Editorial

Risk of Transfusion-Transmitted Human T-Cell Lymphotropic Virus-Type I in Latin America

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In a recent publication, G. Schmunis et al presented data from Latin America on blood quality and on important approaches to preventing human immmunodeficiency virus (HIV), acquired immunodeficiency syndrome (AIDS), and other infectious diseases that may be transmitted by blood transfusion.[1] Mass screening between 1987 and 1988 in Peru of blood from more than 90,000 donors highlighted potential problems in the donor population, and it also uncovered inappropriate practices related to the use of blood transfusions.[2] Since then, adequate screening of the blood supply for HIV was implemented and new transfusion-related AIDS cases have been prevented during the past 8 years.

An earlier review assessed blood transfusions and the risks of transmitting HIV, hepatitis B, hepatitis C, syphilis, and Chagas' disease.[1] Another important pathogen that should be considered when discussing blood transfusion in Latin America is human T-cell lymphotropic virus-type I (HTLV-I).

Transfusions with HTLV-I-contaminated whole blood, platelets, or packed red cells infects 50 to 70% of recipients. Transmission rates are highest with recently donated blood (< 1 wk). The virus is not transmitted through blood products such as fresh frozen plasma or cryoprecipitates.

Human T-cell lymphotropic virus-type I infection has been reported at rates as high as 15% among people of Japanese ancestry in Bolivia, Brazil, and Peru.[3,4] Among Latin Americans of African descent, seropositivity rates for HTLV-I have been reported to be 3 to 10%, and among other ethnic groups, such as the Quachuas, 2 to 5%.[5,6] Seropositivity rates of 7 to 25% have been observed among female sex workers; the risk of positivity has been associated with the length of time during which they have engaged in prostitution and with a history of chlamydia or syphilis infection.[7,8] Condom use has been shown to protect against HTLV-I acquisition among registered and clandestine female sex workers in Lima.[7,9] Seropositivity rates of 4 to 14% for HTLV-I have been reported among bisexual or homosexual males and among people with a high number of sexual partners who are treated for sexually transmitted diseases.[6]

Studies conducted among general populations in Caribbean countries have shown that the presence of HTLV-I correlates with age (>40 years), female gender, especially among those of low socioeconomic status, and a history of blood transfusion.[11] In one recent study conducted in 568 asymptomatic women older than 20 years of age who were randomly selected from three Peruvian regions, 2.6% were positive for HTLV-I antibody. The history of blood transfusion was one of the most important factors and was significantly associated with HTLV-I in that 13.6% of people who had received blood transfusions were HTLV-I positive ($P < 0.00002$) compared to 1.2% who had no blood transfusion history.[12]

Human T-cell lymphotropic virus-type I infection has been associated with several diseases, among them, tropical spastic paraparesia (TSP) or HTLV-I-associated myelopathy (HAM); both TSP and HAM have been frequently reported in Colombia, Brazil, Argentina, Chile, and Peru.[13-16] In these cases, 25 to 40% of patients had a history of blood transfusions, similar to the values reported in Martinique and Japan. In 1986, in HAM or TSP patients in Kagoshima, 39% had a history of a blood transfusion, whereas in the control group (without HAM/TSP) only 3.3% had such a history ($P < 0.001$).[17] In these cases, the incubation period was shorter, and there was an early initiation of a progressive and irreversible neurologic pattern. Patients who acquire HTLV-I through nursing and then develop TSP have a longer incubation period of 20 to 30 years. In another series from Japan, 20% (26/129) of TSP or HAM cases had a history of blood transfusion opposed to only 3% (41/1290) in a healthy control group (odds ratio [OR] = 7.7; $P < 0.01$).[18]

Another disease associated with HTLV-I infection is acute T-cell leukemia-lymphoma (ATLL). This association

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also has been reported in Latin American countries.[19] In Peru, 10% of non-Hodgkin's lymphomas are associated with HTLV-I.[20] The influence of a history of blood transfusion is not clear in this disease, and its role has not been demonstrated in ATLL.

Other infections, such as disseminated strongyloidiasis, have been associated with HTLV-I infection. Among patients without other evident risk factors, *Strongyloides stercoralis* hyperinfection syndrome has been associated with HTLV-I in 87% of cases. Of these patients, 33% had a history of blood transfusion, which is significantly higher than among the general population.[21] Several medical syndromes have been associated with HTLV-I with less frequency (e.g., pneumocystis pneumonia, Norwegian scabies, uveitis) but the role of blood transfusions in these cases has not been defined.

