



SEROPREVALENCE OF TRANSFUSION TRANSMISSABLE INFECTIONS AMONG VOLUNTARY DONORS AT A MEDICAL COLLEGE HOSPITAL IN SALEM DISTRICT, TAMILNADU-A 6 YEAR STUDY.

Pathology

Vajravelu Jayanthi

Associate Professor, Department of Pathology, Government Dharmapuri Medical College, Dharmapuri, TN.

ABSTRACT

INTRODUCTION: Transfusion of blood and blood products is life saving in various medical and surgical conditions which carries 1% chance of transfusion related complications including transfusion transmissible infections (TTIs) like HIV, Hepatitis B, Hepatitis C, Syphilis and Malaria. **AIM:** To find the seroprevalence of TTIs in voluntary blood donors in a medical college hospital blood bank, Tamilnadu. **MATERIAL AND METHODS:** This was a retrospective hospital records based 6 year study, included 60422 voluntary blood donors from 2009 to 2015 and screened for TTIs. **RESULTS:** 729 cases of TTIs constituting (1.2%) were detected, of which 54(0.001%) were seroreactive for HIV, 636(0.01%) for Hepatitis B, 33(0.0005%) for Hepatitis C and 6(0.0001%) for Syphilis. Malaria(0%) was detected in none of the donors. **CONCLUSION:** In the present study, the seroprevalence of HIV, Hepatitis B, Hepatitis C, Syphilis and Malaria is lower than other studies from various parts of the country. A decreasing trend in the seroprevalence of TTIs is noted in this region of Tamilnadu, India.

KEYWORDS:

Seroprevalence, TTIs, Decreasing trend

INTRODUCTION: Transfusion of blood and blood products is life saving in various medical and surgical conditions. Every unit of blood transfusion is associated with 1% chance of transfusion related complications including transfusion transmissible infections (TTI) like HIV, Hepatitis B, Hepatitis C, Syphilis and Malaria¹. India is the second most populous country in the world with a variable demography. India has the second largest pool of Hepatitis B cases in the globe. The drug and cosmetic act of 1945 of Govt of India under the guidelines of Ministry of health and family welfare made the screening of blood donors mandatory for the following infectious diseases like, HIV I, HIV I Hepatitis B, Hepatitis C, Syphilis and Malaria². India has adopted the world health organization's recommendation of selecting the non remunerated voluntary blood donors since 1998³. Transfusion of infected blood and blood components is not only detrimental to the recipients but also to their families and society. Hence it is very important to ensure safe blood transfusion practices. Though there are many strategies and policies put forth by our central and state governments, TTI are still occurring primarily because of window period³. This study was conducted to find out the seroprevalence of HIV, Hepatitis B, Hepatitis C, Syphilis, Malaria at a blood bank in Medical college hospital, Tamilnadu, India.

AIM: To study the seroprevalence of transfusion transmissible infections in voluntary blood donors in a medical college hospital blood bank, located in salem district, Tamilnadu, India.

MATERIAL AND METHODS: This was a retrospective hospital records based study. Data were collected for a period of six years from November 2009 to October 2015. There were 60422 voluntary donors who were selected by standard blood donor selection criteria using a questionnaire as per the guidelines of NACO and TANSAC. H/O of any high risk behavior was stressed. This was followed by physical examination by the blood bank medical officer. Haemoglobin estimation and blood grouping and typing was done. After obtaining the written consent, blood was collected from the donors who were found to be fit. 350 ml and 450 ml blood bags were used for blood collection. Since it was a medical college hospital blood bank, there were much need for the blood components. Hence double, triple and quadruple blood bags were also used along with single blood bags. Components were separated within six hours of blood collection. Meanwhile, pilot samples which were collected from the blood collection bags before sealing them were screened by qualified technicians. HIV, Hepatitis B, Hepatitis C were screened using Elisa and rapid card methods. Rapid plasma regain (RPR) method was used to screen Syphilis. Rapid card method was used

for screening Malaria. Each reactive sample was retested and all the seropositive samples were discarded as per the standard protocols.

