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STUDY OF TRANSFUSION TRANSMITTED DISEASES IN MULTITRANSFUSED HAEMOPHILIC PATIENTS AT TERTIARY CARE CENTRE

Medicine

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ABSTRACT

Background: Haemophilia is bleeding disorder. It's of two types, Haemophilia A (factor VIII) and Haemophilia B (factor IX) deficiency. For treatment of haemophilia patients should be transfused with purified factor preparation/cryoprecipitate plasma/ fresh frozen plasma/ whole blood. So, risk of acquiring transfusion transmitted infections (TTI) is higher in multi-transfused patients.

Aims and Objective: To study the Seroprevalence of HBV, HCV and HIV infection in multitransfused haemophilic patients.

Methods: In study 100 Haemophilic patients were screened for anti-HIV, HBsAg and anti-HCV by using 3rd generation enzyme linked immunosorbent assay (ELISA).

Results: Out of 100 haemophilic patients 14 were infected with TTI, of these 14 patients, 10 received mixed transfusions, 4 received only factor concentrate in the past with P value <0.01. Seropositivity was 7% for HCV, 5% for HBV and 2% for HIV. 13 patients received more than 50 transfusions.

Conclusion: This study showed that HCV and HBV infections were more frequently found than HIV in multitransfused haemophilic patients

KEYWORDS

Haemophilia, Transfusion transmitted infections, Blood transfusions.

INTRODUCTION:

Haemophilia is X-linked genetic disorder [(1)]. Males are affected most commonly and female are carrier. Patients mostly lack either clotting factor VIII (Haemophilia A) or factor IX (Haemophilia) [(2)]. As a result, they lose large amount of blood due to injuries or spontaneous bleeding. Or treatment of bleeding episode, they are treated with purified factors / fresh frozen plasma/ cryoprecipitate/ Whole blood depending on availability. Because of theses multitransfusions, risk of getting TTI is increased to a greater extent.

METHODS

This cross-sectional study was conducted at tertiary health care hospital during July 2014-June 2016 after the approval of institutional ethics committee. Informed consent was obtained from adult participants, parents or legal guardians of participant's under18 years. 100 Haemophilic patients were enrolled in our study. Detailed clinical history including age, family history, number and types of transfusions were taken. Patients sera were tested for HBsAg, anti-HIV and anti-HCV antibodies by using commercially available 3rd generation ELISA kits for the following TTI markers (i) HBsAg (Erba LisaSEN HBsAg ELISA test kit), (ii) Antibody to HCV (Qualisa Microwell Enzyme Immunoassay), (iii) Anti-HIV I/II (Erba Lisa HIV Gen 3 ELISA test kit).

Statistical analysis: Statistical value was determined by Chi square test with yate's correction. P-value less than 0.05 was considered as significant.

RESULTS:

Amongst 100 patients of haemophilia, 87 patients were of haemophilia A (FVIII), 11 patients were of haemophilia B (FIX) and 2 patients were of mixed type (FVIII & FIX). Maximum number of patients were observed in the age group 11-20years.

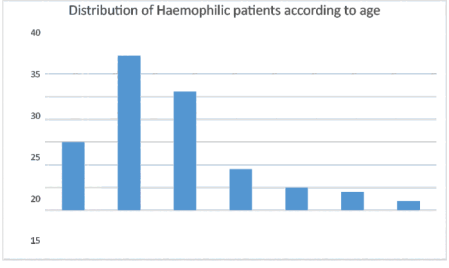

Figure 1: Distribution of Haemophilic patients according to age.

Seroprevalence of transfusion transmitted infections:

Study group	No. of patients	HBs Ag positive	Anti- HCV positive	Anti- HIV positive	Total
Mixed transfusions	26	04	04	02	10
Only factor concentrate transfusion	74	01	03	00	04
total	100	05	07	02	14

Table I: Seroprevalence of transfusion transmitted infections

It is observed from above table that 10 out of 26 mixed transfusion haemophilic patients had acquired TTI and 4 out of 74 patients receive only factor concentrate had acquired TTI.

To above table Chi square test is applied with yate's correction. Chi square test value: 14.82.

P-value<0.01, it is highly significant.So, we can conclude that infection was statically significant in haemophilic patients receiving mixed transfusion than haemophilic patients receiving only factor concentrate. None of the patients, from our study had received recombinant factor.

Seropositivity for HIV infection:

Out of 26 haemophilic patients receiving mixed transfusions 2 patients turn out to be anti-HIV antibody positive and none of the 74 haemophilic patients receiving only factor concentrate turned out to be anti-HIV antibody positive, giving Seroprevalence for anti-HIV antibody as 2%.

