

SERO PREVALENCE OF TRANSFUSION TRANSMITTED INFECTIONS (TTI) IN VOLUNTARY BLOOD DONORS IN A TERTIARY CARE HOSPITAL AT SRINAGAR

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Abstract

Introduction: Blood transfusion plays an vital role in patients management and is live saving in my instances. it plays a pivotal role as a specialized modality of treatment and saves millions of lives worldwide each year and reduces morbidity. Stringent screening of blood not only ensure safe supply of blood and blood products, but also gives us idea about prevalence of ttis among general population

Objective: to determine the seroprevalance of tti among blood donors in lalded hospital

Materials and methods: A retrospective study was carried out over a period of 3 years from January 2017 to December 2019.serum samples were screened for hepatitis B surface antigen ,antibodies to human immunodeficiency virus Type 1 and 2 ,hepatitis c virus and syphilis in department of transfusion medicine was carried out

Result: The result shows that 55 (3.72%) of the blood donors had TTIs. The prevalence of Hepatitis B, Hepatitis C, Malaria, Syphilis and Human immunodeficiency viruses (HIV), was found to be 31(0.21%), 23 (0.15%), 01 (0.0006%), 01 (0.006%) and 02 (0.0.23%) respectively. None were positive for malaria.

Conclusion: Transfusion Transmittable Infections pose a threat to patients admitted in any health care facility and if not carefully screened for will cause significant morbidity. Careful screening of all donor blood units in the blood bank of a hospital is absolutely necessary to prevent any untoward incidence of TTI in patients admitted to a health care facility

Keywords: Transfusion, Sero-Prevalence, Donors, Transfusion Transmissible Infections.

Introduction

Transfusion of blood and its components is one of the most essential lifesaving procedure in the integrated part of health care delivery system. Nevertheless, the risk of blood transfusion transmitted infections (TTIs) poses a serious public health problem if proper screening of donated blood is not done. Globally, prevalent TTIs are mainly caused by Human immunodeficiency virus (HIV), Hepatitis B virus (HBV), Hepatitis C virus (HCV), Treponemapallidum and Malaria parasite which may be present in the blood being transfused^[1]. Despite improved donor screening, factors such as the window period, asymptomatic carriers, concealing of medical history by paid blood donors and emergence of newer transmissible pathogens, pose a serious challenge to blood safety^[2]. Hence, this study was designed to provide data on the overall seroprevalence of major TTIs in blood donors. This analysis will help to emphasize importance of screening among blood donors and to create awareness for the adoption of better screening practices for TTI.

Materials and Methods

The present study was conducted by the Department of haematology and transfusion medicine at Lal Ded Hospital, Jammu and Kashmir, from January 2017 to December 2019. The eligibility criteria for the donors was age between 18-60 years, with a minimum weight of 45 kg, 12.5gm / dl hemoglobin level, with no history of HIV, HBV or HCV or any other sexually transmitted infections. Careful physical and clinical history of all the donors was taken according to the blood donors selection criteria by NACO. All the donors were counseled regarding the risk behavior and a registration form was filled wherein basic information regarding age, sex, body weight, occupation, number of previous donations was noted. All samples were screened for HIV, HBsAg, HCV, syphilis and malaria. HBsAg and Anti- HCV antibodies were tested by 3rd generation Hepalisa and Microlisa kits supplied by Mitra & Co. Pvt. Ltd. and HIV 1 & 2 antibodies were tested by using 4th generation Microlisa kits by Mitra & Co. Pvt. Ltd. (Specific for both HIVAg+Ab). Syphilis was tested by RPR Carbong

Ag Kits supplied by Reckon Diagnostics Pvt. Ltd.) and Malaria was tested by rapid malaria antigen kits followed by slide examination for confirmation. The kits used were all NACO approved and standard protocols were followed.

Results

A total number of 14600 blood donations were taken during the period of January 2017 to December 2019 at department of Haematology and Transfusion medicine at Lal Ded Hospital, Jammu and Kashmir. From our results, 18 cases were found positive for various TTIs in a total of 5000 collections for year 2017 with a percentage of 0.36 %. 20 cases were found to be positive with different TTIs in a total collection of 5100 for year 2018 with a percentage of

0.39%. Similarly 18 cases were found positive for various TTIs in a total of 4500 collections for year 2019 with a percentage of 0.4%. Taken together, for a three-year period, a total of 56 positive cases were reported in a total collection of 14600, giving overall three-year percentage of 0.38 %. The data is also depicted in Table 1. In our study, the highest percentage of 0.21% was contributed by HBV, followed 0.15% by HCV, 0.006% by HIV positive cases, 0.006 % by syphilis & 0.00 % by Malaria (Table 2).. None were positive for malaria.