RESULTS: Total number of voluntary donors in the study period of 6 years were 60422, among which 57971 were males (95.9%) and 2451(4.1%) were females [figure 1: pie chart]. The donor age group ranged from 18 to 54 years. Out of 60422 donors, 729 cases of TTI constituting (1.2%) were detected by screening. Among the 729 cases, 54 cases were seroreactive for HIV, 636 cases were seroreactive for Hepatitis B, 33 cases were seroreactive for Hepatitis C and 6 cases were seroreactive for Syphilis. Malaria was detected in none of the donors. The seroprevalence of HIV was 0.001%, Hepatitis B was 0.01%, Hepatitis C was 0.0005%, Syphilis was 0.0001% [figure 2: bar diagram]. Co infection of HIV and Hepatitis B was detected in one case. In our study, majority of donors were seroreactive for Hepatitis B infection when compared with the other TTIs.

Figure 1: Sex ratio of voluntary donors

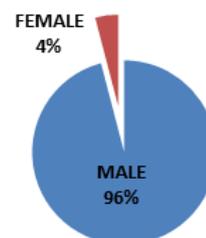
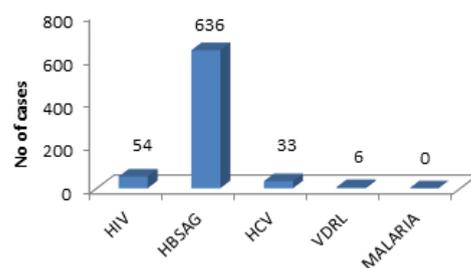


Figure 2: Prevalence of TTIs



DISCUSSION: Transfusion of blood and blood products plays a significant route of transmission of TTIs. To ensure safe blood transfusion, screening of the donated blood is very essential. Blood transfusion is considered equivalent to a major surgery. Hence decision for blood transfusion should be judicious^{R4}. To avoid unnecessary complications related to blood transfusion, blood and blood components should be used only when there is a proper indication.

Table 1: Seroprevalence of TTIs in various studies:

Study	HIV	Hepatitis B	Hepatitis C	Syphilis	Malaria	Total
Vimal M et al ^{R2}	0.06%	2.29%	0.14%	0.42%	0.05%	2.91%
Sunderum et al ^{R5}	0.08%	1.01%	0.14%	0.03%	0.33%	1.6%
Rajak et al ^{R7}	0.33%	0.18%	0.1%	0.32%	-	2.55%
Zulfikar Ahmed et al ^{R9}	0.1%	0.5%	0.08%	0.07%	0%	0.82%
Raina et al ^{R10}	0.1%	0.49%	0.21%	0.03%	-	0.85%
Present study	0.001%	0.01%	0.0005%	0.0001%	0%	1.2%

The overall prevalence rate of TTI in this study is 1.2% which is similar to Sunderum et al^{R5}. In India, the prevalence of HIV ranges between 0.084% and 3.87%, the prevalence of hepatitis B ranges from 0.66% to 12%, prevalence of hepatitis C from 0.5% to 1.5%, prevalence of syphilis ranges between 0.85% and 3% and prevalence of malaria ranges from 0.02% to 0.12%^{R6}. Our study shows 0.01% prevalence of Hepatitis B infection, that is comparable to Rajak et al^{R7} and it is the most common TTI (0.01%) among the voluntary donors in concordance with various other studies conducted in our country^{R2,5-11}. Hepatitis B infection has been associated with carrier state, acute hepatitis, chronic liver disease, cirrhosis and hepatocellular carcinoma (HCC). In spite of the availability of efficient vaccine, the high prevalence of Hepatitis B, stresses the fact it is high time to create public awareness about Hepatitis B Vaccination for adults that should be made freely available in all Government Hospitals. The prevalence of HIV was 0.001% in our study period of 6 years. WHO reports that HIV transmitted through blood transfusion carry huge viral load causing early full blood disease in children and adults^{R8}. Seroprevalence of HIV in our study is the lowest among the various other studies. This implies that awareness has been created about this dreadful disease by various government and voluntary organizations in this region of the State. The seroprevalence of HCV is 0.0005% where as it is 0.08% in the study done by Zulfikar Ahmed et al^{R9}. Though HCV infection is less prevalent than HBV infection, it has more significant rate of chronicity and progress to cirrhosis than HBV infection. In our study the seroprevalence of syphilis is 0.0001%, which is comparable to Raina et al and Sunderum et al^{R5,10}. A reactive VDRL in a donor indicates more chance of harbouring other TTIs even in the window period^{R2}. Advanced techniques like Nucleic Acid Amplification (NAT) are employed in Western countries to detect these infections even in the window period. But in a developing country like India, such costly tests could not be afforded for all donors. Malaria was not detected in any of the donors in our study. Detection of this infection is important particularly in non endemic countries^{R9} because severity of this infection will be more pronounced in recipients particularly in pregnant females and children^{R11}. Though only one case of co infection was detected in our study, this gives concern about high risk behavior and lack of awareness about transmission of these diseases. Our responsibility not only ends with detection of TTIs among donors but also extends to donor notification and counseling. In the present study, there is a reducing trend is seen in all the five TTIs which is similar to the studies done by P. Pallavi et al^{R12}, Singh B et al^{R13}. This could be attributed to the detailed history taking and deferring the high risk donors during screening itself.