Seroprevalence for HCV infection:

Out of 26 haemophilic patients receiving mixed transfusions 4 patients turned out to be anti-HCV antibody positive and out of 74 haemophilic patients receiving only factor concentrate 3 patients turned out to be anti-HCV antibody positive, giving Seroprevalence for anti-HCV antibody positive as 7%.

Seropositivity for Hepatitis B virus infection:

It is seen from above table that out of 26 haemophilic patients receiving mixed transfusions 4 patients turned out to be HBsAg positive and out of 74 haemophilic patients receiving only factor concentrate only one patient turned out to be HBsAg positive, giving Seroprevalence for HBsAg positivity as 5%.

Seroprevalence of transfusion transmitted infections according to number of transfusions:

No.of blood transfusions	No. of patients	HBsAg positive	antiHCV positive	Anti-HIV positive	total
0-50	40	01	00	00	01
51-100	54	01	04	00	05

101-150	04	02	02	01	05
>150	02	01	01	01	03

Table II: Seroprevalence of transfusion transmitted infections according to number of transfusions

It is seen from above table that 13 patients infected with transfusion transmitted diseases had received >50 transfusions and only one patient with transfusion transmitted disease had received <50 transfusions.

DISCUSSION:

Transfusion of blood and blood products faces many challenges. While advances have been dramatic, both in terms of technology and organizational up gradation. But still developing countries like India faces problems like acute shortage, lack of component therapy and safety problems.

HIV Seropositivity in Haemophilic patients [3-11]:

There is enormous risk involved in the transmission of HIV through blood and blood products. So, safety of blood and blood products is very important. At present, risk of transmission of HIV through transfusion is minimal because of many new effective preventive strategies, such as careful selection of donor, avoidance of commercial donors, use of newer laboratory tests have been implem ented. Seroprevalence of Anti-HIV antibody positivity in multitra nsfused haemophilic varies from 00.00-24.3%. In present study Seroprevalence of anti- HIV antibody positivity is 2% in multitransfused haemophilic and is comparable with other studies conducted all over and India [3-11].

HBsAg Seropositivity in haemophilic patients [3-11]:

Hepatitis B virus is one of the major global public health problem. In India, HBsAg prevalence among general population ranges from 2% to 8%, which places India in intermediate HBV endemic zone. Large population and patchy coverage of hepatitis B vaccination in National Immunization programme would further increase in burden of hepatitis B.

Seroprevalence of HBsAg positivity in multitransfused haemophilic varies from 0.043% -24.3%. In present study Seroprevalence of HBsAg positivity is 5% in multitransfused haemophilic and is comparable with other studies conducted all over world and India [3-11].

HCV Seropositivity in Haemophilic patients [3-11]:

Prevalence of HCV among Haemophiliacs depend on the amount and type of product transfused. The high incidence of hepatitis after treatment with clotting factor concentrate form a large pool was first identified by Kasper and Kipinis in 1972.Seroprevalence of Anti-HCV antibody positivity in multitransfused haemophilic varies from 00.435-51.4%. In present study Seroprevalence of anti- HCV antibody positivity is 7% in multitransfused haemophilic and is comparable with other studies conducted all over world and India [3-11].

The reasons for relatively lower prevalence in our study as compared to other studies conducted throughout world probably could be [3-11]:

- The small sample size of our study population
- Better donor selection criteria applied by the blood banks due to better awareness of transfusion transmitted diseases.
- Elimination of professional donors.
- Use of high sensitivity and specificity third generation ELISA test for screening of blood and blood products in blood banks.
- Use of factor concentrate for management of haemophiliac patients, which is virally inactivated.

The reasons for relatively higher prevalence in our study as compared to other studies conducted throughout world probably could be [3-9]:

- In India prevalence of HCV, HIV and HBV are showing increasing trends among blood donors.
- Antigen and antibody screening in blood units reduces but does not eliminate the risk of transmission of TTI.
- Antigen and antibody screening test may be negative in the window phase of infection.
- Antigen and antibody screening test may be negative in convalescence phase and also in chronic infection with low viremia.
- NAT testing is still not in use for screening of blood and blood products at many centres.
- Limited use of factor concentrates for treatment and prophylaxis of haemophilia due to lack of availability and affordability due to high cost at many places other blood products were used.
- Our centre is tertiary health care centre with special unit for Haemophilia and have more chronic and complicated cases, who had received multiple transfusions at multiple centres, explain their high percentage of infection.

CONCLUSION:

Thus, to conclude, multitransfused haemophilic patients receiving mixed transfusions were more frequently infected with any of the TTI viz. HBV, HCV, HIV than haemophilic patients receiving only factor concentrate. Multitransfused with >50 transfusion was showing more prevalence of TTI.So, in future, different mixed transfusions should be strictly prohibited and all patients should receive factor concentrate. None of patients included received.

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