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SCREENING OF COMMON TTIS IN THE BLOOD BANK OF A TERTIARY CARE CENTRE- A FIVE YEARS RETROSPECTIVE STUDY.

Deka R Associate Professor, Department of Pathology, JMCH, Jorhat, Assam, India.

Gogoi B* Assistant Professor, Department of Pathology, JMCH, Jorhat, Assam, India. *Corresponding Author

Brahma V Assistant Professor, Department of Pathology, JMCH, Jorhat, Assam, India.

ABSTRACT

INTRODUCTION: Transfusion Transmitted infections create a significant burden on health care system. A number of diseases can be transmitted through blood transfusion of infected blood or blood components. Although blood transfusion is a specialised modality of patient management, it is associated with large number of complications too. Some are life threatening. Therefore, meticulous pre- transfusion screening and testing of the blood are mandatory. Infected individuals serve as an asymptomatic reservoir and a potential source of transmission of TTIs. The objective of this study is to assess the prevalence of TTI among donors in the blood bank of JMCH, Jorhat.

METHOD: This is a retrospective review of the healthy donor records covering the period between January 2013 to December 2017. The samples were screened for HIV, HbsAg, HCV, Syphilis and Malaria. The data were analysed statistically.

RESULT: A total 48,603 samples of blood were screened. In our study the prevalence of HIV, Hepatitis B, Hepatitis C virus, Syphilis and Malaria were 0.31%, 0.62%, 0.48%, 0.54% and 0.03% respectively. By using strict donor criteria and sensitive screening tests the incidence of TTIs may be possible to reduce in our country.

CONCLUSION: All the donors must be screened for TTI, ensuring safe blood supply to the recipients. Establishment of strict guidelines for blood transfusion, strict donor selection criteria and sensitive screening tests, the incidence of TTIs may be reduced.

INTRODUCTION:

Blood donation and blood transfusion is a life shaving procedure. Till date blood has no genuine alternatives or substitutions. But a number of diseases can be transmitted by transfusion of infected blood or blood components. Transmission of infectious diseases still occurs, although policies and strategies are in force in the country like ours. The primary cause of such infection may be inability of the test to detect the disease in the pre -seroconversion or window period of the infection, lack of funds for high cost of the screening tests, immunologically variant viruses, non-seroconversion of the immunodeficient carriers and moreover inadvertent laboratory testing errors.

Transfusion Transmitted Infection is a major threat for all of us- for patients, for consulting doctors and also authority. In this study we aimed at estimation of HIV, HBV, HCV, Syphilis and Malaria among the donors, which will give a disease burden in our country. We also aimed to know the increasing or decreasing trends of transfusion transmitted infection in last five years, from January 2013 to December 2017, in this region.

MATERIALS AND METHODS:

Study design: This study is a hospital based retrospective study. The study was conducted in the blood bank of Jorhat Medical College & Hospital, Jorhat, to evaluate the prevalence of Transfusion Transmitted Infection in blood donors in last few years. The records of blood donors reporting to blood bank from January 2013 to December 2017 were analysed.

Aim and Objectives:

a) Estimation of HIV, HbsAg, HCV, Syphilis and Malaria positivity among the blood donors, reflecting disease burden in our country.
b) To know the increasing or decreasing trends of transfusion transmitted infection in last few years.

The donor forms with details of the donors and the records of the serological tests were well maintained in the blood bank. After complete physical examination of the donor, the venous blood was collected for testing for HBsAg, HIV, HCV, Syphillis & Malaria. Same Kits/Elisa was used for retesting of all seropositive samples for confirmation. The archived results from the blood bank of Jorhat Medical College & Hospital were used for this study with approval of the authorities. The data was analysed using statistical package for the social science software. The prevalence are calculated at a 95% confidence interval and P Value of 0.05 were considered to be significant.

Laboratory Test:

The collected blood units were tested in the TTI laboratory of blood bank. Anti-HIV, Australia Antigen, Anti-HCV were detected using Rapid ELISA (Ebra Lisa, Transasia Bio-medical Ltd.) as per instruction of manufacturer. VDRL and Malaria were tested using RPR kit VDRL and Rapid kit for Malaria (Arkray Health Care Pvt. Ltd.). All the seropositive samples were confirmed by re-testing with the same serological tests in the same centre.

