised: 11 March 2019
Accepted for publication: 27 March 2019

Correspondence:
Nimra Sharif, Research Assistant
IoBM Korangi Creek Karachi. E.mail: nimra.sharif@iobm.edu.pk

This article may be sighted as: Rana AA, Ali Z, Amin F, Sharif N. Prevalence of Hepatitis B, C and HIV Viruses in Blood Donors at Patel Hospital. LMRJ. 2019; 1(1): 12-14.
Doi: 10.38106/LMRJ.2019.1.1-04.

Abstract
Globally around 70 million people are suffering from chronic hepatitis B virus (HBV), chronic hepatitis C virus (HCV) and Human Immuno Deficiency Virus (HIV) infections. Owing to inadequate health care facilities and lack of awareness at large, Pakistan is also adversely affected by these diseases. The objective of this study was to determine the frequency of transfusion transmitted viral infections among voluntary blood donors at Patel Hospital Karachi. Participants were selected through stringent selection criteria ensuring safety of both the donor and recipient. Specimens from donated blood were screened for hepatitis B surface antigen (HBsAg), antibody against hepatitis C virus (anti HCV) and antibody against Human Immuno Deficiency Virus type 1 (HIV-1) and type 2 (HIV-2) using chemiluminosence based assays. A total of 4034 donors were identified, based on the selection criteria, 424 donors were deferred and 3610 were enrolled into the study. Anemia was the most common cause for deferral. Among the study participants 69 (1.91%) donors were HBsAg, 81(2.24%) were Anti HCV and 2 were Anti HIV-1/HIV-2 infected. It was concluded that the most common cause for donor deferral was anemia and that a significant number of voluntary blood donors are infected with (HBV), (HCV) and (HIV). Blood products should, therefore, be properly screened for these infections.

Keywords: Hepatitis B, Hepatitis C, HIV, Screening, Blood Donors

Introduction
Hepatitis B virus (HBV), hepatitis C virus (HCV) and Human Immuno Deficiency Virus (HIV) infections are among the leading global public health problems[1]. Prevalence of these infections is especially higher in the developing countries where it pertains to the lack of resources and appropriate measures[2]. Worldwide, a total of around 248 million people suffer from chronic HBV infection[3]. HCV infection is relatively less common and affects approximately 80 million people[4]. HIV affects a total of around 36.9 million people[5]. HBV and HCV infections are most feared for their hepatic complications which may lead to severe morbidity and mortality. Together, the two diseases account for more than 50% of the cases of cirrhosis liver and hepatocellular carcinoma[1]. However, globally 80% of deaths due to complications of HBV and HCV have been reported to be caused in the less privileged countries lacking in adequate prevention and cure of these diseases[6].

On the other hand transfusion of blood and its components have become a vital component of modern therapeutics and have a long list of indications[7]. Transfusion transmitted infections (TTIs) are, however, the major concern with this therapeutic modality and has led to meticulous screening measures.

Pakistan is an under-resourced country with inadequate provisions of health care services to majority of its population. A higher prevalence of the aforementioned diseases is hence anticipated. The current study aims at determining the prevalence of HBV, HCV and HIV infections among blood donors in a major tertiary health care hospital located at Karachi, the largest city of Pakistan.

Methodology
This was a cross-sectional, descriptive study, conducted during the year 2015, at Patel Hospital Karachi. All the individuals who volunteered for blood donation in the stipulated study year were processed. Standard procedures of donor selection set at the native blood bank were observed during donor selection process. These included donor's clinical and behavioral history followed by stringent physical examination and testing with complete blood count (CBC). Only adult (18-55 years age) healthy volunteer blood donors were enrolled into the study.

Individuals with known or suspected mental, infectious, uncontrolled metabolic, immunological or systemic disorders and those taking any kind of medications were excluded. An informed consent was acquired in writing from all the enrolled donors.

Blood Screening

All the blood donations were screened for presence of hepatitis B surface antigen (HBsAg), Anti-HCV antibody (Anti HCV), anti HIV-1 and HIV-2 antibodies. The tests were carried out onVITROS® ECiQ immunodiagnostics system. The system employs enhanced chemiluminescence technology in its functioning. Manufacturer's guidelines were adopted in determining reactivity of the cases

Statistical Analyses

The data was recorded and analysed employing Statistical Package for Social Sciences (SPSS®) version 22. Simple arithmetic means and standard deviations were deduced. Categorical data were compared with each other using Chi Square test. The P-value of significance was set at 0.05.

