



A STUDY ON PREVALENCE OF HIV AMONG BLOOD DONORS IN A TERTIARY CARE CENTRE OF MADHUBANI DISTRICT OF BIHAR

Pathology

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ABSTRACT

BACKGROUND: India has the second highest HIV population in the world with about 2.5-3.0 million cases. HIV-2 cases among general and blood donor population have also been reported mostly from west and south India. **AIMS & OBJECTIVE:** To determine the prevalence and trend of blood borne infection namely Human Immunodeficiency Virus (HIV) among blood donors donating blood in a tertiary care hospital of Madhubani District of Bihar, India. **METHODS AND MATERIALS:** The study was conducted in the blood bank of Madhubani Medical College, Madhubani, Bihar after obtaining the institutional and ethical committee clearance. Total 115 donors attending blood bank were included in the study. All the donor samples were screened for detection of antibodies for human immune deficiency virus by micro well Enzyme Linked Immune Sorbent Assay (ELISA) method. The seroprevalence of human immune deficiency virus infection among the donors was determined over a period of two years since November 2019 to October 2021. **RESULTS:** Out of total 115 blood donors included in the study, replacement donor were 12 (13.8%) while voluntary donor were 103 (89.5%). In the duration of two years study period 80 cases (69.5%) were reactive to HIV. Out of total 115 blood donors included in the study, maximum cases i.e. 18 (15.6%) cases were found to be positive for HIV infection in year 2020. infection. Out of 115 blood donors, voluntary donors are more as compared to the replacement donors. Number of HIV positive patients was found to more voluntary donors as compared to the replacement donor. **CONCLUSION:** Blood transfusion is a significant route of transmission of infectious diseases in which HIV infection is lethal. report states that the viral dose in HIV transmission through blood is so large that one HIV positive transfusion leads to death.

KEYWORDS

Human immunodeficiency virus, Transfusion transmissible infections, Donor screening and prevalence

INTRODUCTION:

According to the United Nations Joint Program on HIV/AIDS (UNAIDS), at the end of 2010, an estimated 34 million people with AIDS living within the world [1]. The highest number of patients (22.9 million) is reported from sub-Saharan Africa (31.6-35.2 million) [2]. India harbors the third largest number of HIV infected individuals in the world [3]. Several States in India have now reported the presence of HIV-2 after the first case was reported from Mumbai in 1991 [4].

Blood is a scarce, but lifesaving resource. At the same time, unsafe transfusion practice also puts millions of people at risk of Transfusion Transmissible Infections (TTIs). In India, the main causes of blood for transfusion are voluntary donors and replacement donors. A voluntary blood donor purposely donates blood without looking for any compensation whereas a replacement donor is demanded to donate blood by the patient or his attendants [5,6]. The transfusion of blood and blood products is an essential part of patient care and sometimes the only option for survival. When used correctly, not only it saves lives and improves health but also support complex medical and surgical procedures including transplantation. The blood transfusion improves the life expectancy and quality of life of patients suffering from a wide spectrum of life-threatening inherited disorders such as hemophilia, thalassemia and acquired conditions, such as, cancer and traumatic thalassemia. However, it also carries a potential risk of complications and transfusion related infections. The risk of TTIs can be minimized by safety measures in blood collection, processing and testing [7]. In India, screening of every unit of donated blood for TTIs is made mandatory by the government. Every unit of the donated blood must be screened for Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), HIV, malaria and syphilis in all blood banks [8]. Despite strict donor screening, the difficulties of 'window period', false-negative results, frequency of asymptomatic carriers, genetic variability in viral strains and technical errors remains the area of concern [9]. carriers, genetic variability in viral strains and technical errors remains the area of concern [9].

According to a report on assessment of blood banks in India 2016, the seropositivity of TTI among blood donors was 0.14% for HIV, 0.34% for Hepatitis C, 0.87% for Hepatitis-B, 0.17% for Syphilis and 0.06% for Malaria. However, there is a huge variation between states. The HIV seroprevalence among blood donors was 0.12% in Haryana [10]. The adult (15-49 years) HIV prevalence in India was estimated as 0.22% (0.17-0.29%) in 2020; with 0.23% and 0.20% among males and females respectively while Haryana had an estimated adult HIV

prevalence in the range of 0.20-0.21% [11]. The risk of transfusion transmission of the HIV viruses may be alarming due to high seroprevalence of HIV among blood donors who represent general population. Assessment of statistics on the frequency of TTIs like HIV among blood donors allows a calculation of the approximately precise estimation of risk of HIV which aids in the formation of long term policies to develop public health and to avoid spreading of these diseases in the overall population [12]. The present study was undertaken to determine the prevalence and trend of HIV infection among blood donors in a tertiary care hospital of Madhubani District of Bihar, India.

