

Research Article

Prevalence of HIV and HBV infection among Voluntary Blood donors at a tertiary care hospital, Vijayawada: A 5 year retrospective study

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Abstract: Human Immunodeficiency virus type 1 (HIV-1) and Hepatitis B virus (HBV) exact a high toll worldwide. Both can lead to chronic disease, cancer and death, and neither can be eradicated with the use of current therapies. The present study is to know about HIV and HBV presence among voluntary blood donors. This is a 5 year study from 2010 to 2014 conducted at Siddhartha Medical College, Vijayawada. Serum samples of patients are assessed for HIV by using 3rd and 4th generation ELISA and HBV by using 3rd generation ELISA. Total Number of Samples screened during 2010 to 2014 was 11938. All the samples are screened was from voluntary blood donors. Among total samples screened, 26 (0.21%) were positive for HIV and 141(1.18%) were positive to HBV. More positivity of HIV and HBV were seen in below 30 years of age. Screening of HIV and HBV in blood donors by accurate methods and continued improvements in the coverage and timeliness of HBV vaccination to protect the community and can decrease the transmitted transfusion infections.

Keywords: Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), Transfusion transmitted infections (TTI), ELISA.

INTRODUCTION:

It is a well known fact that transfusion of blood and blood components as a specialized modality of patient management has been saving millions of lives worldwide each year. Amongst the undesirable complications arising out of transfusion of blood and blood products, transmission of certain infections like HIV, Hepatitis B and C and syphilis are most significant for the long term detrimental side effects. Meticulous pre transfusion testing and screening particularly for Transfusion Transmissible Infections (TTI) is the need of the hour [1].

Human immunodeficiency virus type 1 (HIV-1) and Hepatitis B virus (HBV) exact a high toll worldwide. Both can lead to chronic disease, cancer and death, and neither can be eradicated with the use of current therapies. Antiviral drug resistance often develops after patients have received treatment for some time and is usually followed by the loss of clinical benefit. Co-infection with the two viruses exacerbates the negative effects.

According to the Joint United Nations Program on HIV/AIDS (UNAIDS), about 33 million people are

infected with HIV worldwide, and the majority of them live in Asia and Africa [2].

Worldwide, HBV is the leading cause of chronic liver disease and a leading cause of death, accounting for up to half of all cases of cirrhosis and hepatocellular carcinoma. An estimated 400 million people are infected with HBV. With majority of cases occurring in regions of Asia and Africa where the virus is endemic. There, up to 70% of adults show serologic evidence of current or prior infection and 8 to 15% have chronic HBV infection [3].

It should be obligatory on those who are involved in transfusion of blood to a patient for saving his life, that the blood transfusion does no harm to the patient [4]. Morbidity and mortality resulting from 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 [5]. 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 [6]. The present study has undertaken to

know the prevalence of HIV and HBV in Voluntary Blood donors.

MATERIALS AND METHODS:

This is a retrospective study has done in Siddhartha Medical College Blood bank from January 2010 to December 2014. All the blood donors at blood bank and also the donors from various blood donation drives conducted by blood bank were included in this study. A total of 11,938 samples were received from Voluntary blood donors and were tested for prevalence of HIV and HBV for identification of Transfusion Transmitted Infections (TTIs).

A detailed history has taken from the donors and clinical examination has done. Significant details has collected in donor registration form such as Occupation, literacy, number of partners, high risk behavior, previous illness or any surgery, Blood

transfusions, family history, tattoo marks. A written consent has taken from donors before blood collection.

HIV was tested by using 3 & 4 generation ELISA kits as per NACO guidelines. Hepatitis B surface antigen (HBsAg) was tested by 3 generation ELISA kits. These kits are commercially available and approved by NACO. Those samples which were positive discarded as per standard protocols. Counseling has given to those reactive Voluntary donors by Counselors. Advised them to start treatment and to take precautions by which spreading of infection can stop.

RESULTS:

Total Number of Samples screened during 2010 to 2014 was 11938. All the samples are screened was from voluntary blood donor. All the samples were taken from males. Female voluntary blood donors were nil. The total number of samples screened in a year wise tabulated in table no: 1.

Table: 1 Year-wise distribution of samples which are screened for HIV & HBV

Years	Total No. of Samples screened	Percentage (%)
2010	1965	16.4
2011	2542	21.2
2012	2741	22.9
2013	2542	21.2
2014	2148	17.9
Total	11938	

Among total samples screened, 26 (0.21%) were positive for HIV and 141(1.18%) were positive to HBV. HIV and HBV positive cases year wise has depicted in table No: 2. HIV and HBV positives was more in 2011 when compared to other years which is about 38.4% and 25.5% respectively.

Age wise distribution among HIV and HBV shown in Table no:3. HBV incidence is more in below 30 years age group.

