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Prevalence of HIV among Blood Donors at RIMS, Teaching Hospital Blood Bank, Raichur: A Retrospective Study

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Abstract

Aim: To determine prevalence & age and gender distribution of HIV among blood donors and to study the trend of incidence of HIV positive Cases among them. *Materials and Methods:* This is a retrospective study conducted from from January 2001 to Dec 2015 for 15 years at RIMS, Teaching Hospital Blood Bank, Raichur. Serum Samples from Replacement and Voluntary Donors were tested for prevalence of HIV. Donors were selected by taking history, clinical examination (strictly following donor's selection criteria) to eliminate professional donors, The donors were apparently healthy adults of the age group 18-60 yr. The donor blood samples were collected at the time of blood donation from the primary bag and tested for the presence of HIV using enzyme linked imunosorbent assay (ELISA). *Inclusion Criteria:* All blood donors (including voluntary and replacement blood donors) coming to donate blood either at Blood Bank, RIMS, Raichur as well as at various blood donation camps organised by blood bank were included in this study. *Exclusion Criteria:* Donors who did not fulfil the general criteria for blood donation, commercial and paid donors and also those with a history of high risk behaviour were excluded. *Results:* A total of 39090 blood donors were screened for HIV over a period of 15 years between January 2001 to December 2015. Out of which 38261 (97.88%) were males and 829 (2.12%) were females (Table 1). Age of the donors ranges from 18-52years. Out of 39090 donors screened for HIV, 148 donors were found to be reactive, comprising 0.37%. Out of 148 positive donors, 147 were males and one was female comprising 99.32% and 0.68% respectively. *Conclusion:* Prevalence of HIV among blood donors in our study showed 0.37%. Strict selection of blood donors with emphasis on getting healthy voluntary donors and comprehensive screening of blood donors for Human immunodeficiency virus and other transfusion transmissible infections using standard methods are highly recommended to ensure the safety of blood for receipients.

Keywords: HIV Prevalence; Blood Donors; Blood Bank.

Introduction

According to the United Nations Joint Program on HIV/AIDS (UNAIDS), an estimated 34 million people with AIDS are living within the world at the end of 2010 [1]. Third largest number of HIV infected individuals in the world are present in India [2].

HIV-2 cases have also been reported among general and blood donor population , mostly from west and south India [3]. Transfusion of blood and components of blood as a specialized modality of patient management has been saving millions of lives worldwide each year. Transmission of certain infections (TTIs) like HIV are amongst the undesirable complications arising out of transfusion of blood and blood components, most importantly because of their long term detrimental side effects. Meticulous pretransfusion screening and testing , especially for transfusion transmissible infections (TTI) is the need of the hour [4].

HIV infection resulting from blood transfusion was first reported from the United States in late 1982, since then many cases have been reorted repeatedly [5]. The problems occurring due to transfusion associated HIV infection and acquired immuno deficiency syndrome resulted in a notification under the Drugs and

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Cosmetics Act, in 1989, which made the test for HIV mandatory [6].

Objectives

1. To determine prevalence of HIV among blood donors at RIMS, Blood bank.
2. To determine age and gender distribution of HIV among blood donors.
3. Yearly comparison and study of the trend of incidence of HIV positive cases.

Materials and Methods

This is a retrospective study conducted from from January 2001 to dec 2015 for 15 years at RIMS, Teaching Hospital Blood Bank, Raichur. Serum Samples from Replacement and Voluntary Donors were tested for prevalence of HIV. Donors were selected by strictly following donor's selection criteria, by taking history & clinical examination to eliminate professional donors.

Apparently healthy adults of the age group 18-60 years of age were selected as donors. A detailed pre-donation questionnaire was included in donor registration form. Information regarding risk factors like history of surgery, hospitalization, blood transfusion, occupation, previous illness, high risk behaviour and tattoo marks was collected. The donor blood samples were collected at the time of blood donation from the primary bag and tested for the presence of HIV using enzyme linked imunosorbent assay (ELISA). All the reactive samples and blood units were discarded as per standard protocols and such donors were reffered to VCTC.

Inclusion Criteria

All blood donors (including voluntary and replacement blood Donors) coming to donate blood either at Blood Bank, RIMS, Raichur as well as at various blood donation camps organised by blood bank were included in this study.

Exclusion Criteria

Donors who did not fulfil the general criteria for blood donation, paid and commercial donors and those with a history of high risk behaviour were excluded.

Results

A total of 39090 blood donors were screened for HIV over a period of 15 years between January 2001 to December 2015. Out of which 38261(97.88%) were males and 829 (2.12%) were females (Table 1). Age of the donors ranges from 18-52years.

Out of 39090 donors screened, 30078 were volunatary donors and 9012 were replacement donors comprising 76.95% and 23.05% respectively (Table 2).

Out of 39090 donors screened for HIV, 148 donors were found to be reactive, comprising 0.37%. Out of 148 positive donors, 147 were males and one was female comprising 99.32% and 0.68% respectively (Table 3). A high rate of HIV positivity was seen between 18-30 years, consisting of 91 donors comprising 61.5%. The 31-40 years old showed second highest clustering of HIV positives comprising 38 donors (25.7%) followed by 17 (11.4%) in the age range of 41-50 years, and small fraction 02 (1.4%) were found in the age group of 51-60 years (Table 4).

