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SERO-prevalence of transfusion transmissible infections among replacement and voluntary blood donors

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Abstract: **The Objective of present study was conducted to estimate the prevalence of transfusion transmitted infections in voluntary and replacement donors in urban area of Karnataka, India.**

Methods: All voluntary and replacement donors were screened for HBV, HCV and HIV I&II by using the appropriate enzyme-linked immunosorbent assay. Rapid Plasma reagin was used for estimation of syphilis infection. The study was designed for a duration of six years from January 2009 to December 2014.

Results: A total of 13023 voluntary blood donors were screened. The overall seroprevalence of HBV and HCV were 0 .906 % and 0.161 % respectively; for HIV and syphilis the seroprevalence was estimated to be 0.13% and 0.36% respectively.

Conclusion: Strict selection of blood donors and proper testing for TTI will ensure safe blood transfusion. Blood is still one of the main sources of transmission of infections. It is important to continue screening donated blood with highly selective and specific tests and to counsel donors who are positive to any of the above infections.

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

I. INTRODUCTION

Timely transfusion of blood saves millions of lives, but unsafe transfusion practices puts millions of people at risk of transfusion transmissible infections (TTIs) [1].

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 I&II), Hepatitis B virus (HBV), Hepatitis C virus (HCV) and syphilis. With every unit of blood there is 1% chances of transfusion associated diseases.[2]

Among all infections HIV and Hepatitis are the most dreadful infections.

The first case of transfusion associated AIDS was described in an infant given transfusion for erythroblastosis foetalis, thereafter many cases were reported all over the world in which transfusion of blood and its products was the only risk factor.

Morbidity and mortality resulting from the transfusion of infected blood have far-reaching consequences, not only for the recipients themselves, but also for their families, their communities and the wider society[6, 7].

Since a person can transmit an infection during its asymptomatic phase, transfusions can contribute to an ever widening pool of infection in the population. The economic costs of the failure to control the transmission of infection include increased requirement for medical care, higher levels of dependency and the loss of productive labour force, placing heavy burdens on already overstretched health and social services and on the national economy[6, 8].

Only continuous improvement and implementation of donor selection, sensitive screening tests, and effective inactivation procedures can ensure the elimination, or at least reduction, of the risk of acquiring TTIs [9]. TTIs can exist as

asymptomatic diseases in the hosts, so donors must be screened for high-risk behavior related diseases. Evaluation of data on the prevalence of transfusion transmissible infections namely HIV, HBV, HCV and syphilis among voluntary and replacement donors permits an assessment of the occurrence of infections in the blood donor population and consequently the safety of the collected donations. It also gives an idea of the prevalence of the transfusion transmitted infections (TTIs), among blood donors allows for assessment of epidemiology of these infections in the community. Globally, more than 81 million units of blood are donated each year [10].

II. MATERIALAND METHODS

A retrospective hospital record-based study was conducted at the blood bank. Data were collected for a period of six years from January 2009 to December 2014. The tests were routinely done on every blood sample to exclude HIV, HBV, HCV and syphilis and malarial parasite.

A total of 13023 blood units were collected and studied. The donors were selected by the standard criteria for donor fitness. No professional or honorary donor was bled. Exclusion criteria for blood donation were current history of medication, recent history of having undergone a surgical procedure, serious illness, previous blood transfusions , weight <45 kg, age <18 and >60 years, pregnant and lactating women.

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.

