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Original research article

Analysis of the seroprevalence of HIV, HBsAg and HCV infections among blood donors in tertiary care hospital

[1]Dr. NSVithalrao,[2]Dr. DKalyani

[1]Principal/Additional Director, Siddhartha Medical College, Vijayawada, Andhra Pradesh, India

[2]Associate Professor, Department of Pathology, Siddhartha Medical College, Vijayawada, Andhra Pradesh, India

Corresponding Author:

Dr. D. Kalyani (dukkipati29@gmail.com)

Abstract

Aims: Transfusion of blood is a significant method of infecting recipients. Analysis of the seroprevalence of HIV, HBsAg, and HCV in the blood donors was the study's main objective.

Materials and Methods: From January 2020 to December 2022, blood donors who came to the Siddhartha Medical College blood bank in Vijayawada were all studied. Each case's donor information was recorded, including the seropositivity for HIV, HBsAgand HCV. The donors' 19753 blood units were examined for the presence of HIV, HBsAgand HCV.

Results: Among all blood donors, the seroprevalence of HIV, HBsAgand HCV was 0.24%, 0.75% and 0.06%, respectively.

Conclusion: Among blood donors, the prevalence of HBsAg was higher than that of HIV. Raising awareness, educating the public, promoting voluntary blood drives through various organizations, and enforcing strict donor selection criteria in accordance with the National AIDS Control Organization's recommendations for blood banks are all crucial steps to reducing the spread of transfusion-transmissible infections.

Keywords: Transfusion, transmissible,seroprevalence, HIV,HBsAg, HCV

Introduction

Concerns about infectious disease transmission through donated blood are raised in order to give blood with transfusion safety measures. Transfusion-induced transmissible infections like HIV, hepatitis, syphilis, malaria, etc., as well as other viral infections such the Epstein-Barr virus, cytomegalovirus and herpes, are all possible risks associated with blood transfusion [1]. The transfusion-induced spread of hazardous agents is further facilitated by clerical mistakes such as the release of ineligible blood units, the unintentional transfusion of autologous blood to a different recipient (autologous blood may include infectious illnesses), and mistakes in testing [2]. The current study's objectives were to evaluate the level of blood safety and analyse the seroprevalence of HIV, HBV and HCV.

Materials andMethods

The donors who participated in this study were those who visited the Siddhartha Medical College blood bank in Vijayawada. The information, which included the serological diagnostic, was gathered from donor registers. The prevalence of HBsAg, HCV and HIV infections was evaluated.

This study comprised all blood donors, including substitute as well as volunteer donors, who visited the Siddhartha Medical College blood bank in Vijayawada over a three-year period (January 2020-December 2022). This study did not accept donors who had a history of hepatitis or other chronic illnesses. Clinical information was recorded for each instance, including haemoglobin levels more than 12 g/dL for both genders and weights larger than 50 kg in all cases.

Results

Over a three-year period, 19753 blood units were obtained from voluntary donors, family members, and substitute donors (January 2020 to December 2022). Table 1 displayed the total amount of blood units gathered annually. Seropositivity for HIV, HBsAgand HCV are shown in Table 2. The distribution of HIV, HBsAgand HCV positive by year is shown in Table 3. HCV seropositivity was 12 (0.06%), while HIV and HBsAg seropositivity were 48 (0.24%) and 150 (0.75%), respectively.

Table1: Numberofblood unitscollectedduringthree years

Year	Totalnumber of blood units collected	Percentage
2020	5837	29.5%
2021	6903	35%
2022	7013	35.5%
Total	19753	100%

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Table2: Totalseropositivityamongdonors

Total no.of blood units collected	Total number of positivecases			Total seropositivity
	HIV	HBsAg	HCV	210
19753	48(0.24%)	150(0.75%)	12(0.06%)	1.06%

Table3: Yearwisedistribution ofseropositivityofHIV,HBsAg&HCV

Year	Total no.of blood unitscollected	HIVpositive	HBsAg positive	HCVpositive
2020	5837	10(0.17%)	27(0.46%)	-
2021	6903	12(0.17%)	38(0.55%)	6(0.08%)
2022	7013	16(0.22%)	50(0.71%)	12(0.17%)

Discussion

Although there is a chance that blood transfusions will play a substantial role in the spread of an infection, the danger can be minimised by rigorously screening blood donors. Nearly all cases of HIV acquired through blood transfusions [1]. The estimated incidence of transfusion-induced transmission of HIV, HBsAgand HCV is relatively low, according to recent research conducted in the west [3]. HIV incidence was 0.24%, HBsAg was 0.75%and HCV was 0.06% in the current study. The overall infection incidence was 1.06%.

According to this report, HIV infection is present in 0.24% of people. In other investigations, seropositivity for HIV was found to be 0.5% [3], 0.3% [1]and 0% [4]. According to data from the Karnataka State AIDS Prevention Society, the state's HIV incidence is 0.5%.

In this study, the seroprevalence of HBsAg was 0.75%, while it was 2.9% [3], 1.7% [1]and 6% [7] in several other investigations. Due to asymptomatic carriers, HBsAg is more prevalent than other infectious illnesses. Compared to HBsAg, HIV is less frequent. Furthermore, despite a negative antibody test, blood donations obtained during the latent phase of illness may still be infectious [8]. The regular blood screening technique can be improved by using nucleic acid testing (NAT), which aids in the detection of very low quantities of viral RNA or DNA that may be present in given blood.

Therefore, it is imperative to establish strategies to combat transfusion-transmissible diseases, including HIV, HBsAg, and HCV. Motivating volunteer blood donors through voluntary blood donation camps is the most efficient technique to guarantee constant supplies of safe blood. To find the infection during the window period, nucleic acid testing (NAT) for HIV, HBsAgand HCV is advised.

Conclusion

Among blood donors, HBsAg seroprevalence was higher than HIV seroprevalence. To lessen the spread of transfusion-transmissible infections, it's important to raise awareness, educate people, promote voluntary blood donation drives through various organisations, and implement strict donor selection criteria in accordance with the National AIDS Control Organization's recommendations for blood banks.

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