IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 15, Issue 4 Ver. VII (Apr. 2016), PP 60-62
www.iosrjournals.org

Seroprevalence of HIV, HBV &HCV among Blood Donors in a Tertiary Care Hospital in Tripura, India

Vijayanta Kshetrimayum[1], Debaprasad Chakraborty[2], Ramit Chakraborty[3]
[1](Assistant Professor, Department of Blood Bank, Tripura Medical College & Dr. BRAM Teaching Hospital, Agartala, India)
[2](Associate Professor, Department of Pathology, Tripura Medical College & Dr. BRAM Teaching Hospital, Agartala, India)
[3](1st year post-graduate trainee,Tripura Medical College & Dr. BRAM Teaching Hospital, Agartala, India)

Abstract
Background:*Knowledge on prevalence and trends of transfusion transmitted infections is important for implementation and assessment of blood safety measures.*
Materials and methods:*Retrospective data collection on transfusion transmitted infections screening performed by using National AIDS Control Organization (NACO) approved ELISA kits for HIV, HBV & HCV.*
Results:*A total of 7593 donors were screened over the four years; 51.23 % were voluntary donors (VBD). Most of the donors were males (90.03%). Median age of population studied was 32 years. A total of 0.84% donors were found to be serologically reactive to major viral TTI. Seroreactivity due to HBV comprise 0.75% of total donors with mean age of 29.85 years (SD = ±9.25, 95% CI = 0.21) of which 49.12% were VBD. Only four male HIV positive donors (0.052%) were found during the study of which 50 % were VBD. Three HCV positive VBD donors (0.039% of total donors) were found of which two were females.*
Conclusion: *Prevalence of HBV is highest followed by HIV and HCV. Safety of voluntary donation more than replacement donation could not be established in the study.*
Keywords: *Transfusion transmitted infections, blood donors, HIV, HCV, HBV, ELISA*

I. Introduction

It is a well-known fact that blood is a lifesaving resource however blood transfusion may also lead to certain infectious and non-infectious complications in the recipients. In India, screening for human immunodeficiency virus (HIV I & II), hepatitis B virus (HBV), hepatitis C virus (HCV), syphilis and malaria is mandatory in blood banks as per Para K, Schedule F Part XII B (1967 amendment) of Drugs & Cosmetics Rules, 1945.[1] The prevalence of HIV, HBV & HCV among Indian blood donors ranges from 0.2-0.5%, 1.09-2.23% and less than 1.02% respectively.[2-10]

II. Aims

To find out the prevalence and trend of HIV, HCV & HBV among blood donors in our blood bank in Agartala, Tripura. And to study associated variables like distribution of the viral TTI positive donors' address (administrative districts in Tripura), age, sex and type of donor.

III. Materials and methods

A retrospective study was conducted in the department of blood bank after approval from our institute ethical committee. Four years donor TTI screening records were retrieved and reviewed from January 2012 to December 2015. Each donor was included once in the study. A total of 7673 blood donors were screened during this period. Tests were performed by using National AIDS Control Organization (NACO) approved ELISA kits (J. Mitra & Co./Tulip group) for HIV(Microlisa HIV) ,HBV(Hepalisa/Microlisa HBV), HCV(Qualisa/ Microlisa HCV). Cut-off values for test result were calculated as per kit package literature instructions during the testing procedures. Details of TTI reactive donors like age, sex, current address (districts only) and type of donor (voluntary or replacement) were retrieved from donor registry available in our blood bank.

IV. Results

Out of the total 7593 donors screened over 4 years; 51.23% were voluntary blood donors (VBD) and 49.12% were replacement blood donors (RBD). Most of the donors were males (90.03%) & female donors comprise of only 9.97%. Median age of population studied was 32 years. A total of 0.84% (n=64) donors were found to be serologically reactive to major viral TTI. Yearly distribution of donors by type, place of donation & viral TTI seroreactivity details are shown in table 1, 2, 3 and trend over time during the study period is shown in figure 1. Seroreactivity is due to HBV comprising 0.75% (n=57) of total donors of which 49.12 % (n=28) were

VBD and 50.88 % (n=29) were RBD. Mean age of HBV seroreactive donors is 29.85 years (SD = ±9.25, 95% CI = ±0.21) and most were males (96.49 %). Most of the HBV positive donations were done from West-Tripura district (66.67 %) followed by South-Tripura (15.79 %). Only 4 HIV positive donors (0.052% of total donors) were found during the study of which 50 % were VBD belonging to the youngest age group (mean=32.5 years, SD = ±5.12, 95% CI = ±0.11) and all of them were males. Three HCV positive donors (0.039% of total donors) were found during the study with mean age of 27.33 years (SD = ±4.99, 95% CI = ±0.11) of which 2 were females and all 3 HCV positive donations were done at West-Tripura district.