III. RESULTS

Table.No.1. Year wise distribution of tti's in donors.

year	No of donors	HBs Ag positive	HCV positive	HIV positive	RPR
2009	1430	17	Nil	1	2
2010	1644	24	03	3	3
2011	1663	08	02	5	2
2012	1602	19	3	3	4
2013	3172	21	11	1	9
2014	3512	29	2	4	27
Total	13023	118	21	17	29

Table.No.2. Age distribution of seropositive donors

Age	Hbs Ag positive	Hcv positive	HIV positive	RPR
18-25	35	10	5	6
26-35	47	7	7	11
36-45	9	2	3	9
46-55	27	2	2	3

Table.3 Sex distribution of seropositive donors

TTI's	Male	Female
HIV	17	0
HBS	115	3
HCV	21	0
RPR	29	0

In the present study includes 13023 voluntary blood donors. The prevalence of HBsAg, anti-HCV, Syphilis, and anti-HIV among voluntary blood donors in the study population is showed in. The overall seroprevalence of HBV and HCV was 0.906% and 0.16% respectively, while the prevalence of HIV and Syphilis was 0.13% and 0.36% respectively. The highest prevalence was observed for HBV followed by syphilis, HCV and HIV in decreasing order.

IV. DISCUSSION

Blood transfusion is a potential route of transmission of TTIs[11,12,13]. The prevalence of TTIs among the Indian blood donors is reported to be ranging as follows; HBV- 0.66% to 12%, HCV - 0.5% to 1.5%, HIV- 0.084% to 3.87%, and syphilis - 0.85% to 3% respectively[14].

The present study revealed seroprevalence of HBV at 0.906% among the donors which is similar to findings by Chattoraj et al [14], Kaur et al.[15], and Singh B et al[16]. Variable results of 0.66% [17], 2.45% [11], 3.44% [18], 5.86% [19], 25% [20] have also been reported in various other studies. HCV infection is an evolving public health problem globally. For hepatitis C, the estimated prevalence in this study was 0.16%, similar to that reported by the other studies 0.28% [18], whereas a few studies reported much higher level of prevalence such as 1.09%17, 1.57% [19], 2.8%[20] and 6.21% [19] and a yet another set of studies reported it to be at lower levels of and 0.50% [16].

In the present study, the prevalence of HIV was found to be 0.13% which is similar to studies conducted by other authors [14]. Tiwari et al[21] , reported 0.054% prevalence of HIV among blood donors, whereas higher seroprevalence of 0.19% [22], 0.26% [15], 0.47% [18] , 3.8% [23] and 11.7% [20] have been reported.

For syphilis, the seroprevalence was found to be 0.36% in the present study, which was lower than other studies 0.85% [17] and 1.2%[19]. Availability of safe blood for transfusion is a must for the recipients and the community as well. This can be

Achieved by vigorous screening of donors and donated bloods. Effective control strategies including a sensitive and stringent screening of all blood donors, public awareness programs, and institution of adequate public health measures are urgently needed.

V. CONCLUSION

Blood is still one of the main sources of transmission of hepatitis B, hepatitis C, HIVI&II, and syphilis. The majority of donors in our country are voluntary, relatives or friends, who are apparently healthy, but this study found that these diseases are prevalent among donors. Hence, strict selection of blood donors with the emphasis on getting voluntary donors and comprehensive screening of donors for TTIs using standard methods are highly recommended to ensure the safety of blood for recipient.

I/we believe the manuscript represents valid work. Neither this manuscript nor one with substantially similar content under my/our authorship has been published or is being considered for publication elsewhere, except as described in the covering letter.

I/we certify that all the data collected during the study is presented in this manuscript and no data from the study has been or will be published separately.

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REFERENCES

[1] Bihl F, Castelli D, Marincola F, Dodd RY, Brander C, 2007. Transfusiontransmitted infections. J Trans Med.2007; 5: 25.

[2] WIDMANN F.K, EDITOR.Technical manual American association of blood banks. Aglinton USA, 1985.p.325-44.]

[3] Pita-ram, Irez L Torres.Ortiz G E Prevalence of viral antibodies and syphilis serology in blood donors. form a hospital. Rev Invest Clin 1997:49:475-80.

[4] Triwibowo. Anti HIV, Anti HCV, Syphilis, HBs Ag serologic test among high risk group and blood donors in Yogyakarta, Indonesia. South east Asian j trop med public health 1993; 24:275-7.

[5] Kulkarni.H.G, Koppikar.G.V, Mehta.P.R, Borges.N.E. Seroprevelence of HIV 1 infection in Bombay (B321 in abstracts from the second international congress on AIDS in Asia and the Pacific No.92.

