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RESEARCH ARTICLE

STUDY OF DISTRIBUTION OF TRANSFUSION TRANSMISSIBLE DISEASES IN DONATED BLOOD UNITS IN A TERTIARY CARE TEACHING HOSPITAL

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ABSTRACT

Several infectious diseases are transmissible by blood transfusion, especially viral infections. The most common blood-transmitted viruses are hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency virus (HIV). These viruses cause fatal, chronic and life-threatening disorders. The purpose of this study was to establish the current distribution of hepatitis viruses (B and C), Human Immunodeficiency Virus (HIV), Syphilis (VDRL test) and Malaria among donated blood units in a tertiary care teaching hospital.

A total of 296 blood units were found positive on initial testing for a marker of transmissible infection. Distribution of seropositivity was as follows:

HBV: 57.7% (171/296), HCV: 20.6 % (61/296), HIV: 17.9% (53/296) &
VDRL: 2 % (6/296), Malaria - Nil
Co-infection with HIV+HBV: 1 % (3/296)
Co-infection with HIV+HCV: 0.6 % (2/296)

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INTRODUCTION

Blood transfusion is undoubtedly a life saving measure in various medical and surgical emergencies. Apart from being important for the medical treatment of patients, it has great public health importance. India has a population of 1.2 billion; with reported statistics of 2.5 million living with HIV, 43 million with HBV and 15 million with HCV. (Giri *et al*., 2012) The Indian subcontinent has been classified as an intermediate HBV endemic zone (HBsAg carriage 2-7%) and has the second largest pool of chronic HBV infections. However, blood is also the major source of transmission of hepatitis B, hepatitis C, HIV, syphilis, malaria and other diseases. Screening for transfusion transmissible infections (TTI's) among voluntary blood donors is a mandatory and cost-effective method to study the prevalence, distribution and trends of these infections among healthy looking individuals. (Shrestha *et al*., 2009) The risk of transfusion transmitted infections can be analysed and reviewed by a study of the records of blood donors for screening procedures and indicate the prevalence of infectious disease burden. (Giri *et al*., 2012) A careful and well-organized evaluation of the distribution of TTI 's may help us understand the epidemiology of these infections.

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MATERIALS AND METHODS

- The study was carried out over a period of 2.5 years from January 2014 to June 2016 at a tertiary care teaching hospital in urban India.
- Serological markers for HBV, HCV, HIV 1 & 2, VDRL and Malaria were studied retrospectively in a total of 10,414 blood units collected from voluntary blood donors.
- out of10414 blood units, 296 units which tested positive for infectious serological markers and these were included in the study.
- The distribution of these diseases was then studied.

The following type of commercial kits were used

1. HIV: Elisa Method – HEPALISA kit
2. HCV: Elisa Method- Microlisa kit
3. HBV: Elisa Method – Microlisa kit (HbsAg antigen)
4. Syphilis: Card Test – Card Test- RPR Method
5. Malaria: Make Peripheral Smear to Check for Malarial Parasite.

RESULTS

- A total of 296 out of 10,414 (2.84%) blood units were found to be infected.

- Distribution of seropositivity among the infected units was follows:

1. HBV: 57.7% (171/296),
2. HCV: 20.6 % (61/296),
3. HIV: 17.9% (53/296) &
4. VDRL: 2 % (6/296)
5. Malaria- None

- Co-infection with HIV+ HBV: 1 % (3/296)
- Co-infection with HIV+ HCV: 0.6 % (2/296)

Table 1. Frequency of transmission

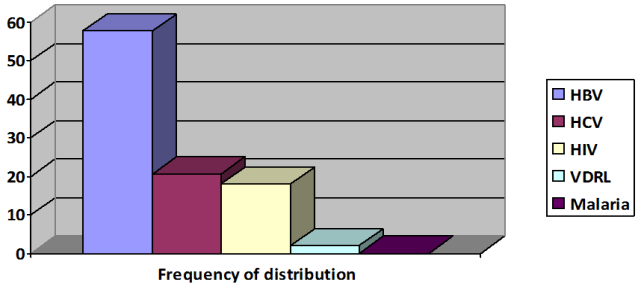
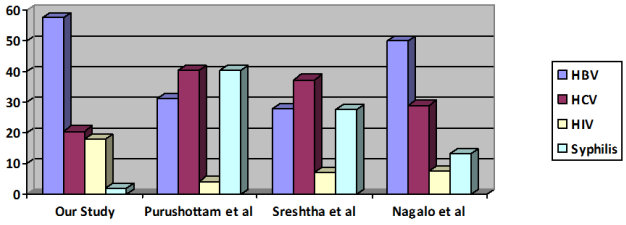