Table 1: Year wise viral seroreactivity

Year	ELISA test result for viral seroreactivity			Total number of donors (n)			
	HIV (n)	HBV (n)	HCV (n)	VBD		RBD	
				M	F	M	F
2012	1	15	0	236	39	1640	84
2013	0	17	0	731	92	1312	44
2014	1	12	0	1065	157	334	3
2015	2	13	3	1243	327	275	11

Table 2: Blood donor distribution by place of donation

Year	Blood donors distribution by place of donation in Tripura districts [§]							
	WT (n)	ST (n)	NT (n)	DHA (n)	SJA (n)	KHO (n)	GOM (n)	UNA (n)
2012	1231	170	19	48	322	60	141	8
2013	1649	29	14	26	276	60	111	14
2014	1364	30	2	5	124	14	19	01
2015	1623	48	3	8	126	18	21	9

[§] WT=West Tripura, ST=South Tripura, NT=North Tripura, DHA= Dhalai, SJA=Sipahijala, KHO=Khowai, GOM=Gomati, UNA=Unakoti

Table 3: Viral seroreactivity distribution by place of donation

	Age in years (n)				Viral seroreactivity distribution by place of donation in Tripura districts [§]							
	18-30	31- 40	41-50	51-62	WT (n)	ST (n)	NT (n)	DHA (n)	SJA (n)	KHO (n)	GOM (n)	UNA (n)
HIV	2	1	1	0	3	0	0	0	0	0	1	0
HBV	35	14	5	3	38	9	1	3	3	0	1	2
HCV	2	1	0	0	3	0	0	0	0	0	0	0

[§] WT=West Tripura, ST=South Tripura, NT=North Tripura, DHA= Dhalai, SJA=Sipahijala, KHO=Khowai, GOM=Gomati, UNA=Unakoti

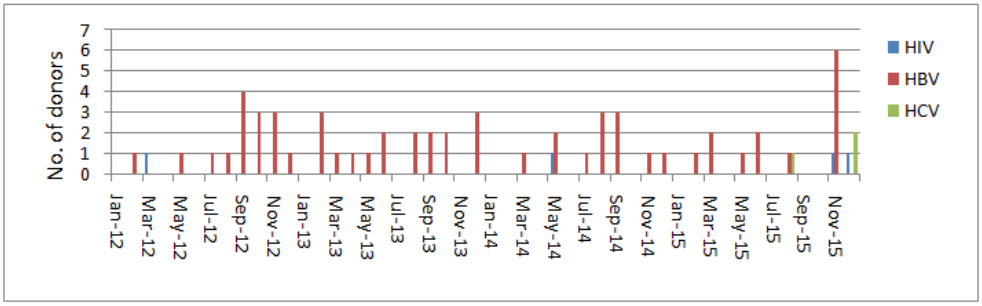

Figure 1: Monthly trend of viral reactivity from January 2012 to December 2105

V. Discussion

In the study, most blood donors were from West-Tripura district (77.27% of total) of which 63.95% was VBD. This may be due to the location of the hospital in the district and also most of the voluntary blood donation camps were conducted in West-Tripura. It is also seen that there is a shift from replacement to more voluntary donation since the year 2014 which is an indication of developing blood donation awareness among the public. HBV is a concern in the study comprising 0.75% (n=57) of total donations but this prevalence is lesser compared to the prevalence in similar studies done in India which ranges from 1.09 % to 2.23 %.[2-8] Maximum HBV positive donations were from West-Tripura but highest prevalence per district-wise blood donor population is in Unakoti district followed by Dhalai. Further studies with more sample size from these districts are required to confirm the result. No significant difference in prevalence of HBV among VBD and

