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Seroprevalence of HIV, HBV, HCV, Syphilis and Malaria among blood donors in a tertiary care hospital of Jammu

Authors
Swati Arora, Mitali Sharma
ASCOMS, Jammu University, India

Abstract
Aims: *Blood transfusion is a source of transmission of infectious agents to the recipients. With every unit of blood transfused, there is 1% chance of transfusion associated problems including TTIs. The aim of the present study was to study the seroprevalence of HIV, HBV, HCV, syphilis and malaria among the blood donors.*
Methodology: *The present study was a retrospective study in which a total of 10668 units of donor's blood were screened for five TTIs from 2013 to 2017 at blood bank, ASCOMS & Hospital, Jammu.*
Results: *The overall seroprevalence of HIV, HBV, HCV, syphilis and malaria was 0.03%, 0.31%, 0.075%, 0.36% and 0.0% respectively.*
Conclusion: *All blood donations should be screened for TTIs to ensure safe blood transfusion to the recipients. With the implementation of strict selection criteria of donors and use of sensitive screening tests for TTIs, it is possible to decrease the incidence of TTIs among recipients of blood products.*
Keywords: *HIV, HBV, HCV, Syphilis, TTIs (Transfusion transmitted infections), Donors.*

Introduction

Transfusion of blood and its components is life saving as well as it has life threatening hazards. With every unit of blood there is 1% chance of transfusion associated problems including transfusion transmitted diseases[2,4]. TTI is a bacteria, virus or parasite that can be transmitted in donated blood through a transfusion to a recipient. According to WHO, it is mandatory to screen for TTIs namely HIV, Hepatitis B, Hepatitis C viruses, syphilis and malaria. All these infectious disease screening must be negative in order to release blood unit for transfusion[13].

Preventing the transfusion of infectious diseases through blood transfusion in developing countries is difficult given that the resources required are not always available even when policies and strategies are in place. TTIs is still a major concern to patients, physicians and policy makers who wish to see a risk free blood supply[10]. The aim of the present study was to find out prevalence of TTIs (HIV, HBV, HCV, syphilis and malaria) among the blood donors who reported to blood bank, ASCOMS & Hospital from the year 2013 to 2017.

Materials and Method

The present study was a retrospective study conducted to find the prevalence of transfusion transmitted infections (TTI) in blood donors

coming to Blood Bank, ASCOMS & Hospital during the period 2013 to 2017.The records of Blood donors who reported to Blood Bank from January 2013 to December 2017 were analysed. Inclusion criteria included age between 18-60 years, minimum weight 45kg, minimum Hb level 12.5gm%, pulse rate between 50-100 per minute, blood pressure diastolic 50-100 mmHg, systolic 100-160 mmHg, normal body temperature. A total of 10668 donors were screened for TTIs. All samples were screened for Hepatitis B surface antigen (HBV), HIV (1&2), Hepatitis C virus (HCV) by ELISA method using approved commercially available kits (Erba lisa Gen 3). Screening for VDRL and MP was done by rapid card methods.(Aspen rapid APF one step immunoassay rapid test for syphilis and Advantage Malaria PAN+Pf card for Malaria.

Results

A total of 10668 blood donors were screened in the last five years. Number of donations increased from 2030 in 2013 to 2495 in 2017. Out of these, 98.4% were males and 1.59% was females. 97.6% were replacement donors and 2.4% were voluntary donors.

The results of seropositive samples for HBV, HCV, HIV, VDRL and Malaria are shown in Table-1.Mean prevalence for HBV, HCV, HIV, VDRL was 0.31%, 0.075%, 0.03% and 0.36% respectively. No blood donor tested positive for MP.

	2013	2014	2015	2016	2017	Total
Total units	2030	1749	2394	2000	2495	10668
HIV	0 (0.0%)	1 (0.05%)	1 (0.04%)	0 (0.0%)	1 (0.04%)	3 (0.03%)
HBV	10 (0.49%)	02 (0.11%)	10 (0.42%)	03 (0.15%)	08 (0.32%)	33 (0.31%)
HCV	2 (0.09%)	1 (0.05%)	2 (0.08%0	0 (0.0%)	3 (0.12%)	8 (0.075%)
VDRL	18 (0.88%)	9 (0.51%)	5 (0.21%)	2 (0.10%)	4 (0.16%)	38 (0.36%)
MP	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

Discussion

Transfusion of blood and blood products is a life saving measure and helps innumerable people worldwide. At the same time however, blood transfusion is an important mode of transmission of infection to the recipients. The risk of TTI has declined dramatically in high income nations over the past two decades, primarily because of extraordinary success in preventing HIV and other established transfusion transmitted viruses from entering the blood supply. But the same may not hold good for the developing countries. In developing countries, the prevalence of TTI is much higher and quite far from attaining a zero risk level at the present moment[3].

