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RESEARCH ARTICLE

SEROPREVALENCE OF HEPATITIS B, HEPATITIS C, AND HUMAN IMMUNODEFICIENCY VIRUS AMONG DONORS AT DISTRICT HOSPITAL KATHUA, J&K, INDIA

[1,*]Dr. Jamwal, V.S., [2]Dr. Konika Razdan and [3]Pathania, S.S.

[1]Consultant Physician, District Hospital, Kathua, India
[2]Research Scientist I, VRDL, Dept of Microbiology, GMC Jammu, India
[3]Supervisor, Lab Tech. District Hospital, Kathua, India

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ABSTRACT

Blood transfusion is an important mode of transmission of infections to recipients. The aim of the study was to assess the prevalence of transfusion-transmissible infections among blood donors. Donors and recipients were screened for seroprevalence of HIV, HBV and HCV. A total of 5938 persons were tested for HIV, The seroprevalence of HIV was 0.43% in the donors. The seroprevalence of HBV and HCV was 0.27% and 0.17% 1.7% respectively.

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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 and 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 and Cosmetics Rules, 1945 (Central drug standard control Organisation). India has a population of more than 1.2 billion with 5.7 (reduced to 2.5) million Human Immunodeficiency Virus (HIV) positive, 43 million HBV-positive and 15 million HCV-positive people (Giri *et al.,* 2012). The prevalence of HIV, HBV and HCV among Indian blood donors ranges from 0.2-0.5%, 1.09-2.23% and less than 1.02% respectively (Kshetrimayum *et al.,* 2016). Transfusion medicine apart from being important for the treatment of each patient also has a great public health importance (Grgicevic *et al.,* 2000). Discovery of these hazards brought a dramatic change in attitude of physicians and patients about the transfusion of blood (Mujeeb *et al.,* 2000). As per guidelines of National AIDS Control organization (NACO) of India, it is mandatory to test each and every blood unit for HIV, anti HCV, HbsAg, Syphilis and Malaria (Kar, 2009).

Corresponding author: **Dr. Jamwal, V.S.,**
Consultant physician, District hospital, Kathua, India.

India is the second most populous nation in the world is classified as an intermediate Hepatitis B Virus (HBV) endemic (HBsAg carriage 2% - 7%) zone and has the second largest global pool of chronic HBV infections causing death due to chronic hepatitis, cirrhosis liver and hepatocellular carcinoma (Sharma *et al.,* 2014) causing death due to chronic hepatitis, cirrhosis liver and hepatocellular carcinoma (Bhattacharya *et al.,* 2007). Aim of this study is to estimate the seroprevalance of Transfusion Transmitted Infections (TTIs) among the voluntary and relative donors over a period of two years at a District hospital based blood bank in Kathua, J&K, India and to evaluate the trends of TTIs. These observations were compared within the study as well as with the other relevant studies.

MATERIALS AND METHODS

This study was carried out at blood bank, department of Community Medicine, Govt. District Hospital Kathua, J&K, India. Donors were screened with trained personnel after satisfactory answering the donor's questionnaire, their physical examination and hemoglobin (Hb%) estimation. A total of 1937 males, 714 females, 3263 ANC cases and 24 children were screened at ICTC for HIV using Microlisa HIV for HIV 1 and 2. While as, 2893 samples were screened for Hepatitis profile using ELISA kits. 3 ml blood in plain vial and 2 ml blood in EDTA (ethylene diamine tetra acetic acid) vial taken

from the satellite bag. All samples were screened for Hepatitis B surface antigen (HBsAg), Human immunodeficiency virus (HIV), Hepatitis C virus (HCV).

RESULTS

A total of 5938 cases from blood bank were screened for HIV among which 1937 were males, 714 were females, 3263 were from ANC and 24 were children. While as, 2893 samples were screened for Hepatitis profile. Among that 15 males (0.7%), 6 females (0.8%), 3 ANC (0.091%) and 2 children (8.3%) were found to be HIV positive (Fig I). Among, 2893 samples for Hepatitis screening 13 were found to be positive where in 8 were positive for Hepatitis B surface antigen (0.27%) while as 5 were found to be positive for HCV (0.17%). The most commonage group is being 30-40 years. The results of seropostive samples for HBsAg, HCV and HIV VDRL shown in Fig. 1 and 2. Hence this study was carried out to highlight the importance of screening among blood donors. The seropostive cases were confidentially and informed to take a necessary treatment. The infected samples are discarded as per the biological rule.

DISCUSSION

Though the risk of transmission of infection is reduced by vigorous screening of donor and donated blood, the risk remains. WHO report states that viral dose of HIV transmission through blood is so large that one HIV positive transfusion leads to death, on an average, after two years in children and after three to five years in adults (Deshpande *et al.,* 2012). It is observed that, those HIV infected individuals who are co-infected with hepatitis viruses display rapid progression to severe liver disease and have an increased risk of hepatotoxicity associated with antiretroviral therapy (Sanjiv *et al.,* 2013). In India the overall rate of infection with HBV and HCV varies from 1-6% (Kumari *et al.,* 2017). In our study, the seroprevalence of HBsAg was 0.27% in total blood donors while in another study by Arora *et al.,* (2018) 0.3% of HBsAg seroprevelance was reported. On the contrary studies done by Adhikhari *et al.,* (2010), Arora *et al.,* (2010) and Bhattacharya *et al.,*(2007) depicted a seroprevalence of 0.78%, 1.2% and 1.46% respectively. The prevalence of HCV was found to be 0.17% in present study. Garg *et al.,* (2001) reported HCV seroprevalence of 0.28% while Panda *et al.,* (2008) depicted a seroprevelance of 1.98%. India is the second largest home of HIV and has witnessed sharp increase in HIV/AIDS cases and transfusion-related HIV/AIDS has gone down from 16% - end November 1994 to 3% - end November 2002 due to compulsory blood screening for HIV for over a decade (national reports). From a window period donor, the risk of acquiring HIV based on HIV antibody testing has been reported to be 1 in 4 93 000 units transfused in the US (Das *et al.,* 2011). The report of National AIDS control organization showed a considerable increase in HIV prevalence in the year 2005 in antenatal clinic (0.5 - 0.84%) and sexually transmitted diseases clinic (0.8 - 2.16%) from the state of West Bengal, whereas adult HIV prevalence in the rest of the country was comparable with the previous years (http://www.nacoonline. org) Seropositivity for HIV (0.43%) in this study was lower than the studies reported from other parts of India (Panda *et al.,* 2008). Sonwane *et al.,* (2008) showed 2.11% HIV prevalence in rural population of Ambajogai, Meanwhile the National data also suggest higher incidence of HIV in Chennai, Maharashtra, and South India. An increase in HIV incidence from 0.04 to 0.55% was shown in New Delhi between 1989 and 1995, whereas a decreasing trend of HIV incidence (0.81% in 2006, 0.32% in 2007, and 0.53% in 2008, overall 0.51%) was noted in blood donors of Bhopal. Incidence of HIV (0.16-0.18%) in Kerala remained constant from 1990 to 1999. In Chandigarh, HIV seroprevalence was 0.084%. No voluntary blood donors were found to be HIV positive in Haryana (Das *et al.,* 2011).

Conclusion

In the present study TTIs were found to be lower as compared to studies from other parts of the country although surveillance remains a vital aspect in elucidating the actual scenario of the disease burden; immunization, education of high-risk groups and health-care personnel, Proper pre-donation counseling, donor notification and 100% voluntary blood donation are some of the effective control measures.

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