

Original Research Article

Prevalence of HIV, HCV, HBV and Syphilis in Blood donors among the Dakshina Kannada District, India

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A B S T R A C T

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Every year blood transfusion rescues millions of lives worldwide, recipients of transfusions risk becoming infected with blood-borne pathogens. Transfusion-transmissible infections with the blood donors during the various blood donation camps in Mangalore were investigated from January 2008 to March 2010. The seroprevalence Hepatitis B Virus (HBV) infection was confirmed to be 0.53%, HepatitisC Virus(HCV) infection to be 0.098%, Human Immunodeficiency Virus(HIV) to be 0.08% and Syphilis to be 0.09% after supplementary testing. The transfusion risk potential of these pathogens was also demonstrated. Thus understanding the demographic data would reduce the overall burden on health care system.

Introduction

Blood is one of the integral components of body constituents, which flows throughout body and becomes a reason for survival. Blood transfusion is a life saving procedure for needy patients. Providing safe and adequate blood is supposed to be an integral part of every country's national health care policy and infrastructure. WHO suggests that all activities associated to blood collection, testing, processing, storage and distribution be matched at the

national level through effective organization and a national blood policy. This is now supported by appropriate legislation to promote even implementation of standards and consistency in the quality and safety of blood and blood products. WHO recommends that all blood donations should be screened for infection prior to use. Screening should be mandatory for hepatitis B virus (HBV), hepatitis C virus

(HCV), human immunodeficiency virus (HIV) and syphilis. Globally there are more than 300 Million HBV infected people and 75% of them are Asians (Qasmi *et al.*, 2000). The prevalence of HBV infection is reported to be high of 5-15% in south East Asia and China (Ponamgi *et al.*, 2009). In India the national average for HBV positivity in the healthy donor population is around 4.7%. According to WHO cataloguing , globally there are 34 million people were living with HIV at the end of 2011(The global fund: to fight AIDS TB & Malaria 2013). According to NACO, In India there are around 2-3 million HIV infected people with the prevalence of 0.31% among adults (India Facts: HIV/AIDS in India statistics. NACO 2011). According to Karnataka State AIDS Prevention Society, there are 250,000 HIV infected people in Karnataka (India Facts: HIV/AIDS, 2012).

The global prevalence of HCV is around 2% with 170 million people. In India the prevalence rate of HCV is approximately 1.8% - 2.5% (Ponamgi *et al.*, 2009). The main diseases transmitted through blood are hepatitis, HIV, Syphilis, malaria & infrequently toxoplasmosis, Brucellosis and some other viral infections like CMV, EBV and Herpes (Sonia Garg *et al.*, 2001) with every unit of blood, there is a 1% risk of transfusion associated complications including transfusion transmitted diseases (Naveen Kakkar *et al.*, 2004).

Considering the grave consequences of these infections and to hold back the transmission to minimum, it is extremely essential to remain cautious about the possible spread of these diseases in the course of blood transfusion. Thus we aimed to estimate the prevalence of HIV, HBV, HCV and Syphilis among the blood collected from the donors. It would also

help to study and identify the trend of increase or decrease among these diseases.

Materials and Methods

Blood collection was done from healthy donors through blood camps organized by Govt. Wenlock Hospital managed by Dr. M.V. Shetty trust, Mangalore and also from replacement donors. Each donor's Name, age (18-60 years), Sex, date of birth, address and contact number were recorded . A unique identification number was also given. Donors with history of any pre existing illness in the recent past, weight loss, uncontrolled diarrhea, recent jaundice, liver disease, cardiovascular disease, pulmonary disease, malignancy, epilepsy, malaria, unusual or excessive bleeding, recent donation of blood, receipt of blood, and taking contraindicated drugs were excluded. Detailed history of immunization was also noted. Weight, pulse, blood pressure and temperature were recorded for each donar. Screening for anemia and Inspection for any marks of drug abuse or any skin lesions/ infections at the venepuncture site was also recorded. A written informed consent was taken from each donar before the blood donation. Proper sterilization and other precautions were taken during the blood collection and blood units were stored by appropriate methods.

