

SEROPREVALENCE OF HIV AND HBsAg AMONGST BLOOD DONORS IN A TERTIARY CARE HOSPITAL, CHHATTISGARH.

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Abstract

INTRODUCTION: India being the second highly populated nation in the world. HIV/AIDS has acquired pandemic proportion in the world. Estimate by WHO for current infection rate in Asia. India has the third largest HIV epidemic in the world. HIV prevalence in the age group 15-49 yrs was an estimate of 0.2%. India has been classified as an intermediate in the Hepatitis B Virus (HBV) endemic (HBsAg carriage 2-7%) zone with the second largest global pool of chronic HBV infections. Safety assessment of the blood supply, the quality of screening measures and the risk of transfusion transmitted infectious diseases (TTIs) in any country can be estimated by scrutinizing the files of blood donors. After the introduction of the blood banks and improved storage facilities, it became more extensively used. Blood is one of the major sources of TTIs like hepatitis B, hepatitis C, HIV, syphilis, and many other blood borne diseases. Disclosure of these threats brought a dramatic change in attitude of physicians and patients about blood transfusion. The objective of this study is to determine the seroprevalence of transfusion transmitted infections amidst voluntary blood donors at a rural tertiary healthcare teaching hospital in Chhattisgarh.

MATERIAL AND METHODS: This retrospective study was carried out in Chandulal Chandrakar Memorial Medical College, Kachandur, Durg. Blood donors were volunteers, or and commercial donors who donated the blood and paid by patients, their families, or friends to replace blood used or expected to be used for patients from the blood bank of the hospital. After proper donation of blood routine screening of blood was carried out according to standard protocol. Laboratory diagnosis of HIV 1 and HIV 2 was carried out by ELISA test. Hepatitis B surface antigen was screened by using ELISA.

RESULTS: A total of 1915 consecutive blood donors' sera were screened at Chandulal Chandrakar Memorial Medical College, blood bank during study period. Of these 1914 were male and 1 female. The mean age of patients was found to be 29.34 years with standard deviation (SD) of 11.65 Years. Among all blood donors in present study, 759(39.63%) were first time donors and 1156(60.37%) were repeated donors. 1 patient was HIV positive in first donation group while 3 (75%) were positive in repeat donation group. 7 (38.9%) were HBsAg positive in in first donation group while 11(61.1%) were positive in repeat donation group. Two patients in first donation group had dual infection of HIV and HBsAg.

CONCLUSION: Seropositivity was high in repeated donors as compared to first time donors. The incidence of HIV is observed to be 0.2% and that of HBsAg is 0.94%. Strict selection of blood donors should be done to avoid transfusion-transmissible infections during the window period.

INTRODUCTION:

Blood transfusion in clinical practice has brought untold benefits to countless individuals, but simultaneously, unsafe transfusion practices carry the risk of transmitting life-threatening Transfusion – Transmissible Infections.

Extremely effective strategies which were used to reduce Transfusion Transmitted Infections (TTI). Availability of safe blood in adequate quantity has become a necessity due to increasing dangers of AIDS and other transmissible infections[1].

India being the second highly populated nation in the world. HIV/AIDS has acquired pandemic proportion in the world. Estimate by WHO for current infection rate in Asia. India has the third largest HIV epidemic in the world. HIV prevalence in the age group 15-49 yrs was an estimate of 0.2%. This percentage is small compared to most other middle-income countries but because of India's huge population (1.3 billion people) this equates to 2.1 million people living with HIV [2]. India has been classified as an intermediate in the Hepatitis B Virus (HBV) endemic (HBsAg carriage 2-7%) zone with the second largest global

pool of chronic HBV infections [3]. Therefore a need has arisen to test for HIV & HBV infection in the surveillance, prevention and screening of donated blood [4].

Safety assessment of the blood supply, the quality of screening measures and the risk of transfusion transmitted infectious diseases (TTIs) in any country can be estimated by scrutinizing the files of blood donors. Donors are to be compulsorily screened for prevalence of serological markers of infectious diseases. Blood transfusion has been performed since 1930 for various indications [5]. Blood Transfusion has been a traditional treatment in various medical and surgical procedures [6]. Transfusion medicine, apart from being instrumental in the medical treatment of each patient, also has global public health importance [7]. After the introduction of the blood banks and improved storage facilities, it became more extensively used [8]. Blood is one of the major sources of TTIs like hepatitis B, hepatitis C, HIV, syphilis, and many other blood borne diseases. Disclosure of these threats brought a dramatic change in attitude of physicians and patients about blood transfusion.

In July 1989, the reports of recurrence of high seroprevalence in commercial blood donors led to mandatory blood screening procedures and blood products for HIV antibodies. This was initiated by the Indian National AIDS Control Origination (NACO) [9, 10]. The objective of this study is to determine the seroprevalence of transfusion transmitted infections amidst voluntary blood donors at a rural tertiary healthcare teaching hospital in Chhattisgarh. This data might give us the insight about disease burden on the society and the basic epidemiology of these diseases in the rural community.

MATERIAL AND METHODS:

This retrospective study was carried out in Chandulal Chandrakar Memorial Medical College, Kachandur, Durg with a period from January 2018 to December 2018. This is a tertiary care hospital located in central India. Blood donors were volunteers, or and commercial donors who donated the blood and paid by patients, their families, or friends to replace blood used or expected to be used for patients from the blood bank of the hospital. After proper donation of blood routine screening of blood was carried out according to standard protocol. Laboratory diagnosis of HIV 1 and HIV 2 was carried out by ELISA test. Hepatitis B surface antigen was screened by using ELISA.