Seropositivity rates for HTLV-I among blood donors in Latin America is estimated to be 0.1 to 2%. One early study in Buenos Aires found that only 4 of 12,846 donors were positive; however, eight additional patients were positive by enzyme-linked immunosorbent assay (ELISA) and indeterminant by Western blot.[22] In northern Argentina (Jujuy) the rate recently detected was 0.81% (39/4805).[23] In Sao Paulo, in one early study, HTLV-I positivity of 0.15% in 17,063 donors was detected.[24] Recently, in Bello Horizonte, 689 (1.35%) of 51,135 blood donors were positive.[25] In a national survey in 1995 in Brazil, the overall positivity among donors was 1%.[26]

In trials in Paraguay, Chile, and Cali, Colombia, rates of 1.1% (7/621), 0.7% (7/954), and 0.7% (91/13,000), respectively, were found in healthy blood donors.[27,28]

In Peru, during 1997, Fuentes conducted a survey of the National Program of Blood Banks. In 164 different blood banks, they tested 142,583 donors; 2,068 (1.45%) were positive for HTLV-I at screening, and 1,861 (1.3%) were confirmed positive on re-testing.[29] According to national guidelines, screening for HTLV-1 is mandatory in all Peruvian blood banks.

In the United States, in one trial with 39,898 blood donors, 10 (0.025%) were positive, and because of this low rate, universal screening for HTLV-I has been conducted since 1988. In Japan for all individuals donating whole blood or cellular compounds, the Japanese Red Cross started to systematically screen blood, and after 2 years with these national guidelines, the number of reported patients with HAM/TSP has decreased by 16%.[18] In France and other European countries, blood screening was started in 1991. In developing countries under economic restrictions, a selection of endemic areas, ethnic groups, and populations with high-risk sexual behavior could be made for screening specific populations, to control costs; however, intra-country and inter-country migration supports a more global policy of recommendation of HTLV-I screening, as performed in Japan, the United States, and Europe, where the HTLV-I infection rate is low.

It is evident that each country should be responsible for identifying endemic areas, affected ethnic groups, and regions within its borders where ELISA for HTLV-I should be mandatory. On the basis of updated data on HTLV-I infection, Latin American and Caribbean countries are areas where HTLV-I screening in blood banks is recommended.

With the new highly sensitive ELISA for HTLV-I, it is easy to identify infected donors, but the results need to be confirmed by Western blot before donors are identified as seropositive cases. Screening of all family members to whom transmission has been possible through breast feeding or sexual intercourse is recommended. In family surveys of index cases (strongyloidiasis or TSP with HLTV-I) 20 to 28% of the members infected with HTLV-I were detected (Gotuzzo E. Unpublished data). This screening procedure will avoid new cases and permit an early diagnosis of some HTLV-I-associated diseases.

Consideration should be given to the following:

- Although ELISA tests for screening are sensitive, they are not specific, and produce 2 to 10% false-positive results that require a second test and a Western blot, which makes the system more expensive.
- Important issues are the emotional reactions and counselling required by HTLV-I-seropositive blood donors (only in the cases that are confirmed by Western blot). Usually, people with anxiety or depression attributable to the diagnosis need to receive counselling support for 3 to 5 weeks. The counselling needs to be continuous, with new information regarding ways to reduce transmission provided to stable partners and women of childbearing age, according to each case. Human T-cell lymphotropic virus-type I should be clearly differentiated from HIV.
- The absence of documented available treatment for HTLV-I and the risk of developing a disease during a lifetime of 1 to 4% for TSP and 1 to 2% for ATLL also produces anxiety, especially because the risk factors that trigger the appearance of these diseases are not known. However, an early diagnosis can help in the treatment of HTLV-I-associated diseases, and effective treatment for HTLV-I itself may be available in the future.
- It is important to have policies to prevent the transmission of HTLV-I infection, and it is recommended that discordant partners use condoms.

A special comment should be made for ELISA-positive patients with an indeterminate Western blot. Although some authors do not include these patients in the number of infected, the use of their donated blood should be avoided and these patients should be clinically and serologically studied every 6 months until their final status is defined. One International Reference Center should be

established to follow these cases for a better definition of the outcome of such individuals.

Although more HTLV-I infections are attributable to transmission through breast feeding and sexual intercourse, it is imperative to reduce transmission from blood products. A cost:benefits analysis of screening for HTLV-I in blood donors needs to be done country-by-country. The specter of infecting blood product recipients with a tumor or paraparesia causing virus must be included in this analysis.

In conclusion, the risk of transmission of HTLV-I by transfusion, particulary in Latin America and the Caribbean, makes it important that blood banks screen for HTLV-I.

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