Table 2. Comparison of frequencies with similar studies



DISCUSSION

In our study, we found that among the discarded blood units, the most prevalent infection was hepatitis B caused by hepatitis B virus (HBV). An estimated 257 million people in the world today are living with hepatitis B virus infection (defined as hepatitis B surface antigen positive) (http://www. who.int/bloodsafety/en). 887 000 deaths resulted from HBV infection in 2015, mostly from complications (including cirrhosis and hepatocellular carcinoma). With a high carrier rate of 3%, India has more than 37 million people who are infected. (Puri, 2014) HBV infection can be either acute or chronic. Chronic hepatitis B (CHB) is defined as the persistence of Hepatitis B surface antigen (HbsAg) for six months or more. (http://www.who.int/bloodsafety/en) This is a major public health problem because the infection is often dormant and the patients are asymptomatic. They are unaware of the infection and usually present with advanced disease. Our study showed that 57.7% (171/296) of the discarded units were HbsAg positive. These figures were similar to the study conducted in Burkina Faso where HBV was the most common infection. However, in similar studies conducted by Purushottam *et al* in Western Maharashtra and Sreshtha *et al* in-Nepal, HBV was the second most common infection. Hepatitis C was the second most common infection in our study. Globally, an estimated 71 million people have chronic hepatitis C infection. In India, the viremic prevalence is said to be 0.7% which means about 11 million people are living with the infection. It has been predicted that a significant number of those who are chronically infected will develop cirrhosis or liver cancer. Approximately 399 000 people die each year from hepatitis C, mostly from cirrhosis and hepatocellular carcinoma (http://www.who.int/bloodsafety/en). Hepatitis C virus (HCV), like HBV, can causes both acute and chronic infection. Acute HCV infection is usually asymptomatic and very rarely (if ever) associated with life-threatening disease. Of those infected, approximately 15–45% of will spontaneously clear the infection within 6 months without any treatment. The remaining 55–85% of persons will develop chronic HCV infection. Of those with chronic HCV infection, the risk of cirrhosis of the liver is between 15–30% within 20 years. (http://www.who.int/bloodsafety/en) In our hospital, we found that 20.6% (61/296) of the discarded units tested positive for HCV. This was in accordance with the findings of Nagalo in Burkina Faso (Nagalo *et al*., 2011). HCV was the most common infection in Nepal (Shrestha *et al*., 2009) and Western Maharashtra. (Giri *et al*., 2012) HIV was the third most common infection we encountered. There were approximately 36.7 million people living with HIV at the end of 2016 with 1.8 million people becoming newly infected in 2016 globally (http://www.who.int/ bloodsafety/en). In India alone, the estimated number of people living with HIV is said to be over 2.1 million (2015) which accounts for over 5% of the world's burden. In our study, 17.9 % (53/296) of the infected units were of HIV. In similar studies conducted in rural western Maharashtra, Nepal and Burkina Faso HIV was the least common infection at fourth place. Thus, our study showed a higher percentage of HIV infection among discarded units compared to similar studies.

Syphilis is a sexually transmitted disease caused by the bacterium Treponema pallidum. It is said to cause multi-systemic complications and is associated with increased morbidity and mortality if left untreated. Moreover, syphilis in pregnancy can lead to still birth, low birth weight or vertical transmission of infection and associated congenital anomalies in children. It was the least common infection found in our study accounting for 2% (6/296) of the total discarded samples. However, it was the most common infection in a similar study conducted in Western Maharashtra. It was the third most common infection in studies conducted in Nepal and Burkina Faso, so our study showed a lower percentage of syphilis compared to others. None of the discarded samples in our study tested positive for malaria. This may have been so since a silent infection is unlikely and careful history taking would have eliminated all the donors who had a recent history of malaria. Since ours was a retrospective study, the age, sex and other details of the donors of the discarded blood units could not be procured. Hence, correlation of the infection rates with the above-mentioned variables could not be established.

Conclusion

Infected blood is a major source of transmission of many infections. The discarded blood units in the studies conducted here, have been taken from apparently healthy donors. It is therefore imperative to define strict inclusion and exclusion criteria as well as reliable screening serological tests with high sensitivity and specificity to ensure safe transfusion. Also, since these infections were seen in clinically asymptomatic adults, they may be used as an indicator of the burden of these infections in the community.

REFERENCES

Blood transfusion safety. Available from: http://www.who.int/ bloodsafety/en/.

Giri PA, Deshpande JD, Phalke DB, Karle LB. 2012. Seroprevalence of Transfusion Transmissible Infections Among Voluntary Blood Donors at a Tertiary Care Teaching Hospital in Rural Area of India. *Journal of Family Medicine and Primary Care*, 1(1):48-51.

Makroo RN, Hegde V, Chowdhry M, Bhatia A, Rosamma NL. 2015. Seroprevalence of infectious markers & their trends in blood donors in a hospital based blood bank in north India. *Indian J Med Res*., 142(3): 317–322.

Nagalo MB, Sanou M, Bisseye C, Kaboré MI, Nebie YK, Kienou K, Kiba A, Dahourou H, Ouattara S, Zongo JD, Simporé J. 2011. Seroprevalence of human immunodeficiency virus, hepatitis B and C viruses and syphilis among blood donors in Koudougou (Burkina Faso). *Blood Transfus*, 9:419-24.

Puri P. 2014. Tackling the hepatitis B disease burden in India. *Journal of Clinical and Experimental Hepatology*, (4):312-19.

Shrestha AC, Ghimire P, Tiwari BR, Rajkarnikar M. 2009. Transfusion-transmissible infections among blood donors in Kathmandu, Nepal. *J Infect Dev Ctries*., 3(10):794-7.

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