[6] World Health Organization (WHO). Blood Safety Strategy for the African Region. Brazzaville, World Health Organization, Regional Office for Africa (WHO AFR /RC51/9 Rev.1). 2002

[7] World Health Organization (WHO). Status of blood safety in the WHO African Region: Report of the 2004 Survey WHO Regional Office for Africa, Brazzaville 2007: 1-25.

[8] Kitchen AD, Barbara JAJ. Transfusion transmitted infections. In: Murphy MF and Pamphilon DH (Eds): Practical Transfusion Medicine. Blackwell Science, Oxford. 2001: 192-210

[9] Tiwari BR, Ghimmire P, Karki S, Raj Kumar M, 2008. Seroprevalence of human immunodeficiency virus in Nepalese blood donors: A study Microbiol 2001; 44:409-12. From three regional blood transfusion services. Asian J Trans Sci , 2: 66-68.

[10] WHO fact sheet on Blood safety and donation, 2008

[11] Chaudhary IA, Samiullah, Khan SS, Masood R, Sardar MA, Mallhi AA. Seroprevalence of HBV and C among health donors at Fauji Foundation Hospital, Rawalpindi. Pak Med J 2007; 23:64-7.

[12] Irshad M, Peter S. Spectrum of viral hepatitis in thalassemic children receiving multiple blood transfusions. Indian J Gastroenterol 2002; 21: 183-4.

[13] Mollah AH, Nahar N, Siddique MA, Anwar KS, Hassan T, Azam MG. Common transfusion-transmitted infectious agents among thalassaemic children in Bangladesh. J Health Popul Nutr 2003; 21:67-71.

[14] Chattoraj A, Bhel R, Kataria V. Infectious disease markers in blood donors. Med J Armed Forces India 2008;64(1):33-5.

[15] Kaur H, Dhanon J, Pawar G. Hepatitis C infection amongst blood donors in Punjab - a six year study. Indian J Hematol Blood Transfus 2001; 19:21-2.

[16] Singh B, Verma M, Verma K. Markers of transfusion associated hepatitis in North Indian blood donors: Prevalence and trends. Jpn J Infect Dis 2004; 57:49-51.

[17] Gupta N, Vijay Kumar, Kaur A. Seroprevalence of HIV, HBV, HCV, and Syphilis in voluntary blood donors. Indian J Med Sci 2004;58:255-7.

[18] Garg S, Mathur DR, Garg DK. Comparison of seropositivity of HIV, HBsAg, HCV and syphilis in replacement and voluntary blood donors in Western India. Indian J Pathol Microbiol 2001; 44:409-12.

[19] Mumtaz S, Rehman MU, Muzaffar M, Hassan MU, Iqbal W. Frequency of seropositive blood donors for hepatitis B, C and HIV viruses in railway hospital, Rawalpindi. Pak J Med Res 2002;41(2):19-2.

[20] Dessie A, Abera B, Fissehawale. Seroprevalence of major blood borne infections among blood donors at Felege Hiwot referral hospital, Northwest Ethopia. Ethiop J Health Dev 2007; 21:68-9.

[21] Tiwari B, Ghimire P, Karkee S, Rajkarnikar M. Seroprevalence of human immunodeficiency Virus in Nepalese blood donors: A study from three regional blood transfusion services. Asian J Transf Sci 2008;2:66-8.

[22] Karkee S, Ghimire P, Tiwari B, Shrestha A. Seroprevalence of HIV and Hepatitis C coinfection among blood donors in Katmando valley, Nepal. Southeast Asian J Trop Med Public Health 2009;40(1):66-70.

[23] Matee M, Magesa PM, Lyamuya EF. Seroprevalence of human immunodeficiency virus, Hepatitis B and C viruses and Syphilis infections among blood donors at the Muhimbiili National Hospital in Dar es Salam, Tanzania. BMC Public Health 2006; 6:21.114.