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Study of Seroprevalence of HIV, HBV, HCV and Syphilis among Blood Donors at Tertiary Care Hospital in North Karnataka

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ABSTRACT

Background: Transfusion transmissible infections (TTIs) such as Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), Hepatitis C Virus (HCV) and Syphilis are among the greatest threats to blood safety for the recipient. So the present study was conducted to know the prevalence and trends of TTIs.

Methods: The present study was carried out at the Blood bank attached to Bidar Institute of Medical Sciences Bidar. In this study donors who donated blood at blood bank during five year period were retrospectively evaluated with respect to HBV, HCV, HIV, Syphilis seroprevalance.

Results: During the five year period of study there was increase in the blood donors and decrease in the seroprevalence of transfusion transmitted transfusions. Out of 26056 blood donors, 847 had serological evidence of infection. The overall seroprevalence was 3.25%. The seroprevalence was high for HBV i.e. 2.88%, followed by 0.28% for HIV, 0.04% for HCV and 0.03% for VDRL.

Conclusion: In present study there was year wise increase in the blood donations at the same time there was year wise decrease in the seroprevalence of transfusion transmitted infections. The most common transfusion transmitted infection was Hepatitis B followed by HIV then HCV and last Syphilis. The seroprevalence of transfusion transmitted infection should be decreased further.

Key Words: Blood donors, HBV, HIV, HCV, Syphilis.

INTRODUCTION

Transfusion of blood and its component is a life saving procedure at the same time sometimes it has life threatening hazard. With every unit of blood there is 1% chance of transfusion associated problems including transfusion transmitted infections.[1] Common infectious agents include Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), human immunodeficiency virus (HIV), syphilis and malaria. Unsafe transfusion is costly for both the recipientas well as to the society. Complications of blood transfusions may be mild or can be life threatening and hence pre transfusion testing and screening for transfusion transmitted infections is mandatory.[2]

World Health Organization (WHO) recommends that all blood donations should be screened for evidence of infection prior to release of blood and blood components for clinical or manufacturing use.[3] The prevalence rate of transfusion transmitted infections in blood donation in middle low income countries is higher than high income countries.[4] Different studies conducted across the country have reported different seroprevalence rates for transfusion transmitted infections. So the present study was conducted to find out the seropreva-

lence of different transfusion transmitted infection in our area.

MATERIALS AND METHODS

The present study was conducted at the blood bank of Bidar Institute of Medical Sciences Bidar. It is a newly established autonomous institution by Government of Karnataka. In this retrospective study we reviewed records of 26056 blood donors over a period of 5 years i.e. from 1st January 2008 to December 2012.The approval was taken from institutional ethical committee. In our blood bank the blood donors are selected for donation by trained personnel after a complete physical examination and satisfactorily answering the donor's questionnaire. Tests are routinely done on every blood unit to exclude HIV, HBV, HCV, syphilis and malaria. All the samples were screened for hepatitis B surface antigen (HBsAg), HIV, hepatitis C virus (HCV) by ELISA method using approved kits. Screening for VDRL was done by RPR method. All the reactive blood units were discarded.

RESULTS

Total 26056 blood donors were screened at blood bank during the study period of five years. Table No.1 shows the year wise distribution of donors. There was year wise increase in number of blood donors and at the same time there was decrease in overall seropsitivity. The total number of blood donors who were found positive for transfusion transmitted infections was 847. The overall seroprevalence of transfusion transmitted infections was3.25%. Out of 847 seropositive individuals 753 were HbsAg positive followed by 73 HIV positive, 11 HCV positive and 10 were reactive to VDRL. The overall seroprevalence rate of HIV, HBV, HCV, and Syphilis was 0.28%, 2.88%, 0.04%, and 0.03%. Table No.2 shows seropositivity of HBV, HCV, HIV and syphilis.

Table -1 Year Wise Distribution of Seroprevalence of HIV, HBV, HCV and Syphilis Among Blood Donors In Bidar District

Year	Blood donors	Rejected Donors	HIV Positive %	HBV Positive %	HCV Positive %	Syphilis Positive %
2008	3514	155(4.41)	18 (0.51)	132(3.75)	02(0.05)	05(0.14)
2009	5169	171(3.30)	16 (0.30)	167(3.23)	02(0.03)	00(0.00)
2010	4216	132(3.13)	10 (0.23)	108(2.56)	02(0.04)	04(0.09)
2011	6590	197(2.98)	15 (0.22)	169(2.56)	03(0.04)	01(0.01)
2012	6567	192(2.92)	14 (0.21)	177(2.69)	02(0.03)	0.00
Average Seroprevalence	26056	847(3.25)	73 (0.28)	753(2.88)	11(0.04)	10(0.03)