Results

A total of 4034 donors (voluntary and replacement) were processed at the native blood bank of Patel Hospital Karachi during 1st January 2015 to 31st December 2015. After initial donor recruitment scrutiny, 424 donors were deferred. These included 394 (92.9%) cases of anemia, 10 (2.3%) cases of hypotension and 20 (4.7%) cases of active medication. Rest of the 3610 donors were enrolled into the study (Table 1). Of the 3614 donors, a total of 152 (4.2%) donors turned out to be reactive in the screening assays. Sixty nine (1.91%) donors were HBsAg reactive and 81(2.24%) donors were Anti HCV reactive. Only two donors were found to be positive for Anti HIV-1/HIV-2 (Table 1).

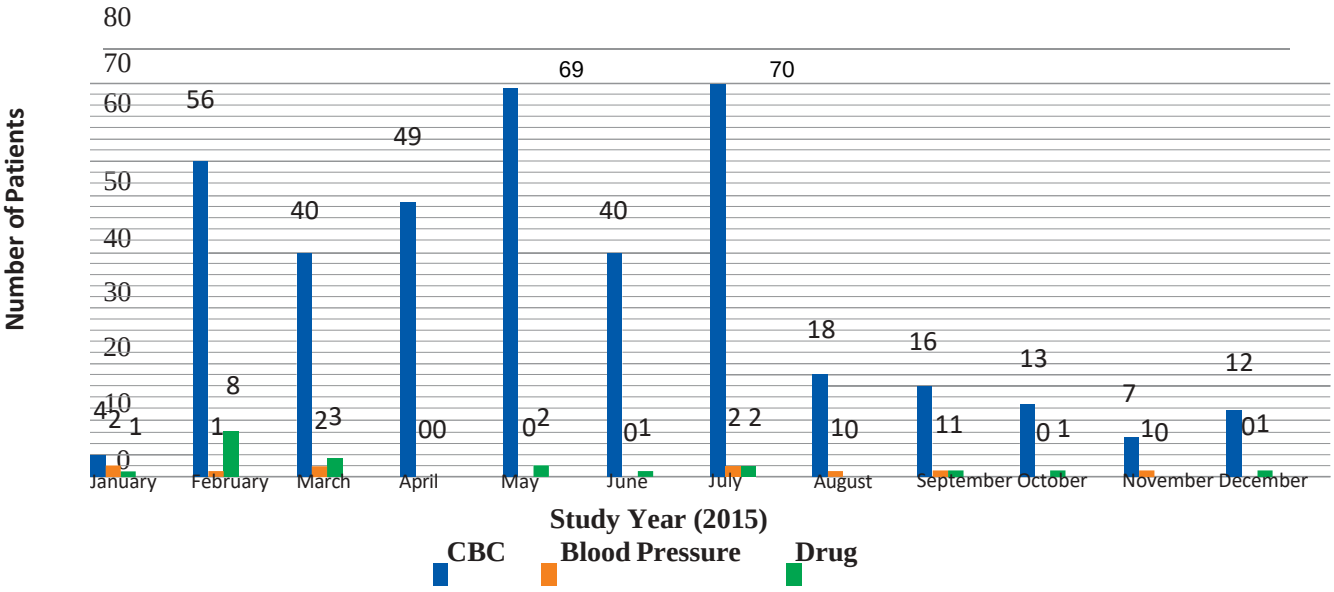

Figure 1. Frequencies of various donor deferral causes in study patients

Table 1. Monthly frequency of viral seropositive cases among donors

Months	Total Donors	HBs Ag n(%)	HCV n(%)	HIV n(%)
January	322	6 (1.86)	2 (0.62)	0
February	325	3 (0.92)	3 (0.923)	0
March	286	4 (1.39)	2 (0.69)	0
April	329	6 (1.82)	13 (3.95)	1 (0.30)
May	337	11 (3.26)	9 (2.67)	0
June	370	8 (2.16)	9 (2.43)	0
July	271	3 (1.10)	3 (1.10)	0
August	339	6 (1.76)	8 (2.35)	0
September	203	5 (2.46)	10 (4.92)	0
October	248	5 (2.0)	8 (3.22)	0
November	326	5 (1.53)	5 (1.53)	0
December	254	7 (2.75)	9 (3.54)	1 (0.39)
TOTAL	3610	69 (1.91)	81 (2.24)	2 (0.05)