Of the 52 positive TTIs, 31 (0.21%) were found to be the carriers of HBV, 23(0.15%) were positive for HCV, 1 (0.006%) were positive for HIV and 1 (0.006%) had Syphilis. none were positive for malaria. (Table 3)

Table 2: Incidence of HIV, HBsAg, HCV and syphilis in blood donor

| Year | No of blood units screened | TTI positive cases | %age of positive cases |
|-------|----------------------------|--------------------|------------------------|
| 2017 | 5000 | 18 | 0.36% |
| 2018 | 5100 | 20 | 0.39% |
| 2019 | 4500 | 18 | 0.4% |
| Total | 14600 | 56 | 0.38% |

Table 2: Seroprevalance of different TTIs among blood donors for a three year period

| Type of TTIS | Total TTIS positive cases in two years | Total no of blood units screened in three year | %age of positive cases |
|--------------|--|--|------------------------|
| HBV | 31 | 14600 | 0.21% |
| HCV | 23 | 14600 | 0.15% |
| HIV | 1 | 14600 | 0.006% |
| Malaria | 0 | 14600 | 0.006% |
| Syphilis | 1 | 14600 | 0.006% |

Table 3: HBV, HCV, HIV, malaria and syphilis prevalence among study population year wise

| TTIS | 2017 | 2018 | 2019 | Total |
|----------|------------|-----------|-----------|------------|
| HBV | 10(0.2%) | 12(0.23%) | 9(0.2%) | 31(0.21%) |
| HCV | 8(0.16%) | 8(0.15%) | 7(0.15%) | 23(0.15%) |
| HIV | 00(0.00%) | 00(0.00%) | 1(0.02%) | 01(0.006%) |
| Malaria | 00(0.00%) | 00(0.00%) | 00(0.00%) | 00(0.00%) |
| Syphilis | 00(0.00%) | 00(0.00%) | 1(0.02%) | 01(0.006%) |
| Total | 18 (0.36%) | 20(0.39%) | 18(0.4%) | 56(0.38%) |

Discussion

Blood transfusion plays a vital role in the delivery of good health care to patients in hospitals, and can be a life saving measure in many settings. However, it carries a risk of transmitting very dangerous diseases such as HIV, HBV, HCV, syphilis and malaria.^{3,4}

The incidence of TTI diseases in our study was: HBsAg: 0.21%; HCV: 0.15%, Syphilis:0.006% and HIV: 0.006% which was comparable to the results of other studies

The present study revealed a sero prevalence of 0.21 % of HBsAg and 0.15 % of HCV, which was far less than the study conducted by Giri et al 5, Chatteraj et al 6, Kaur et al 7, and Singh B et al 8. Variable results of 0.66% by Gupta et al 9 2.45% by Choudhary et al 10, 3.44% by Garg et al

11, 5.86% by Mumtaz et al 12, 2.5% by Dessie 13 have also been reported.

In our study, we found the prevalence of HIV to be 0.28 %, while in a study by Giriet al 5, the prevalence was found to be 0.07%, while Gupta et al 9 reported 0.084% and Tiwari et al 14 reported 0.054%, which were lower compared to our results. A prevalence of 0.26% was reported by Kaur et al 7 and 0.47% by Garg et al. 11 A prevalence of 0.10 % was reported by Mumtaz et al 15 from a study in Pakistan. Around the world, in the African countries, the prevalence was far higher, with 3.8% in Ethiopia 16 and 11.7% in Tanzania.

The present study revealed a seroprevalance of 0.006 % of syphilis which was low compared to the study by Giri et al 5 (0.07%), Gupta et al (0.85%) 9 and Dessie et al (1.2%).

13 There were no cases of malaria among the donors in the period under study bringing the prevalence to 0.0 %

Conclusion

To conclude, 1% of healthy donors are seropositive for TTI in this study and reveal the danger of transmitting through blood transfusion. HBV is the commonest TTI among apparently healthy blood donors, which is followed by HCV. Implementation of donor selection criteria should be strict and proper. To minimize transfusion transmitted infections and provide safer blood and blood products, highly generation kits and newer strategies are to be adopted.

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