RESULT:

A total of 48,603 blood donors were screened during the study period; out of which 47,950 (98.66%) were male and 653 (1.34%) were female. Among the donations 28,522 (58.69%) were voluntary and 20,081 (41.31%) were replacement donations (Table-A).The result of seropositive samples are shown in Table-B

Table-A : The Sex Ratio and Type of Donation

Sex	Voluntary	Replacement	Total Units	Percentage %
Male	27,931	20,019	47,950	98.66%
Female	591	62	653	1.34%
Total Units Donated	28,522	20,081	48,603	100%

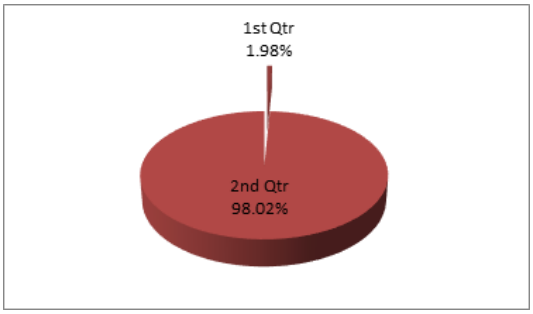
Table-B: The Result of Seropositive Samples

Units	2013	2014	2015	2016	2017	Total in 5yr
HIV	12	31	19	40	48	150
HbsAg	24	61	69	83	65	302
HCV	52	55	25	49	52	233
VDRL	51	115	43	22	33	264

Malaria	02	06	07	01	0	16
Total TTI	141	268	163	195	198	965
Total Donation	7854	9718	10091	10240	10700	48603
Percentage%	**1.79%**	**2.75%**	**1.61%**	**1.90%**	**1.85%**	**1.98%**

A total 48,603 samples of blood were screened. In this study the prevalence of HIV, HBV, HCV, Syphilis and Malaria were 0.31%, 0.62%, 0.48%, 0.54% and 0.03% respectively. The prevalence of TTI in five years is 1.98%. The overall prevalence rate was highest in the year 2014 and lowest in the year 2015.

Fig. 1: Showing the prevalence of TTI



DISCUSSION:

Blood transfusion is an important route of transfusion related Transfusion Transmitted Infection. But due to tremendous success in preventing HIV and other established Transfusion Transmitted virus from entering the blood stream, the risk of TTI has declined significantly in developed nations. But in developing countries like us, the prevalence of TTI is much higher at present time. The prevalence of TTI in five years is 1.98% in our study which is seen between a study from Pakistan, Attaullah et al and Pailor et al from Karnataka, India [1,2]. Among the total of 48,603 donations, 28,522 (58.69%) were voluntary and 20,081 (41.31%) were replacement donations.

Majority of the donors were between 18-35 years in this study. Fernandes et al, Chandekar et al and Pailor et al [3,4] have shown the distribution of similar pattern of age. The prevalence of HIV, HCV, HBV, VDRL and malaria among the donors are more or less similar in last 5 years as that of Attaullah et al 1.4% [5]. Seropositive of HIV is 0.31% in our study which is in contrast to other study, Sawke et al, Arora et al which were observed 0.5% and 0.3% [6,7].

Seropositive of HBsAg in our study was 0.62 % which is very less compared to other studies such as Arora et al [7] and Swake et al that shows seropositivity of 1.7% and 2.9 percent. Increase number of voluntary donations may be cause of lower prevalence. In our country, as a medium endemic region, HBV infection is a special problem. Routine screening for HBsAg may be negative in the window phase of the HBV infection; also in the convalescence phase and in chronic infection of HBV, the viral load is very low.

Seroprevalence of HCV is 0.48% which is less compared to other studies like Kulkarni et al and Farooqi et al [8,9]. In India the test for HCV has been made mandatory since June 2001. In case of syphilis the prevalence of infection is found 0.54% which is in between of other studies like Attaullah et al with 2.26% and Pallabi et al with 0.28% [10]. With associated risk of HIV infection, syphilis also has attained a new potential risk of morbidity and mortality.

Regarding Malaria we have found 0.03% prevalence in our institution. In contrast, most of the other studies such as Arora et al, Chandra et al and Padma Malini et al the prevalence were 0% and 0.012% [11,12]. This region is malaria endemic area and it needs more research to confirm the true risk of Malaria through transfusion.

A steady to low prevalence of Transfusion Transmitted Infection rate in our study may be due to increased number of selection of voluntary donors and following of strict screening criteria. Regarding HIV and HBV prevalence a strict selective criteria for blood donors to exclude those with multiple sexual partner is recommended. Also promotion of more and more voluntary blood donation is to be strictly followed. In developing countries like us, the prevalence of TTI, specially the HIV is much higher at present time.

CONCLUSION:

Despite stringent donor screening and testing practice, safe blood, free from Transfusion Transmitted Infection remains an elusive goal. With implementation of strict donor selective criteria, use of sensitive blood screening tests and establishment of strict guidelines for blood transfusion, it may be possible to reduce the incidence of TTI in the Indian scenario.

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