AIMS AND OBJECTIVE:

To determine the prevalence and trend of blood borne infection namely Human Immunodeficiency Virus (HIV) among blood donors donating blood in a tertiary care hospital of Madhubani District of Bihar, India.

MATERIAL AND METHODS:

STUDY DURATION:-

From November 2019 to October 2021

INCLUSION CRITERIA:

- All the blood donors were included in the study.

EXCLUSION CRITERIA

- Individuals who were excluded were with age <18 years.
- Weight <50 kilograms, hemoglobin level <12 gram/dl
- History of recent medications,
- History of blood transfusion, within <3 months duration,
- History of recent illness like malaria, typhoid etc.,
- History of long term illness like tuberculosis,
- History of allergic reactions,
- History of significant medical and surgical interventions and also pregnant and lactating women.

METHODOLOGY

The study was conducted in the blood bank, Madhubani Medical College, Madhubani and Hospital, Madhubani, Bihar after obtaining the institutional and ethical committee clearance. Total 115 donors attending blood bank were included in the study. All the donor samples were screened for detection of antibodies for human immune deficiency virus by micro well Enzyme Linked Immune Sorbent Assay (ELISA) method. The seroprevalence of human immune deficiency virus infection among the donors was determined over a period of two

years since November 2019 to October 2021. The prevalence rate of human immune deficiency virus among blood donors differs between countries and regions depending on several factors such as the general human immune deficiency virus prevalence, education of the public regarding blood donation, the selection of donors and pre-donation screening. Name, age (22-60 years), Sex and contact number were recorded for each donor, and a unique identification number was given to the donors. Detailed history of immunization was taken. Weight, pulse, blood pressure and temperature were recorded for each patient. A written informed consent was taken from each patient before the blood donation. Proper sterilization and other precautions were taken during the blood collection and blood units were stored by appropriate methods. After collection all samples were screened for Human Immunodeficiency Virus by microwell ELISA to detect antibodies against HIV in plasma.

STATISTICAL ANALYSIS:

Collected data were entered in the Microsoft excel spreadsheet, coded appropriately and later cleaned for any possible errors. Analysis was carried out using Statistical Package for the Social Sciences (SPSS) for windows version 20.0, and online Graph Pad software (Prism 5 for windows) version 5.01. Normally distributed data were presented as means and standard deviation and categorical data were expressed as frequency.

RESULT:

Out of total 115 blood donors included in the study, replacement donor were 12 (13.8%) while voluntary donor were 103 (89.5%). In the duration of two years study period 80 cases (69.5%) were reactive to HIV. Out of total 115 blood donors included in the study, maximum cases i.e. 18 (15.6%) cases were found to be positive for HIV infection in year 2020. infection. Out of 115 blood donors, voluntary donors are more as compared to the replacement donors. Number of HIV positive patients was found to more voluntary donors as compared to the replacement donor.

DISCUSSION:

The first documented HIV infection in India was among a cohort of sex workers in the southern State of Tamil Nadu, in 1986 [13,14]. The virus since then has been spreading rapidly across the country. States with a high prevalence of HIV include Maharashtra, Tamil Nadu, Karnataka, Andhra Pradesh, Manipur, and Nagaland. Within these high-prevalence areas, the HIV epidemic reflects the diverse social, cultural, religious, and sexual practices [15,16]. There are "hot spots," where commercial sex work is common, such as in coastal Andhra Pradesh, northern Karnataka, and southern Maharashtra. Blood transfusion is a significant route of transmission of infectious diseases in which HIV infection is lethal. The seroprevalence of HIV among blood donors in this study was very low. Sonawane et al, reported a prevalence of 1.83% in rural population [17].

CONCLUSION:

The seroprevalence was more in replacement donors as compared to voluntary donors. The present study concludes that the most effective way of adequate supply of safe blood is to motivate voluntary blood donors by conducting voluntary blood donation camp. Proper implementation of donor selection criteria, blood donation guidelines could improve transmission of infection to the recipient.

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