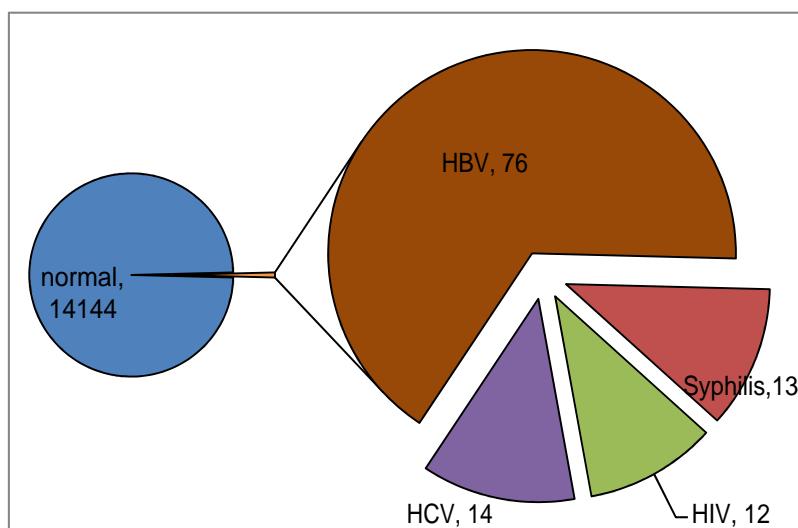
A total of 14,259 blood units collected from healthy voluntary and replacement donors during the period from January 2008- March 2010.The blood samples were screened for HIV, HBV, HCV and Syphilis by ELISA and syphilis by RPR card test.

Result and Discussion

Among the 14259 blood units collected, seropositivity was found to be 0.82% of

Table.1 Distribution of blood born disease among the blood donors of Mangalore

Disease	Number	Percentage
HBV	76	0.53
HCV	14	0.098
HIV	13	0.08
Syphilis	12	0.09

Figure.1 Pie chart showing the number of significant infectious disease

the total units collected. This is depicted in the Pie chart showing the number of significant infectious disease (figure 1). The prevalence of blood borne infection in the Mangalore district during the period January 2008- March 2010 is presented in table 1.

Blood born infections are common serious hurdles of blood transfusion. Averting the transfusion-transmitted infections in developed countries has been accomplished by reducing unnecessary transfusions, using only regular voluntary donors, excluding donors with specific risk factors and systematic screening of all donated blood for infection. By contrast, in many developed countries these interventions is applied uniformly and the risk of transfusion-transmitted infections remains low. Mangalore district is one the

fastest growing region in technology wise. A study on the transfusion-transmitted infections of blood donars have shown that only seropositive of 0.82% was found among the 14259 units of blood collected.

Though the prevalence of HBV positivity among the Indian national healthy donor is 4.7%, our study showed only 0.53% prevalence among the total blood units collected. The differences in the prevalence among our study and other studies (Swapna Kumar Sinha *et al.*, 2012; Arora *et al.*, 2010) may be recognized to be the differences in the sensitivities of the assays used, the criteria of positivity, types of donors and the level to which individuals with risk factors for blood-borne viral infections that have been excluded.

As the prevalence of HCV is approximately 1.8% - 2.5% in India, our study showed a smaller rate of 0.098% among the blood units collected. This might be due to high awareness of blood-borne viral infections among the donors and a comprehensive vaccination program against hepatitis B has been carried out earlier.

Hepatitis infection is often a precursor to HIV transmission and other blood borne pathogens. Since specific programs for medical education, a meticulous infection control system in the hospitals, a registry program, HIV infection in general is only 0.08% of the total blood units.

Syphilis though is a sexually transmitted infection, is also transmitted via blood and blood products. The prevalence rate of syphilis in Karnataka is 0.11%⁹. From this study syphilis among the blood units collected us only 0.09%.

The challenge and perspectives of blood borne disease during transfusion is related to improvement of clinical selection of blood donor. Even though the seroprevalence of blood borne infection is low among voluntary blood donors in Mangalore, a larger study to generate more accurate estimates of the magnitude of the transfusion-transmissible infectious diseases would be needed. Thus understanding the demographic data would still reduce the overall burden on health care system.

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