Discussion

Meticulous screening of blood and its products ensures not only recipient's safety but also imparts an insight into the prevalence of transfusion transmitted infections in general population[8]. This study was carried out to assess the frequency of designated infectious disease markers in donor population of Patel Hospital Karachi. Being a hospital based blood bank, majority of the cases were replacement donations. The overall sero-reactivity for HBsAg, Anti HCV and Anti HIV-1/HIV-2 was determined to be 1.9%, 2.2% and 0.05%, respectively. In a survey conducted by the Pakistan Medical Research Council (PMRC) in 2009, it was found that a total of 2.5% of the Pakistani population was infected by HBV whereas HCV prevails in around 4.9% of the population[9]. Taking into account the evolving health care facilities in the country, findings from the current study are in agreement with those stated by PMC. These findings are also comparable with those from studies conducted earlier[8]. Anemia was the most common cause for deferral in the current study. Studies conducted earlier had comparable findings in terms of the most common cause of deferral[10,11]. The proportion of cases deferred due to anemia, however, varied considerably. Findings in the current study are way too high when compared with previous studies[12]. Iron deficiency has been elucidated to be the most common cause of anemia among donors[13].

Conclusion

The results showed that donor were more affected with Hepatics C than that of Hepatitis B, while none of them suffering from HIV. Majority of the donors had awareness regarding the disease and most of them agreed to contribute blood in coming times, if need arises.

Conflict of Interest

We hereby declare that we do not have any conflict of interest related to publication of this article.

Grant Support Financial Disclosures

None

References

1. Easterbrook PJ, Roberts T, Sands A, et al. Diagnosis of viral hepatitis. Current Opinion in HIV and AIDS. May 2017;12(3):302-314.

2. Keramat F, Eini P, Majzoobi MM. Seroprevalence of HIV, HBV and HCV in Persons Referred to Hamadan Behavioral Counseling Center, West of Iran. Iranian Red Crescent Medical Journal. Jan2011;13(1):42-46.

3. Ganczak M, Dmytrzyk-Daniłów G, Korzeń M, et al. Prevalence of HBV Infection and Knowledge of Hepatitis B Among Patients Attending Primary Care Clinics in Poland. Journal of Community Health. 2016;41:635-644

4. Gower E, Estes C, Blach S, et al. Global epidemiology and geno- type distribution of the hepatitis C virus infection. Journal of hepa- tology. Nov 2014;61(1 Suppl):S45-57.

5. Stover J, Andreev K, Slaymaker E, et al. Updates to the spectrum model to estimate key HIV indicators for adults and children. AIDS (London, England). Nov 2014;28 Suppl 4:S427-434.

6. Lavanchy D. Evolving epidemiol- ogy of hepatitis C virus. Clinical microbiology and infection : the official publication of the Europe- an Society of Clinical Microbiology and Infectious Diseases. Feb 2011 ; 17 (2) :107-115.

7. Seifried E, Mueller MM. The present and future of Transfusion Medicine. Blood Transfusion. Oct 2011 ;9(4) :371-376

8. Arshad A, Borhany M, Anwar N, et al. Prevalence of transfusion transmissible infections in blood donors of Pakistan. BMC Hematology. 2016;16

9. Qureshi H, Mohamud BK, Alam SE, et al. Treatment of hepatitis B and C throughnational programme--an audit. JPMA. The Journal of the Pakistan Medical Association.Feb 2013;63(2):220-224.

10. Nadeem A, Salamat N, Iqbal N, et al. Demographic Features Of Donors And Causes Of Blood Donor Deferral At Armed Forces Institute Of Transfusion, Rawal- pindi. Pakistan Armed Forces Medical Journal. 2016;66(6).

11. Waheed U, Zaheer H. Evaluation of deferral pattern among the blood donors in Islamabad, Pakistan. Global Journal ofTrans- fusion Medicine. July 1,2016 2016;1(2):81-84.

12. Bahadur S, Pujani M, Jain M. Donor deferral due to anemia: A tertiary care center-based study. Asian Journal of Transfusion Science. Jan 2011;5(1):53-55.

13. da Silva MA, de Souza Carlos AM, et al. Etiology anemia of blood donor candidates deferred by hematologic screen ing. Revista Brasileira de Hemato logia e Hemoterapia. 2012;34(5):356-360