CONCLUSION: In the present study, the seroprevalence of all the five

TTIs namely HIV, Hepatitis B, Hepatitis C, Syphilis and Malaria is lower than the other studies conducted in various part of our country. A decreasing trend in the prevalence of TTIs is noted in our region of the state. Strict selection procedures eliciting detailed history from donors before blood donation and comprehensive screening for HIV, HBV, HCV, Syphilis and Malaria may further eliminate the risk of TTIs in this part of our state ensuring safe blood transfusion.

REFERENCES:

- Nirali shah, J.M. Shah, Preeti Jhaveri, Kazoomi Patel et al. Seroprevalence of HBV, HCV, HIV and Syphilis among donors at a tertiary care teaching hospital in Western India.
- Vimal mourougessine, Sowmya Srinivasan, Ramya Gandhi. Transfusion Transmissible Diseases-Is there a decreasing trend in recent years? National Journal of Laboratory Medicine. 2016. DOI:10.7860/NJLM/2016/23339:2182.
- World Health Organisation (WHO) Blood safety strategy for the African region. Brazzaville, World health Organisation, Regional office of Africa. (WHOAFR/RC51/9Rev.1)2002.
- Health and Family Welfare Department, Government of Tamilnadu, Guidelines for blood transfusion in Obstetric Practice. 2015.
- Sunderam S, Karir S, Haider S, Singh SB, Kiran A et al. Serprevalence of transfusion transmissible infections among blood donors at blood bank of Rajendra Institute of Medical Sciences, Ranchi. Heal J Assoc Prev Soc Med. 2015;6(1):36-40.
- Agarwal VK, Sharma VP, Agarwal P, Gupta d. Serprevalence of transfusion transmissible infections among blood donors in Urban Area. Asian J Med Res. 2012;1(3):112-114.
- Rajak DV, Patni DA. Seroprevalence of HBV, HCV, HIV and Syphilis infections among blood donors in South East Rajasthan-An eleven year Retrospective study. J Med Sci Clin Res. 2015;3(10):8068-73.
- Arora D, Arora B, Khetarpal A. Seroprevalence of HBV, HCV, HIV and Syphilis in blood donors in Southern Haryana. Indian J Pathol Microbiol. 2010;53(2):308-9.
- Zulfikar Ahmed, Umaru N, Shreesha K. Serprevalence of Transfusion Transmissible infections among blood donors in Mangalore. Medica Innovatica December 2012. Volume 1, Issue 2.
- Raina S, Raina SK, Kaul R, Sharma V. Seroprevalence of hepatitis, hepatitis C, HIV surface, and syphilis among blood donors; A 6 year report from a sentinel site in western Himalayas, India. Indian journal of sexually transmitted diseases. 2015; Jul;36(2):220
- Rehman S, Arif SH, Saeed N. Trends in seroprevalence of malaria among blood donors in a north Indian tertiary care centre: importance of prevention if transfusion transmissible malaria. Int J Curr Microbiol App Sci. 2015;4(1):265-68.
- P. Pallavi, C.K. Ganesh, K. Jeyashree, G.V. Manjunath. Seroprevalence and Trends in Transfusion Transmitted Infections Among Blood Donors in a University Hospital Blood Bank; A 5 Year study.
- Singh B, Kataria SP, Gupta R. Infectious markers in blood donors of East Delhi: Prevalence and trends. Indian J Pathol Microbiol. 2004;47:477-479.