Table: 2 Year wise HIV and HBV positive cases

Years	HIV	Percentage (%)	HBV	Percentage (%)
2010	3	11.5	20	14.1
2011	10	38.4	36	25.5
2012	6	23	30	21.2
2013	2	7.6	22	15.6
2014	5	19.2	33	23.4
Total	26		141	

Table-3: Age Wise distribution of HIV and HBV positive cases.

Years	HIV		HBV	
	19-30 years	≥30 years	19-30 years	≥30 years
2010	2	1	10	10
2011	6	4	25	11
2012	2	4	18	12
2013	1	1	16	6
2014	2	3	19	14
Total	13	13	88	53

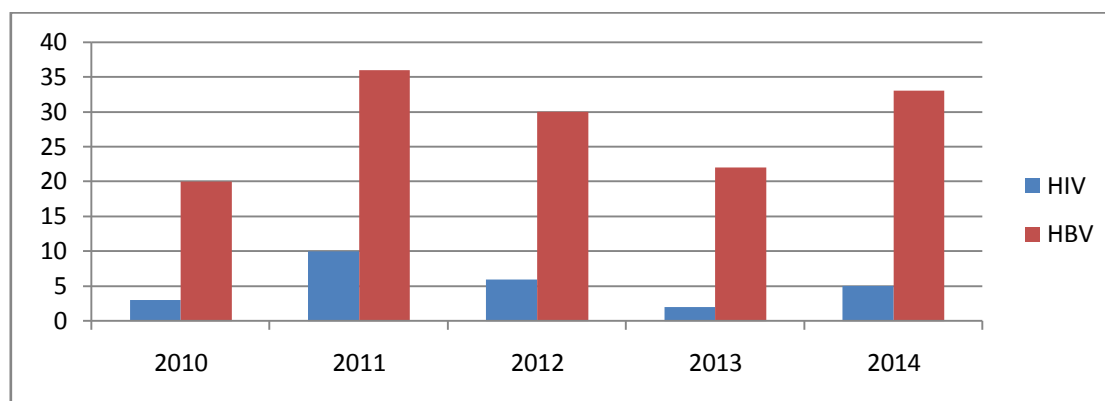


Fig-1: Year wise distribution HIV and HBV positive cases

Year wise distribution in relation to HIV and HBV positivity has depicted in Fig. No:1. HBV cases were noted more than HIV.

DISCUSSION:

Screening for transfusion-transmissible infections (TTIs) to exclude blood donations at risk of transmitting infection from donors to recipients is a critical part of the process of ensuring that transfusion is as safe as possible. Effective screening for evidence of the presence of the most common and dangerous TTIs can reduce the risk of transmission to very low levels [7]. Blood transfusion services should therefore establish efficient systems to ensure that all donated blood is correctly screened for specific TTIs and that only non-reactive blood and blood components are released for clinical and manufacturing use.

The adoption of screening strategies appropriate to the needs, infrastructure and resources of each country can contribute significantly to improvements in blood safety. In countries where effective blood screening programmes have been implemented, the risk of transmission of TTIs has been reduced dramatically over the last 20 years [8, 9].

Each country should have a national policy on blood screening that defines national requirements for the screening of all whole blood and apheresis donations for transfusion-transmissible infections.

Voluntary donors are motivated blood donors who donate blood at regular intervals. With every unit of blood, there is 1% chance of transfusion associated problems including TTI.

In the present study, all the samples (11938) are screened was from voluntary blood donor. All of them were males. Females were nil. Other studies [10, 11] were also mentioned that women voluntary blood donors were very less, only poor women were

participated in blood donation. More awareness has to create among female population by keeping blood camps and has to encourage them to donate blood.

Among total samples screened, 26 (0.21%) were positive for HIV and 141(1.18%) were positive to HBV. Gupta N *et al.*; [12] reported that HIV and HBV seropositivity was 0.084% and 0.66% respectively and mentioned that there is no co-relation between HIV and HBV. Kothari *et al.*; [13] reported that 3% HBV positivity and 1% HIV positivity among blood donors. Lathamani K *et al.*; [14] observed that 0.53% and 0.08% of HBV and HIV positivity respectively.

More positivity of HIV and HBV were seen in below 30 years of age. HBV positivity was more than HIV among Voluntary blood donors in this study and also in many other studies [12-14]. Prevalence of occult HBV infection has also been reported in many various parts of India [15, 16].

Screening of blood donors is mandatory to detect major viruses. As a result spreading of transfusion transmissible infections can be decreased in the community and to physician. Early detection with new commercially available kits made easy for detection of these viruses.

CONCLUSION:

Motivation of voluntary blood donation campaigns is necessary to decrease the spread of HIV and HBV in the community and to decrease the incidence of Transfusion Transmitted Infections. Routine screening of HIV and HBV should be mandatory in blood donors which improves blood product safety.

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