Table 1: Sex distribution of blood donors

Sex	No. of Donors	Percentage
Male	38261	97.88%
Female	829	02.12%
Total	39090	100%

Table 2: Types of blood donors

Type of Donor	Total number	Percentage
Voluntary	30078	76.95%
Replacement	9012	23.05%
Commercial	Nil	Nil
Total	39090	100%

Table 3: Sex distribution of HIV positive blood donors

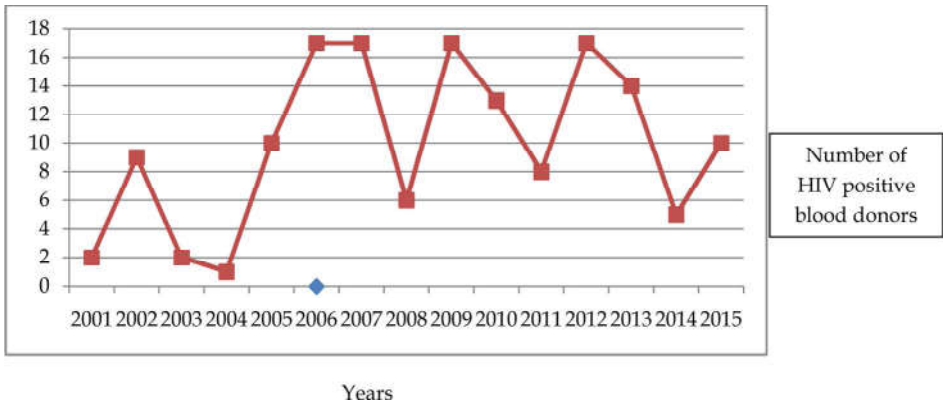
Sex	HIV Positive Donors	Percentage
Male	147	99.32%
Female	01	0.68%
Total	148	100%

Table 4: Demographic profile of blood donors

Age (Years)	Total Number	Percentage
18-30	91	61.5%
31-40	38	25.7%
41-50	17	11.4%
51-60	02	01.4%
Total	148	100%

Table 5: Year wise prevalence of HIV with 95% CI

Year	Total Donors	Total HIV Positive	Prevalence	95%CI
2001	218	02	0.92	0.25-3.2
2002	609	09	1.47	0.77-2.8
2003	679	02	0.29	0.08-1.06
2004	725	01	0.14	0.02-0.77
2005	1062	10	0.94	0.51-1.72
2006	1714	17	0.99	0.6-1.58
2007	2268	17	0.75	0.46-1.19
2008	2511	06	0.24	0.1-0.52
2009	3182	17	0.53	0.33-0.85
2010	3705	13	0.35	0.2-0.59
2011	3836	08	0.21	0.1-0.41
2012	4561	17	0.37	0.23-0.59
2013	4023	14	0.35	0.2-0.58
2014	4511	05	0.11	0.04-0.25
2015	5486	10	0.18	0.09-0.33



Graph shows trend of HIV positive cases among blood donors

To study the the prevalence of HIV positivity among blood donors during study period from 2001 to 2015, Chi square trend test is employed to see the the trend over the period, the results indicated (Table 5).

Chi square trend test done on the above data suggests that there is significant change in the trend of prevalence of HIV positivity among blood donors in the study period between 2001 to 2015. Chi square value is 38.95 and p value is <0.0001.

Discussion

The first documented HIV infection in India was seen in 1986 in the southern state of Tamil Nadu, among a cohort sex worker [7,8]. Since then the virus has been spreading rapidly across the country [7,9]. HIV epidemic reflects the diverse social, religious, cultural, and sexual practices, within high prevalence areas [10,11]. There are some regions which are "hot spots," where commercial sex work is common, such as in Andhra Pradesh, northern Karnataka, and southern Maharashtra [9].

The importance of screening blood for HIV and other transmissible infection among blood donors before transfusion, can neither be underestimated nor over emphasized. Blood administered as therapeutics to needy people, need to be safe in order to provide the desired help and improvement to human life. It is not practically feasible to screen the donor blood for all known potential infectious diseases, that can be transmitted through blood transfusions. However, it

is mandatory to screen for HIV among blood donors as it is one of the important infectious agents that can cause great devastation if contaminated blood is transfused to patients [12].

The results in this study showed prevalence of HIV among our blood donor population as 0.378%, which is comparable to study conducted by Makroo RN et al in northern India, who found 0.247%. Prevalence of HIV reported in Indian blood donors ranges from 0.84-3.87% [14]. Sonth SB et al [15], reported 0.81%.

Table: Showing prevalence of HIV among blood donors in various studies

Studies	Prevalence of HIV in blood donors
Makroo RN et al[3]	0.247%
Sonth SB et al[15]	0.81%
Present study	0.38%

The presence of HIV-2 has been reported from south-western parts of India [16] but we didn't find any HIV-2 positive donor in our study. All HIV positive donors in our study were positive for only HIV-1.

In our study, we found only one HIV positive female blood donor out of total 148 blood donors, comprising 0.68%, where as out of 148 HIV positive donors, 147 were males, comprising 99.32%. Makroo RN et al [13] reported 2.6% HIV positive female donors and 97.4% HIV positive male donors in their study. Nationally, the prevalence rate for adult female is 0.29%. According to NACO, more men are HIV positive than women. The findings of higher infectivity among men in the reproductive age group, in the present study are in comparable with findings of other studies on blood donors [17].

A study conducted on blood donors at a tertiary care centre of the Armed forces revealed seropositivty rates of 0.12% in 2003, 0.17% in 2004 and 0.10 in 2005, with an overall seropositivity of 0.13% [14]. While in our study we found seropositivity rates of 0.29%, 0.13% and 0.94% in 2003, 2004 and 2005 respectively, and overall seropositivity in our study is found to be 0.378%.

Conclusion

Prevalence of HIV among blood donors in our study showed 0.37%. Transfusion transmissible infections are a very serious complications of blood transfusion, due to the long term morbidity and mortality associated infectious agents such as HIV. Strict selection of blood donors with emphasis on getting voluntary donors and meticulous screening of blood donors for HIV and other transfusion transmissible infections using standard methods are highly recommended to ensure the safety of blood for receipients.

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