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Original Research Article

HIV Seropositivity among Thalassemic Patients in a Teaching Tertiary Care Hospital

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Abstract: The aim of this study was to ascertain the prevalence of HIV seropositivity among thalassemic patients in a tertiary care teaching centre. Retrospective analysis of data of HIV testing among thalassemia patients from January 2011 to December 2014 at a teaching tertiary care hospital was done. All samples had been tested by serological tests for HIV antibodies as per NACO guidelines. Out of 192 patients tested, only one patient aged 25 years was found sero-reactive for HIV. Our study reveals a low HIV sero-prevalence of 0.52% among thalassemic patients**.** The exact cause of seroconversion in the single HIV sero-reactive patient in the study could not be ascertained as other baseline data was not available. He might have received unscreened blood at some remote or unauthorised centre. Moreover, the case is in sexually active age group so possibility of sexual transmission cannot be ruled out. Since thalassemic patients have to undergo frequent blood investigations, there is a chance of contracting infection by parenteral route. Therefore, at thalassemia clinics all new entrants should be screened for HIV infection and at frequent intervals thereafter to detect early transfusion transmitted infection.
Keywords: HIV, AIDS, Seropositivity, Thalassemia, Blood Transfusion, Transfusion transmitted infections, NACO, prevalence, seropositivity, beta globin

INTRODUCTION

Thalassemias are a group of commonest inherited hemolytic disorders that have in common deficient synthesis of one or more of the globin subunits of normal human haemoglobin. The clinically most significant form of thalassemia is beta thalassemia major with reduced or absent beta chain production. Approximately 150 million people worldwide carry beta thalassemia genes that constitutes three percent of world's population. The carrier frequency of thalassemia traits reported in various groups of Indian population is between 3.5% to 14.9% with high incidence from states of Punjab, Gujarat and West Bengal [1].

Due to absence or reduced normal globin synthesis, thalassemic patients require regular blood transfusion for improved survival. Blood transfusion may have its own side effects including transmission of infectious agents including viruses, bacteria and parasites. Multi-transfused thalassemic patients are prone to get transfusion transmitted diseases that have created additional burden on the health care system [1-3].

Among all the transfusion transmitted infections, the most dreaded is transmission of HIV infection. The first reported case of transfusion associated AIDS was an infant from San Francisco, who died at age of 20 months [4]. This child had received multiple transfusions for anaemia at birth. One of the original blood donors in this case was a gay, who was healthy at the time of donation. Later on that donor also died of AIDS. Thalassemia with HIV is a dreadful amalgamation of hereditary and acquired ailment [1]. Therefore, data was analyzed to know about the prevalence of HIV seropositivity among thalassemic patients in a tertiary care teaching centre.

MATERIAL AND METHODS

Retrospective analysis of the data of blood samples received at the Department of Microbiology, PGIMS, Rohtak from thalassemia clinic from January 2011 to December 2014 was done. The testing of all the samples for detection of anti HIV antibodies was done as per the guidelines of National AIDS Control Organisation (NACO), India. All the samples were first tested for HIV antibodies with test kit of highest sensitivity. Sample reactive with first test were further confirmed with two other HIV tests. Tests with high specificity were used as second and third tests. All the three kits used were based either on different principle or different antigen. The HIV test kits utilized in the laboratory for the testing of these samples were provided by the NACO through Haryana State AIDS Control Society (HSACS).

RESULTS

A total of 192 blood samples from thalassemic patients were received during the four year study period. There were 127 (69.78%) males and 65 (35.71%) females. The major group was formed by patients between 16-25 years of age constituting 51 (69.86%) males and 22 (30.13%) females. Out of 192 patients, only one (0.52%) male patient aged 25 years was sero-reactive for HIV.

Table-1: Age and sex wise distribution of 192 patients from 2011- 2014

Year	2011 (n= 16)		2012 (n=40)		2013 (n=50)		2014(n=86)		Total
Sex / Age (years)	Male	Female	Male	Female	Male	Female	Male	Female	
0-15	1	2	6	1	8	8	28	15	69
16-25	7	1	8	2	18	10	18	9	73
26-50	3	1	13	4	2	1	10	6	40
>50	1	0	3	3	1	2	0	0	10
Total	12	4	30	10	29	21	56	30	192

DISCUSSION

Transfusion transmitted infections (TTIs) have always been a major trouble in multi- transfused patients including thalassemia patients. The probability of transmission of TTIs is connected to the probability of being exposed to the infected units of blood. This probability further depends on the prevalence of carriers among the blood donors in the population and the number of blood units transfused. Thus, the rate of transfusion transmitted infections increases with age in successive years among multi-transfused cases [5]. The magnitude of the problem has always been a flaming topic for various studies and discussions. Our study presents the data of 192 thalassemic patients, who were screened for HIV infection over a period of four years. Only one male thalassemic patient aged 25 years was found to be sero-reactive in the year 2014. Our study reveals a low sero-prevalence of 0.52%**.** Prevalence of HIV sero-positivity among thalassemic patients as reported by various authors is depicted in Table 2.

Table-2: Prevalence of HIV sero-positivity in Thalassemic patients by various authors.

Name of the author	**Year**	**Prevalence**
Present study(Rohtak)	2011-2014	0.52%
Patel *et al* (Ahemdabad) [5]	2013	1.23%
Soni *et al* (Ahemdabad) [6]	2012	0%
Khaled *et al* (Iraq) [7]	2012	0%
Bhavsar *et al* (Gujrat) [8]	2008	9%
Jain *et al* (Ujjain) [9]	2007	1.04%
Kumar *et al* (Chandigarh) [10]	1994	3.58%
VD Charan *et al* (New Delhi) [11]	1993	6.77%
DR Arora *et al* (Rohtak) [12]	1986-1999	1.26%

Since this is a retrospective analysis of the data of the samples received in the Microbiology Department, the probable mode of transmission in our patient could not be ascertained. Incidence of HIV sero-positivity has decreased probably due to mandatory screening of all blood bags since early 1989 for HIV-1 and 1993 for HIV-2 [8]. Similar data has also been reported by various authors from different geographical regions. Since 1992 NACO has been primarily responsible for ensuring provision of safe blood for the country [13]. Window period is still a big problem in blood transfusion departments, where facility of more sensitive tests like p24 antigen detection or HIV viral RNA detection by RT-PCR are not available. The blood transfusion department of our institute met the requirement of blood either through the voluntary blood donation or by replacement donors. Professional blood donors are not accepted. Moreover, mandatory screening of blood bags is being done by fourth generation ELISA in our institution. This single HIV sero-reactive patient might have received unscreened blood at some remote or unauthorised centres, as mandatory screening guidelines are not followed at some centres. Moreover, since the case is in sexually active age group, possibility of sexual transmission cannot be ruled out. Thalassemic patients require frequent haemoglobin testing and several other blood investigations, for which blood is withdrawn with needles, chances of HIV transmission cannot be ruled out if these needles are not adequately sterilized. There is one report of a thalassemic patient becoming seroreactive after six to eight weeks of minor surgery in nursing home. All blood transfusions received by the patient were ELISA non-reactive [11]. Therefore, a chance of acquisition of infection by the patient during surgical procedure could not be ruled out completely. Hence, it is inappropriate to state that HIV seroreactivity in multi-transfused thalassemic patients is certainly due to blood transfusion.

CONCLUSION

Proper screening along with a good questionnaire before blood donation can lead to self-exclusion of high risk donors. At thalassemia clinics, all new entrants should be screened for HIV infection to get base line information and at frequent intervals thereafter to detect HIV sero-conversion at an early stage.

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