DISCUSSION

Blood transfusion is a life-saving procedure of modern medicine. WHO recommends that all blood donations should be screened for infections prior to use. Screening for human immunodeficiency virus, hepatitis B virus, hepatitis C virus, syphilis and malaria is mandatory as these are the common infections which are transmitted parentally. In our study the overall prevalence of transfusion transmitted infections was 3.25%. The finding is comparable with findings of Kotwal U et al[5] and Amrutha Kumari B et al[6](3.02%,2.81% respectively) but it was less than the studies conducted by Agarwal N et al[7] (0.87%) Leena M S et al[8] (1.37%). In present study the overall prevalence of HIV infection among blood donors was 0.28%. There was decreasing trend in the seroprevalence of HIV infection. It was 0.51% in the year 2008 and decreased to 0.21% in the year 2012.The present study finding of HIV seroprevalence was similar with the findings of Leena M S et al[8], Sushma Chandekar et al[2], but different from the Nilima Sawke et al[9] (0.51), Murtuza Shaikh et al[10] who reported HIV seroprevalence of 0.51% .The decrease in the prevalence of HIV infection may be due to the increased awareness activities conducted for the prevention and control of HIV infection in the community under National AIDS control Programme and decrease in the practice of commercial bold donors. WHO report states that viral load in case of HIV transmission is very high due to which the HIV positive transfusion leads to death, on an average after two years in children and three to five years in adult.[11] Therefore safe transfusion practices should be encouraged. These safe practices include avoidance of professional donors, promoting voluntary blood donation and autologus blood transfusion.

Seroprevalence of Hepatitis B was higher in our study.The average Hepatitis B infection prevalence was 2.88%.Seroprevalence of Hepatitis B showed year wise decreasing trend from 3.75% in the year 2008 to 2.83%in the year 2012. The finding of our study was comparable with the findings of Murtuza Shaikh et al[10], Nilima Sawke et al[9] but not comparable with Hilda Fernandez et al [12], Kirana-Pailooret al[1] (0.30).India falls in the intermediate endemicity zone (prevalence of 2–7%, with an average of 4%), with a disease burden of about 50 million.[13] Hepatitis B positivity indicates a carrier

state or active infection.These individuals may develop chronic hepatitis, cirrhosis or hepatocellular carcinoma. There is increased risk of transmission of infections if the donor donates blood during window period.

The seroprevalence of HCV showed a yearwise decreasing trend with overall prevalence of 0.04%.The low prevalence of HCV infection finding of our study was comparable with the findings of other studies reported by KiranaPailoor et al[1], Hilda Fernanez et al[12] but different from Jyotsna Khattri et al[14] (2.06%), Murtuza Shaikh et al[10] (1.11%). HCV infection is evolving as public health problem. The HCV is mainly transmitted through blood exposure. The HCV infected individual may develop chronic infections and there is an increased risk of cirrhosis and hepatocellular carcinoma.

In present study the seroprevalence of syphilis was found to be 0.03%. The finding our study is comparable with the seroprevalence reported by Shalini Sundaramet al[15] (0.03) and Giri et al[16] (0.07). Higher seroprevalence of syphilis was reported by Akanksha Rawatet al[17] (1.62), Chintamani Pathak et al[18] (1.45). Lower seroprevalence was reported by Leena M S et al[8] (0.12), KiranaPailoor et al[1] (0.12), Hilda Fernanez et al[12](0.11), K.Padma Malini et al[19] (0.12). High seroprevalence of syphilis was reported by the studies conducted in the North India and low prevalence by the studies conducted in the South India. There is increased risk of HIV infection in individuals who are infected with syphilis. Therefore strict selection criteria should be implemented so that the donors with multiple sexual partners will be excluded. In our study prevalence of malaria infection was reported in only one case. The overall seroprevalence of malaria infection was negligible. The other studies Jyotsna Khattarietal[14], Murtuza Sheikh et al[10] also have reported the same findings.

In our study there was increase in the number of blood donors at the same time there was overall decrease in the Seroprevalence of HIV, HBV, HCV and Syphilis. The increase in blood donors may be due to the increase in the conduction of blood donation camps and increase in operative procedures after starting new government medical college at Bidar. The decrease in the seropositivity may be attributed to the increased awareness in the community done by mass media regarding prevention of HIV infection, decreasing risk taking behaviour and following strict screening measures. The National AIDS Control organization, Govt. of India and other Non-governmental organizations are playing major role in increasing awareness in the community regarding prevention of transmission of HIV.

CONCLUSION

In present study there was year wise increase in the blood donation at the same time there was year wise decrease in the transfusion transmitted infections. The most common transfusion transmitted infection was Hepatitis B followed by HIV then HCV and last Syphilis. The decrease in the transmission of TTIs may be due to increase in the practice of voluntary blood donation and impact of IEC activities conducted to create awareness among the community about prevention of various infections like HIV, hepatitis B and syphilis.

Recommendations

The seroprevalence of transfusion transmitted infection should be decreased further. To further decrease the seroprevalence of transfusion transmitted infections different measures like strict screening of blood donors, increase in voluntary blood donations and using standard highly sensitive methods are recommended.

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