Statistical analysis was done by using SPSS v22 statistical package. Data was entered in Microsoft excel sheet 2013 edition and were cross checked by statistician. Demographic variables were tested for significance using logistic regression. Linear regression was used to assess the statistical significance of trends in seroprevalence of HIV and HbsAg. P value less than 0.05 was considered statistically significant.

RESULTS:

A total of 1915 consecutive blood donors’ sera were screened at Chandulal Chandrakar Memorial Medical College, blood bank during study period. Of these 1914 were male and 1 female. The mean age of patients was found to be 29.34 years with standard deviation (SD) of 11.65 Years. Only 1 female was observed in age group of 30-39 years

Table 1: Demographic characteristics of blood donors

Age groups(in years)	Number(N)	Percentage
20 – 29	1156	60.37%
30 – 39	560	29.24%
40 – 49	172	8.98%
50 – 59	27	1.41%
Total	1915	100%

In present study there were 1915 donors in all among which majority (60.37%) of blood donors belonged to age group 20 – 29. About 29.24% were from age group 30 – 39, followed by 8.98% donors between 40 – 49 years of age and least (1.14%) of blood donors were from age group 50-59.

Table 2: Sex-wise distribution of blood donors

Gender	N (%)
Male	1914 (99.94%)
Female	1 (0.05%)

Among all 1915 blood donors in this study, 1914 were male donors while only one donor was female.

Table 3: Frequency of blood donations

Frequency	N (%)	HIV (%) reactive	HBsAg (%) reactive
First Donation	759(39.63%)	1 (25%)	7(38.9%)
Second or more Donation	1156(60.37%)	3 (75%)	11(61.1%)

Among all blood donors in present study, 759(39.63%) were first time donors and 1156(60.37%) were repeated donors. 1 patient was HIV positive in first donation group while 3 (75%) were positive in repeat donation group. 7 (38.9%) were HBsAg positive in in first donation group while 11(61.1%) were positive in repeat donation group. Two patients in first donation group had dual infection of HIV and HBsAg.

Table 4: HIV and HBsAg positivity in donors

Age groups(in years)	HIV (%)	HBsAg (%)
20 – 29	1 (25%)	8(44.4%)
30 – 39	2(50%)	7(38.9%)
40 – 49	1(25%)	3(16.7%)
50 – 59	0(0%)	0(0%)
Total	4(100%)	18(100%)

In present study, 4 among 1915 donors were HIV positive whereas 18 donors were HBsAg positive. The incidence of HIV is observed 0.2% and that of HBsAg is 0.94%.

DISCUSSION

Blood transfusion is one of the most important lifesaving technique in modern medicine. If the safe blood supply is not considered, it can be life-threatening. However, the blood has its potential risks causing serious side effects in the recipients and blood borne infections by bacteria, viruses and parasites can be transmitted through blood transfusions [11].

In our study 1914 donors were male and only 1 female. The mean age of patients was found to be 29.34 years with standard deviation (SD) of 11.65 Years. Only 1 female donor was in age group of 30-39 years. Pallavi P. et al. observed that the majority (97.87%) of the donors were males [12]. In a study by Osei E et al similar results were observed in which total of 576 blood donors were screened in 2014, out of which 520 (90%) were males and the 56 (10%) were females [13]. Another study in India by Chandekar S A et al. out of 76,653 healthy donors, 70,363 (91.79%) were males and 6290 (8.21%) were females [14]. The less percentage of females in our study may be due to low socioeconomic status, child bearing age or may be social taboos.

In this study majority (60.37%) of the blood donors were age group 20 – 29 years. 759(39.63%) were first time donors and 1156(60.37%) were repeated donors. The incidence of HIV is observed 0.2% and that of HBsAg is 0.94%. In a study by Adhikari L et al. [15] out of 3735 donors, 2423 (64.87%) were replacement and 1312 (35.13%) voluntary donors; male donors were 3434 (91.94%) and females were 301 (8.06%) with overall seroprevalence of major blood-borne pathogens (HIV, HBV, HCV and Syphilis) was 1.63%. The sero-positivity of HIV, HBsAg, was 0.32 and 0.78 respectively. In another study of Ethiopia by Tessema, B et al. the overall seroprevalence of HIV and HBV was 3.8% and 4.7% respectively which was higher as compared to our study [16]. In a study of Pallavi et al. it was observed that 39,060

and healthy adult donors were screened and the overall prevalence of HIV and HbsAg, was 0.44, 1.27 respectively [12].

In our study HBV incidence was higher which indicates the carrier state or an active infection in donors. Similar results were observed by Chandekar SA et al [14].

India is second country to South Africa in terms of overall number of people living with HIV. The Indian National AIDS Control Organization (NACO) suggested an overall prevalence of 0.91% (2005) in India with 0.25% in Delhi [17]. There is high prevalence if HIV in western and southern part of India [18]. Sonwane et al. reported a prevalence of HIV to be 1.83% in rural population [19].

World Health Organization has given the prevalence rate if HBV between 2–7% [17]. Kar et al observed HbsAg prevalence in Punjab blood donors was 1.7% [20]. The seropositivity of HIV and HBV was less among first time donors compared to repeat donors in our study. These results were not in agreement with the previous studies [21, 22]. Selection of donors with low risk of infections and regular laboratory screening is necessary and important part in blood bank to reduce the transfusion transmitted infections.

CONCLUSION

Our study showed that almost all donors were male. Seropositivity was high in repeated donors as compared to first time donors. The incidence of HIV is observed to be 0.2% and that of HBsAg is 0.94%. Transfusion-transmissible infections during the window period still pose a threat to blood safety. Therefore, strict selection of blood donors should be done.

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