

Original Article

Prevalence of HIV Infection in Thalassemic Patients Receiving Blood Transfusion in Chaharmahal-bakhtiari Province in 2006

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ABSTRACT

Background and Objective: Patients with thalassemia major have an abnormality in hemoglobin synthesis and ineffective hematopoiesis and for this reason with respect to disease severity should receive one or more fresh blood unit every 15-30 days. Since transfusion of blood products has been known as one of the routes of HIV infection, therefore, this study was conducted to evaluate the prevalence of HIV infection in thalassemic patients under transfusion in Hajar hospital in 2006.

Materials and Methods: Descriptive strategy of this study was conducted on 73 serum samples from patients with thalassemia major as referrals of Hajar hospital. In this respect, HIV-Ab of the samples was assessed using ELISA method. For each patient, information including age, gender, and date of 1st blood transfusion were collected. The presence or absence of HIV1 and/or HIV2 antibodies was determined with regard to absorption cut-off value. HIV-Positive samples with absorption greater than 0.8 were further studied using PCR.

Results: Out of 73 studied patients, 36 and 37 cases were male and female respectively. The mean age of patients was 10.3 ± 4.9 years. All of the patients had blood transfusion from 1991. The prevalence of HIV-positive in these patients was 0%.

Conclusion: This result can be attributed to probably low incidence of HIV in blood donors and precise screening of blood products by Blood Transfusion Organization.

Key words: Screening, HIV, Blood Transfusion, Thalassemia

Introduction

Beta thalassemia is a congenital anemia due to a defect in beta globulin gene. Although grafting of allogenic hematopoietic cells can effectively treat the condition, but this is not possible in most patients (1). Performing repetitive and regular blood transfusion

in thalassemic patients can increase their survival. However, blood transfusion can increase the risk of transfer of viral infections including HIV (2). The first case of HIV transfer through blood transfusion was reported in 1982 (3). Retrospective studies in Australia before the initiation of screening programs showed that 129 cases have afflicted with AIDS due to

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blood transfusion following medical interventions. The maximum rate of infection was in the year 1982. After that in the year 1983, through performing preventive strategies, an appropriate decrease was observed in HIV incidence(4).

The standard test used in blood transfusion networks is ELISA antibody test. In new ELISA tests, specific and sensitive recombinant antigens are used. In this regard, there is no warranty for its safety. For these tests, an expected risk of 1/920000 has been obtained (5). In USA, this risk varies between 1/39000 and 1/300000 or may be greater (6). The risk at the present time is from 1/450000 to 1/660000 (7). The real risk varies between blood products. For this reason, cryoprecipitates and fresh frozen plasma are procured from those individuals that donate blood on a regular basis. This can reduce the risk of laboratory errors due to lower incidence of disorders like HIV infection in such patients. During the years 1983-1986, 78% of patients with severe hemophilia under VIII factor therapy were infected with HIV in Australia (8). In Iran, screening of blood products was initiated since 1991 in blood banks. The quiescent period for getting positive using ELISA method is about 6-8 weeks after infection. If the infected individual becomes a blood donor within this period, a pseudo-negative result for screening of HIV antibody will be obtained and this can infect blood recipients.

With respect to this fact that thalassemic patients require repetitive blood transfusions and since a relatively large proportion of provincial youths are engaged in business works in Arabic countries within Persian Gulf including Kuwait, therefore, this study was conducted to determine the prevalence of HIV-Ab in thalassemic patients as referrals of Hajar hospital, Shahrekord.

Materials and Methods

The descriptive strategy of this study was conducted on 73 patients with thalassemia with 8 weeks past from their 1st transfusion. The patients were willing to the study and it was that they are informed of the results. For each patient, a questionnaire for information collection including age, gender, and date of 1st transfusion was prepared. Then, 5 ml of blood was collected and serum samples were evaluated for HIV1 and HIV2 antibodies using ELISA test with regard to absorption cut-off value. For this purpose, MEGA kit (USA) was used. HIV-positive samples (4 cases) with absorption greater than 0.8 were further studied using PCR (Sinagen).

Results

Out of 73 studied patients, 36 (49%) and 37 (51%) cases were male and female respectively. The mean age of patients was 10.3 ± 4.9 years. All of the patients had transfusion from the year 1991. The prevalence of HIV-positive in these patients was 0% after performing PCR test on 4 cases being positive initially (Table 1).

Table 1. Age distribution of thalassemic patients in Hajar hospital (Shahrekord, 2006) with regard to HIV infection

Age group	HIV-Negative	HIV-Positive
<5 Years	4	0
5-9 Years	22	0
10-14 Years	13	0
15-19 Years	23	0
>19 Years	11	0
Total	73	0

Discussion

The results of this study showed that none of the 73 studied patients with thalassemia had HIV virus infection. In a study by Al-Sheyyab et al on 143 cases of thalassemia, the prevalence of HIV virus was reported as 0 (9). A similar result was obtained by Tabatabaie et al on patients under hemodialysis in 1996 in Yazd (10). Hemmati et al also reported the same result (11). The incidence of HIV was also obtained as 0 in a study by Tahmasebi et al in Bushehr in 1999 (12). In support of these data, Shariatzadeh et al reported an incidence of 0 for HIV infection in thalassemic patients in Markazi province (13). Lee et al also reported the same result (14). Mollah et al in a study on 152 patients with thalassemia reported its prevalence as 0 (15). Jung et al in a study on 20 thalassemic patients in Denmark found no HIV-positive case that is consistent with our study (16).

In contrast, Sen et al in a study on 203 children with thalassemia found that 8.9% of cases are HIV-positive (17). Kumar et al (1994, Italy) reported that 11.3% of thalassemic children (n = 406) in their study are HIV positive (18). Mossi reported that 2.7% of cases with thalassemia (n = 1305) are HIV-infected (19).

It appears that the most important cause for such controversies is the difference in HIV prevalence in blood

donors from different communities. In USA, its incidence has been 1/60000 and in a study on 50000 blood donors in Iran, its incidence has been 0 (HIV-negative). Another reason for such differences may be the time of study, since the previous studies dates back to one decade ago, at a time that there was no accurate screening test for HIV.

Conclusion

Since every 24 hours, approximately 10000 individuals are infected with HIV and 50% of new cases are inhabitants of Asia and Pacific region, we should not suffice to the results of this study and related high-risk patients should be alternatively evaluated for infections like HIV. Meanwhile, blood donation in our country should be a voluntary action and not an obligatory process. In addition, precise database should be designed for blood donors and have a more accurate medical history from those individuals on their first refer. Furthermore, if it is possible, complementary techniques like PCR may be used as a helpful tool.

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