Seroprevalence of Transfusion Transmitted Infections among Blood Donors in Mangalore

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Abstract

Background : Blood transfusion is life-saving but can cause diseases if not tested properly for transfusion-transmissible infections (TTIs) before transfusion.

Aim : The aim of the present study was to know the seroprevalence of transfusion-transmitted diseases among blood donors.

Materials and methods : The study was conducted at a Government district Wenlock hospital blood bank, Mangalore. Data was collected for a 4-year period from January 2008 to December 2011.

Results : In a 4-year period, 25633 donors were tested. Of these, 23521 (91.8%) donors were males. The donors' age ranged from 18-55years. 210 (0.82%) donors among the total 25633 donors were positive for TTIs. Seropositivity for HIV, HBsAg, HCV and Syphilis was 0.1%, 0.5%, 0.08%, 0.07% respectively. The incidence of seropositivity was more in the age group between 18- 33 years than the older age group.

Conclusion : Strict selection of blood donors and proper testing for TTIs will ensure safe blood transfusion. It is very important to continue screening donated blood with highly sensitive and specific tests and to counsel donors who are positive to any of the above infections.

Keywords : Blood donors, HIV, HBsAg, HCV, syphilis.

Introduction

Blood transfusion is life-saving but can cause diseases if not tested properly for transfusion-transmissible infections (TTIs) before transfusion. Blood transfusion emphasizes on two objectives, safety and protection of human life. Blood transfusion carries the risk of transfusion-transmissible infections, including Human immunodeficiency virus (HIV), hepatitis B virus (HBV), hepatitis C virus (HCV) and syphilis. With every unit of blood, there is 1% chance of transfusion-associated problems including transfusion-transmitted diseases [1]. Among all infections HIV and hepatitis B are the most dreadful infections.

The HIV, HBV and HCV are of great concern because of their prolonged viraemia. They also cause fatal, chronic and life-threatening disorders. HBV is highly contagious and relatively easy to be transmitted from one infected individual to another by blood transfusion, during birth, by unprotected sex, and by sharing needles and has a relatively higher prevalence in the tropics [2]. Syphilis is a systemic disease which can be spread by sexual contact and blood transfusion. The incidence of transfusion-transmitted HIV and hepatitis is increasing in India. The aim of the present study was to know the seroprevalence of transfusion-transmitted diseases among blood donors

Materials and methods

The study was conducted at a Government district Wenlock hospital blood bank Mangalore. Tests were routinely done on every blood unit to exclude HIV, HBV, HCV, and syphilis. Data was collected for a 4-year period from January 2008 to December 2011. In a 4-year period, 25633 donors were tested. Donors were selected by the standard criteria for donor fitness. The screening for HIV was done by ELISA. HBs Ag was detected by ELISA. Anti-HCV test was done by ELISA. Test for syphilis was done by RPR (Rapid Plasma Reagin) test.

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Results

Of the 26357 consenting donors at Government district Wenlock hospital Mangalore, 724 (2.7%) were deferred by the questionnaire, including 67 specifically because of risk behaviour for TTI during the study period. A total of 25633 consecutive blood donors were selected and screened for TTI. Of these, 23521 (91.8%) donors were males and 2112 (8.2%) were females. Daily labourers and students constituted majority of the blood donors. Other donors were professionals, health care workers and businessmen. The donor age ranged from 18-55 years. Table 1. gives the details of the age distribution of the seropositive donors. 210 (0.82%) donors among the total 25633 donors were positive for TTIs. The incidence of seropositivity was more in the younger age group (18- 35 years) than the older age group (36- 55 years). 60% of donors with seropositivity were in the younger age group. Yearly distribution of detected seropositivity is given in Table 2. 32 (0.1%).cases showed seropositivity for HIV, 30 cases were males and 2 cases were females. 139 (0.5%) cases showed seropositivity for HBsAg, 134 cases were males and 5 cases were females. 21 (0.08%) cases showed seropositivity for HCV, all the cases were males. 18 (0.07%) cases showed seropositivity for syphilis, 17 cases were males and 1 case was of a female donor. Table 3 gives the details of the sex distribution of the seropositive donors.