RBD was observed in the study (p-value=0.7492) however all HBV positive donors from Unakoti, Dhalai and 6 donors from South Tripura were RBD. Peak monthly HBV positivity was found in November 2015 in which 5 VBD & 1 RBD donors were positive. Only 0.052% (n=4) HIV positive donors were found during the study of which 3 donors were from West-Tripura and one donor from Gomti district. Other studies in the country showed prevalence ranging from 0.07 % to 0.56 %.[2-8]. Similar to HBV here also no significant difference in prevalence of HIV among VBD and RBD was observed in the study (p-value=0.961). For HCV, 0.039% (n=3) from West-Tripura District were positive in the study and all were VBD but here also no significance can be drawn (p-value= 0.090). A study conducted in the neighboring state Manipur and another in Bangladesh showed HCV prevalence of 1.52% and 0.18% respectively. [9, 10] Popular notion about safety of voluntary over replacement donation could not be established in this study. A suspected reason may be due to attempt by some blood donors who donated blood only for the sole purpose of free testing for the five mandatory transfusion transmitted infections screened in blood banks. KAP study among voluntary blood donors is necessary to confirm this misdirected awareness.

VI. Conclusion

Prevalence of HBV is relatively high among blood donors in Tripura among the three diseases included in the study. However the prevalence of the three diseases in this study is lesser compared to the national average. Preventive measures like vaccination, disease surveillance, proper awareness campaign, diligent donor screening and medical examination of donors, rational use of blood and use of newer technologies like nucleic acid testing (NAT) in parallel with ELISA for TTI screening is required to increase blood safety and prevent spread in population

References

[1] Central Drug Standard Control Organisation [Internet]. India: Regulatory requirements of blood and/or its components including blood products; 2012 [cited 2016 Feb 29]. Available from: http://www.cdsco.nic.in/writereaddata/guidelines_for_blood_bank.doc

[2] Chandra T, Kumar A, Gupta A. Prevalence of transfusion transmitted infections in blood donors: an Indian experience. Trop Doct 2009; 39: 152-4.

[3] Pahuja S, Sharma M, Baitha B, Jain M. Prevalence and trends of markers of hepatitis C virus, hepatitis B virus and human immunodeficiency virus in Delhi blood donors: a hospital based study. Jpn J Infect Dis 2007; 60: 389-91.

[4] Giri PA, Deshpande JD, Phalke DB, Karle LB. Seroprevalence of transfusion transmissible infections among voluntary blood donors at a tertiary care teaching hospital in rural area of India. J Family Med Prim Care 2012; 1: 48-51.

[5] Srikrishna A, Sitalakshmi S, Damodar P. How safe are our safe donors. Indian J PatholMicrobiol 1999; 42: 411-6.

[6] Makroo RN, Hedge V, Chowdhry M, Bhatia A, Rosamma N. Seroprevalence of infectious markers & their trends in blood donors in a hospital based blood bank in north India. Indian J Med Res 2015; Sept; 142: 317-22

[7] Arora D, Arora B, Khetarpal A. Seroprevalence of HIV, HBV, HCV and syphilis in blood donors in Southern Haryana. Indian J PatholMicrobiol 2010; 53: 308-9

[8] Bhattacharya P, Chandra PK, Datta S, Banerjee A, Chakraborty S, Rajendran K, et al. Significant increase in HBV, HCV, HIV and syphilis infections among blood donors in West Bengal, Eastern India 2004-2005: exploratory screening reveals high frequency of occult HBV infection. World J Gastroenterol 2007; 13: 3730-3.

[9] Lalhriatpuii ST, Barindra A, Meina A, Rachandra A, Memtombi K, Khoyumthem P. Hepatitis C seroprevalance among blood donors in a tertiary care hospital in Manipur. Int J Innov Res &Dev [Internet]. 2014 [cited 2016 Feb 29]; 3: 190-2. Available from: http://www.ijird.com/index.php/ijird/article/view/46138/37484

[10] Dewan G. Prevalance of hepatitis B and C virus seropositivity among tribal and non-tribal voluntary blood donors of Rangmati, Bangladesh. J Univ Col Med Sci [Internet]. 2013 [cited 2016 Feb 29]; 1: 33-6. Available from: http://www.ucms.com.np/images/journals/issue4/a8.pdf