

Prevalence of HIV & VDRL seropositivity in blood donors of Delhi

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Blood transfusion has been the transmission mechanism in 15 per cent of total patients infected with human immunodeficiency virus (HIV). A few reports are available regarding the trend of HIV seropositivity in northern India. Prevalence of VDRL (venereal disease research laboratory) reactivity varies from 0.8-15 per cent in blood donors. We present data on the prevalence and trends of infection with HIV 1 and 2 and VDRL reactivity in blood donors in Delhi. Between 2000-2002, a total of 76089 (voluntary and replacement) donors were screened. Majority (82.4%) were replacement donors. Seropositivity for HIV and VDRL was seen in 0.54 and 2.6 per cent of donors respectively. The percentage of seropositivity for HIV and VDRL was significantly higher in replacement donors ($P<0.001$). It is suggested that extensive donor selection and a voluntary donor service would reduce the number of infectious donors significantly. Non-remunerated repeat voluntary donor services are urgently required to lower the prevalence of transmissible infections. While the need to change to a voluntary donor service and devising effective donor screening cannot be over emphasized, there is also a need to mandate HIV antigen detection in India.

Key words Blood donors - HIV infection - prevalence - replacement donors - VDRL reactivity - voluntary donors

Transmission of HIV and other viral infections continues to be a threat to safe blood transfusion. Developing countries account for more than 90 per cent of all new HIV cases¹. With the population exceeding one billion, HIV epidemic has remarkably impaired the economy of India and health of its people. The major transmission mechanism for HIV has been through heterosexual contacts (42%) especially with commercial sex workers (CSWs), with blood transfusion (15%) and intravenous drug users (15%)². The prevalence of HIV in various parts of India is different. It is particularly high in western and southern parts^{3,4}. Only few reports are available regarding the

trend of HIV seropositivity⁵⁻⁷ and venereal disease reference laboratory (VDRL) reactivity particularly in blood donors⁸ from northern India. VDRL reactivity varies from 0.8 per cent in voluntary donors to more than 15 per cent in paid commercial donors⁹. Although HIV infection has been reported in all groups of blood donors in Delhi¹⁰, it is particularly high among replacement donors^{10,11}. Concealing the medical history by professional or replacement donors pose a great threat to safe blood supply. Problems are also due to prevalence of asymptomatic carriers in the society, blood donations during window period, genetic variability in the viral strains and laboratory errors.

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We undertook this study to assess the prevalence and trend of HIV infection and syphilis among blood donors of Delhi during 2000-2002. Majority of the blood donors were one-time blood donors donating for their relatives or friends.

A total of 76089 blood units were collected from blood donors during the period from January 1, 2000 to December 31, 2002 at Regional Blood Transfusion Centre, Guru Teg Bahadur Hospital, Shahdara, Delhi. Blood donors were either replacement or voluntary. Care was taken to exclude professional donors by taking appropriate history and examination. All 76089 serum samples were screened for HIV-1 and 2 and VDRL reactivity using ELISA kits from Lab System (Germany) and Glaxo-India, respectively. Tests were performed according to manufacturer's instructions. All reactive samples were repeated in duplicate as per directions from National AIDS Control Organisation. Repeat reactives were labelled as ELISA positive and were discarded.

Out of total 76089 blood donors, 62732 (82.4%) were replacement and 13357 (17.6%) were voluntary donors (Table I). More than 90 per cent donors were males in the age group of 20-45 yr. Replacement donors constitute the largest group of blood donors in India¹⁰ as evident in our study also low proportion of voluntary donors could be a reflection of lack of awareness amongst the general public about

voluntary blood donation. Some of the replacement donors are actually professional donors who are paid by the patient's relative instead of blood bank. A total of 408 blood donors (0.54%) were seropositive for HIV infection ranging between 0.50-0.58 per cent and it showed a peak in 2001 (Table II). Student's 't' test was performed for any statistically significant difference in the seropositivity of HIV and VDRL in voluntary donors ($P < 0.001$). HIV seropositivity was highest among replacement donors (0.64%) and lowest (0.33%) among voluntary donors in 2001. The VDRL reactivity remained steady and ranged from 2.5 to 2.7 per cent during the study period. Similarly, the seropositivity for VDRL was significantly lower in voluntary donors than replacement donors ($P < 0.001$). The VDRL reactivity showed increasing trend in voluntary donors between years 2000-2002.

Differences in infection rates between voluntary and replacement donors have been observed previously^{8,11}. HIV seroprevalence among paid and voluntary blood donors in New Delhi rose from 0.10 and 0.01 per cent respectively, before 1991^{6,12} to 0.33 per cent among all blood donors in 1994¹³. In multitransfused recipients like patients with thalassaemia and haemophilia, seropositivity varies from 0.5-3.8 per cent^{14,15}. VDRL reactivity varies from 0.8 per cent in voluntary donors to more than 15 per cent in paid commercial donors⁹.

Table I. Total blood collection and distribution in different categories

Year	Total donors (no.)	Replacement donors (%) no. (%)	Voluntary donors no. (%)
2000	23238	19549 (84.1)	3689 (15.9)
2001	27428	22320 (81.4)	5108 (18.6)
2002	25423	20863 (82.1)	4560 (17.9)
Total	76089	62732 (82.4)	13357 (17.6)

Table II. Number and percentage of seropositives in different categories

Year	HIV (+ve)			VDRL (+ve)		
	R (%)	V (%)	T (%)	R (%)	V (%)	T (%)
2000	99 (0.51)	18 (0.49)	117 (0.50)	535 (2.7)	40 (1.1)	575 (2.5)
2001	142 (0.64)	17 (0.33)	159 (0.58)	656 (2.9)	71 (1.4)	727 (2.7)
2002	113 (0.54)	19 (0.42)	132 (0.52)	578 (2.8)	77 (1.7)	655 (2.6)
Total (%)	354 (0.56)	54 (0.40)	408 (0.54)	1769 (2.8)	188 (1.4)	1957 (2.6)

R, Replacement donors; V, voluntary donors; T, total

In conclusion, this study showed HIV seropositivity in 0.54 per cent and VDRL seropositivity in 2.6 per cent of blood donors in Delhi. Seropositivity was significantly higher in replacement donors. Based on these results, we feel that to reduce the risk of these infections, non-remunerated repeat voluntary blood donor services are needed. There is real scarcity of non-remunerated repeat voluntary donors in India. Seroconversion rates were lower in repeat donors than in general population¹⁶. Extensive donor selection and screening procedures can improve the blood safety. It has been shown that prevalence of HIV seropositivity may be lowered up to 100-folds in selected donors than in the general population¹⁶. Replacement donors sometimes conceal their medical history to donate blood for their relatives. Thus, blood safety still depends highly on open and honest answering of the screening questions. The emphasis must also be given on voluntary risk reductions, which will require increased knowledge and change in attitude of people. It was shown that the risk of HIV infection in San Francisco declined substantially, to about 0.2 per cent as a direct result of efforts to educate at risk individuals to avoid donation¹⁷. Safe transfusion practices like avoidance of single donors and practice of autologous blood transfusion should be encouraged.

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