Table 1. Age distribution of seropositive donors

Age	HIV	HBsAg	HCV	Syphilis
18-25 years	9	41	8	5
26-35 years	10	39	7	6
36-45 years	7	30	3	4
46-55 years	6	29	3	3
Total	32	139	21	18

Table 2. Year-wise distribution of transfusion transmitted infections in donors

Year	HIV	HBsAg	HCV	Syphilis
2008	9	27	6	5
2009	7	36	3	4
2010	8	39	7	4
2011	8	37	5	5
Total	32	139	21	18

Table 3. Sex distribution of seropositive donors

	Males	Females
HIV	30	2
HBsAg	134	5
HCV	21	0
Syphilis	17	1
Total	202	8

Discussion

Blood transfusion is a significant route of transmission of transfusion transmitted infections. Screening of donated blood is important to ensure safe blood transfusion. Blood should be transfused only with proper indication to avoid unnecessary complications including TTIs. Educating people and creating awareness about voluntary blood donation is an important factor. Acquisition of HIV disease through blood transfusion is a relatively efficient mode of transmission, with rates approaching 100% [3]. Moreover, it should never be forgotten that blood donations collected in the latent period of infection may be infectious despite a negative antibody test [4]. In our study seropositivity for HIV was 0.1% in total donors which is very low as compared to the study done by Arora D et al. [5], Ramanamma et al. [6], Shashikala et al. [7] and Kulkarni et al. [8]. National data also states that higher incidence of HIV is found in Maharashtra and south India. In comparison to Northern and Western India, seropositivity for HIV in our study was slightly less [9,10]. Seroprevalence of HBsAg was 0.5%. Seropravalence for HCV and syphilis was 0.08% and 0.07% respectively. HBsAg was the most common TTI. This is comparable to the study done by Arora D et al. [5] and Srikrishna et al. [11]. Significant increase in seroprevalence of TTIs was observed in the age groups of 18-33years compared to the age group of greater than 33years. This is in concurrence with previous reports by Tessema B et al. [12] and Baba et al. [13] in which higher prevalence was observed among youths. This observation is worrisome since the most productive and economically viable age group of the populations is worst hit. There is the need for renewed intensification of preventive programmes aimed at high risk behavioural change [12]. The majority (91.8%) of the donors were males which is comparable to the study

done by Rose et al. [14], Rao and Annapurna et al. [15], and Arora D et al. The seropositivity rate of HIV and HBV was higher among first time donors compared to repeat donors. This is comparable with other studies [16-18]. The significantly increased HIV and HBV seroprevalence among first time donors might be due to the fact that people who regularly donate blood usually have a profile of low-risk of HIV and HBV infection because they were selected many times [19]. In this study, none of the donors showed the presence of co-infections. Donors should be encouraged to be voluntary donors and to repeat the blood donation to avoid scarcity of blood. Meanwhile, they should be educated regarding the TTIs which are dangerous to both donors and the recipients. For this voluntary blood donation camps have to be arranged and proper counselling of the donors should be done. Strict selection of blood donors and proper testing for TTIs will ensure safe blood transfusion.

Conclusion

In the 4-year period, 25633 donors were tested. 210(0.82%) donors among total 25633 donors were positive for TTIs. Male donors constituted 91.8%. The seropositivity of HIV, HBsAg, HCV and syphilis was 0.1%, 0.5%, 0.08% and 0.07% respectively. The time and cost involved in screening donated blood can be reduced by an effective donor education and selection program that promotes self-exclusion by donors at risk of transfusion-transmissible infections. Transmission of transfusion-transmissible infections during the negative window period is a threat to blood safety. Therefore, strict selection of blood donors with the emphasis on getting voluntary donors and comprehensive screening of donors' blood for HIV, HBV, HCV and syphilis using standard methods are highly recommended to ensure the safety of blood for recipient. It is of utmost importance to continue screening donated blood with highly sensitive and specific tests and to counsel donors who are positive to any of the above infections. It is absolutely necessary to avoid the transmission of infection from repeat donors.

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