In our study, majority of the donors were aged between 18 and 45 years. Other studies have shown similar age distribution[5]. In our study, over a period of five years, there was no significant increase or decrease in the prevalence of TTIs except for syphilis. Seroprevalence of HIV was 0.03% in our study which is comparable to Mujeeb et al (0.0%)[9] and Pailoor et al (0.06%) [11] but in contrast to study conducted by Garg et al[5] who reported 0.44%, Kulkarni et al (0.9%)[8]. Seroprevalence of HBV in our study was 0.31% which is comparable to Garg et al(0.34%)[5] but less then compared to studies conducted by Arora et al[1], Chandra et al[2] and Sawke et al[15] who reported a prevalence of 1.7%,5.0% and 2.9% respectively. Seroprevalence of HCV came out to be 0.075% which is comparable to 0.06% by Pailoor et al[11] and less compared to Kulkarini et al (0.35%)[8].

Seroprevalence of syphilis in our study was 0.36% comparable to studies conducted by Garg et al

(0.22%)[5] and Sawke et al(0.23%)[15] but less compared to Kulkarni et al(0.04%)[8], Sachdeva et al(0.07%)[14]. No blood donor tested positive for malaria. Arora et al[1], Chandra et al[2], Sawke et al[15], Gupta et al[6] and Sabharwal et al[13] have also reported zero prevalence in their studies. Majority of the donors were males(98.4%) which is comparable to the study done by Arora et al[1], Fernandes et al[3], Kulkarni et al[8], Rao et al[12]. Low prevalence of TTIs in our study may be attributable to srict screening criteria at our Blood Bank.

To conclude, with the implementation of strict selection criteria of donors and use of sensitive screening tests for TTIs, it is possible to decrease the incidence of TTIs among recipients of blood products and improve over blood product safety. People are to motivated for voluntary blood donations. Females are to motivated to come forward for blood donations.

Bibliography

1. Arora D, Arora B, Khetarpal A. Seroprevalence of HIV,HBV,HCV and syphilis in blood donors in southern Haryana. Indian J Pathol Microbiol. 2010;53:308-309.
2. Chandra T, Kumar A, Gupta A. Prevalence of transfusion transmitted infections in blood donors: An Indian experience. Trop Doct.2009;39:152-154.
3. Fernandes H, D'souza PF, D'souza PM.Prevalence of transfusion transmitted infections in voluntary and replacement donors. Indian J Hematol Blood Transfus.2010;26(3):89-91.
4. Fiebig EW, Busch MP(2008).Infectious disease screening. In: Technical Manual (16th edtn.). American Association of Blood Banks,241-278.
5. Garg S, Mathur DR, Garg DK. Comparision of seropositivity of HIV, HBV, HCV and syphilis in replacement and voluntary blood donors in western India. Indian J Pathol Microbiol. 2001;44(4):409-412.
6. Gupta N, Kumar V, Kaur A. Seroprevalence of HIV, HBV, HCV and syphilis in voluntary blood donors.Indian J Med Sci.2004;58:255-7.
7. Kamran Mohd., Mahmood RT, Khan MA, Mehmood A,Nisar L and Asad MJ. Prevalence of transfusion transmitted infections among blood donors: a prospective study.AJPCT.2014;2(4):540-543.
8. Kulkarni N. Analysis of the seroprevalence of HIV,HBV,HCV and syphilitic infections detected in the pretransfusion blood: A short report. International Journal of Blood Transfusion and immunohematology.2012;2:1-3.
9. Mujeeb SA,Mehmood K. Prevalence of HBV, HCV and HIV infections among family blood donors. Annals of Saudi Medicine 1996;16(6):702-3.
10. Negi G and Gaur DS.Trends of transfusion transmissible diseases among blood donors at Uttarakhand,India. Indian J community Med.2014 Jul-Sep:39(3).
11. Pailoor K, Keshav SM,Rai P, D'Cunha O and Lakshmi C.A retrospective study of screening of common transfusion transmitted infections in the blood bank of a tertiary care centre. J. Blood Disorders Transf. 2015,6:2.
12. Rao P, Annapurna K.HIV Status of blood donors and patients admitted in KEM Hospital Pune. Indian J Hemat Blood Transf 12:174-176.
13. Sabharwal ER, Biswas NK, Purohit V.Prevalence and patterns of transfusion transmissible infections among blood donors in Sri Ganganagar, Rajasthan,India. A retrospective study.J Phar Biomed Sci.2012:15:1-4.
14. Sachdeva A, Gupta A, Sharma B, Sharma D, Sharma N. Seroprevalence trends of transfusion transmitted infections among

blood donors in a tertiary care hospital of Himachal Pradesh, India. Int J Res Med Sci.2016 Nov;4(11):5002-06.

15. Sawke N, Sawke GK, Chawla S. Seroprevalence of common transfusion transmitted infections among Blood Donors. People's Journal of Scientific Research.2010;3(1).
16. Yadav BS, Varma AV, Singh P, Kumar R, Bandi PK. Seroprevalence of Transfusion Infections (TTIs) in blood donors: a study from central India. International Journal of Medical Science and Public Health. 2016;5(6).