

Original Research Article

Seroprevalence of HIV in blood donors at tertiary care center, M.Y.H. Indore, India

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ABSTRACT

Background: Transfusion of blood has become an important mode of transmission of infections such as human immunodeficiency virus and hepatitis B to the recipients. Blood transfusion is a boon in medical era if properly screened. The aim of study was to determine the seroprevalence of HIV donors in blood bank at M.Y.H. Indore.

Methods: The study was conducted in the blood bank, M.Y.H. Hospital, Indore. Total 115775 donors attending blood bank were included in the study. All the donor samples were screened for detection of antibodies for human immunodeficiency virus by microwell Enzyme Linked Immunosorption Assay (ELISA) method. The seroprevalence of HIV infection among the donors was determined over a period of five years since January 2013 to December 2017.

Results: Total 115775 blood donors were recorded. Out of total 115775 blood donors included in the study, replacement donor were 10766 (9.29%) while voluntary donor were 105009 (90.70%). In the duration of five-year study period, total 80 cases (0.06%) were reactive to HIV. Out of total 115775 blood donors included in the study, maximum cases i.e. 22 (0.08%) cases were found to be positive for HIV infection in year 2017. Out of 10766 replacement donors included in the study, 64 cases (0.59%) were reactive to HIV infection. While out of 105009 voluntary donors, 16 cases (0.01%) were found to be reactive to HIV infection. Voluntary donors are more as compared to the replacement donors. Number of HIV positive patients were found to more in replacement donor as compared to the voluntary donors.

Conclusions: The seroprevalence of HIV is low in this study and hence it is concluded that the more the number of voluntary donors, the less the number of HIV positive cases. Voluntary donors can be motivated by proper health education and high quality screening programs.

Keywords: Blood donor, HIV

INTRODUCTION

Blood transfusion carries the risk of transfusion induced transmissible infections including HIV, hepatitis, syphilis, malaria and less frequently toxoplasmosis, brucellosis and some viral infections like Epstein Barr virus, cytomegalovirus and herpes.¹ With every one unit of blood transfusion there is 1% chance of transfusion related complications including Transfusion transmitted

infections.² According to the World Health Organization (WHO) guidelines screening of all blood for TTIs should be mandatory.³ As a result, there is reduction in TTIs in countries where routine serological screening of donors is carried out.⁴

India is already carrying a burden of 50 million of HBV carriers and 2.27 million of HIV cases.^{5,6}

The aim of the study was to determine the seroprevalence of HIV in blood donors at tertiary care center, M.Y.H. Hospital, Indore.

METHODS

The study was conducted in the blood bank, Maharaja Yashwant Rao Hospital, Indore, Madhya Pradesh. Total 115775 donors attending blood bank were included in the study. All the donor samples were screened for detection of antibodies for human immune deficiency virus by micro well Enzyme Linked Immuno Sorption Assay (ELISA) method. The seroprevalence of human immune deficiency virus infection among the donors was determined over a period of five years since January 2013 to December 2017.

The prevalence rate of human immune deficiency virus among blood donors differs between countries and regions depending on several factors such as the general human immune deficiency virus prevalence, education of the public regarding blood donation, the selection of donors and pre-donation screening.

This study was conducted over a period of five years since January 2013 to December 2017. Total 115775 donors attending blood bank were included in the study.

Inclusion criteria

All the blood donors were included in the study.

Exclusion criteria

Individuals who were excluded were with age <18years, weight <50 kilograms, hemoglobin level <12gram/dl, history of recent medications, history of blood transfusion within <3months duration, history of recent illness like

malaria, typhoid etc., history of long term illness like tuberculosis, history of allergic reactions, history of significant medical and surgical interventions and also pregnant and lactating women.

Name, age (18-60 years), Sex and contact number were recorded for each donor, and a unique identification number was give to the donors. Detailed history of immunization was taken. Weight, pulse, blood pressure and temperature were recorded for each patient. A written informed consent was taken from each patient before the blood donation. Proper sterilization and other precautions were taken during the blood collection and blood units were stored by appropriate methods. After collection all samples were screened for Human Immunodeficiency Virus by microwell ELISA to detect antibodies against HIV in plasma.

RESULTS

Out of total 115775 blood donors included in the study, replacement donor were 10766 (9.29%) while voluntary donor were 105009 (90.70%). In the duration of five year study period 80 cases (0.06%) were reactive to HIV.

Out of total 115775 blood donors included in the study, maximum cases i.e. 22 (0.08%) cases were found to be positive for HIV infection in year 2017.

Out of 10766 replacement donors included in the study, 64 cases (0.59%) were reactive to HIV infection. While out of 105009 voluntary donors, 16 cases (0.01%) were found to be reactive to HIV infection.

Out of 115775 blood donors, voluntary donors are more as compared to the replacement donors. Number of HIV positive patients were found to more in replacement donor as compared to the voluntary donors (Table 1).

Table 1: Seroprevalence of HIV among donor blood samples.

Year	Replacement donor	Positive replacement donor	Voluntary donor	Positive voluntary donor	Total no. of HIV positive cases	Total no. of donors
2013	2001	13(0.64%)	17012	02(0.01%)	15(0.07%)	19013
2014	2055	12(0.58%)	19617	04(0.02%)	16(0.07%)	21672
2015	1995	12(0.60%)	19251	01(0.005%)	13(0.06%)	21246
2016	2263	10(0.44%)	24567	04(0.01%)	14(0.05%)	26830
2017	2452	17(0.69%)	24562	05(0.02%)	22(0.08%)	27014
Total	10766(9.29%)	64	105009(90.70%)	16	80(0.06%)	115775

DISCUSSION

Blood transfusion is a significant route of transmission of infectious diseases in which HIV infection is lethal. The seroprevalence of HIV among blood donors in this study

was 0.06% which is very low. Sonawane et al, reported a prevalence of 1.83% in rural population.⁷

A WHO report states that the viral dose in HIV transmission through blood is so large that one HIV positive transfusion leads to death, on an average, after 2

years in children and after three to 5 years in adults.⁸ Hence, safe transfusion practices like avoidance of single donors and practices of autologous blood transfusion should be encouraged.⁹ Kaur et al, reported in a study that the prevalence of HIV in Indian blood donors range from 0-3.87%.¹⁰ In a report of NACO, India showed that an overall prevalence of HIV 0.91% in 2005, where Men were more sufferer.¹¹ Manjunath MR et al, found that seroprevalence of HIV was 0.27%.¹² Gupta et al and Tiwari et al reported 0.084% and 0.054% prevalence of HIV among blood donors respectively.^{13,14} There can be many reasons for it. Over the years, awareness of spread of HIV might have improved among the population, making voluntary blood donors with risk behavior abstain from donating blood. Also, better training and awareness of health workers at blood banks may be effective in screening out those with high risk of HIV.

Out of 10766 replacement donors included in this study, 64 cases (0.59%) were reactive to HIV infection. While out of 105009 voluntary donors, 16 cases (0.01%) were found to be reactive to HIV infection. Similar results are also found in the study done by Kulkarni N.¹⁵ The reason for this is Replacement donors most of the times are family members and during emergency they donate blood without giving proper history of exposure. While voluntary donors are motivated through proper health education and campaigns by large number of blood camps.

CONCLUSION

In five year period 115775 units of blood was collected. Seroprevalence of HIV was 0.06%. The seroprevalence was more in replacement donors as compared to voluntary donors. The present study concludes that the most effective way of adequate supply of safe blood is to motivate voluntary blood donors by conducting voluntary blood donation camp. Proper implementation of donor selection criteria, blood donation guidelines could improve transmission of infection to the recipient.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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