

Renal Data from Asia-Africa

Survey of the Seroprevalence of HTLV I /II in Hemodialysis Patients and Blood Donors in Urmia

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ABSTRACT. Human T lymphocytotropic virus HTLV is a virus from retroviridae family, and more than 20 million people are infected with this virus worldwide. It can cause leukemia/lymphoma in adults, tropical spastic paralysis, HTLV associated myelopathy, spastic paraparesis, tropical myelopathy (HAM/TSP), and some other nervous system diseases. It is transmitted by means of blood products via blood transfusion. In Iran, except the Great Khorasan region, none of blood products undergo screening for HTLV. Immunodeficiency in HD patients, results in in-creased risk of infection. The aim of this study was to determine the prevalence of anti-HTLV-I/II antibody among hemodialysis patients and healthy blood donors in Urmia, Iran. A cross-sectional study was conducted from April 2005 to January 2006 among healthy blood donors and in 2006 among hemodialysis patients. The serum of 2046 blood donors and 95 Hemodialysis patients was checked with enzyme-linked immunosorbent assay (ELISA) for anti HTLV-I/II, and positive cases were confirmed by western blot. Three seropositive cases among 95 hemodialysis patients were detected, and only one of them was confirmed by western blot. Of the healthy blood donors 1910 (93.4%) were males and 136 (6.6%) were females. Serum of 1997 (97.6%) subjects was negative, and 49 (2.6%) cases were positive for HTLV by ELISA. Among the positive cases western blot confirmed only 7 (14.3%) persons as HTLV positive, 37 (75.5%) as negative, and 5 (10.2%) as indeterminate. Among the 7 positive cases 6 (85.6%) were infected with HTLV-I, and only one (14.3%) with HTLV-I /II infection. Total Serologic prevalence of HTLV in healthy blood donors was 0.34%. We conclude that such high serologic prevalence in the population of blood donors in Urmia city, suggests the high probability of transmission through blood transfusion, and therefore screening of blood donors for human T-lymphocyte virus is essential in this region. HD patients should be screened for HTLV and positive subjects should be isolated.

Keywords: Blood donors, Hemodialysis, HTLV, Iran, Immunodeficiency

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Introduction

Human T lymphocytotropic virus (HTLV) is a virus of retroviridae family and it is associated with neoplasms and neuropathies.¹ HTLV is capable of modifying human inherent T-

cells resulting in malignancies of lymphocytes origin. Lymphadenopathy, hepatosplenomegaly, skin lesions, uveitis and hypercalcemia are some clinical manifestations of HTLV infection. This virus has been detected in hairy cell leukemia and adult T cell leukemia (ATL) patients.² Some countries in Caribbean region, southern America, Middle East, Malaysia, tropical places in Africa and south of Japan are endemic places for HTLV in the world.^{1,3,4}

HTLV type II infection has been reported in many cases of granular lymphocytic leukemia and prelymphocytic leukemia.^{1,5,6} The transmission of HTLV is similar to HIV via 3 different routes: sexual contact with infected person, vertical transmission from mother to fetus and via the transfusion of blood and blood products.^{1,7,8} Transmission via plasma transfusion has not been reported yet.⁹ Virus invades leukocytes, for its replication and is an essential factor in transmission and distribution of disease.

Great Khorasan is a highly endemic region for HTLV in Iran with a prevalence of 1.97%.¹⁰ In a recent study in Bushehr province, infection with this virus among frequent blood recipients was reported as 43.1%.

Material and Methods

In our cross-sectional study, we have 2 subgroups: a group of 95 hemodialysis patients at a training hospital in Urmia, Iran (Taleqani Hospital) in 2006, and another of 2046 healthy blood donors in Urmia during a period of ten months from April 2005 to January 2006. In both groups, blood samples were obtained from the study subjects with venipuncture, and the sera were isolated by centrifugation. All the sera were frozen at -20°C and transported to Mashhad in the northeast of Iran, where screening for HTLV is run as a routine test in the management of patients with related complaints and healthy blood donors. HTLV-1 antibody assay on serum samples was done by standard ELISA method (Dia Pro diagnostic bio probe kits made in Italy) in the central lab of blood transfusion organization. Western blot method (Genelab kits) was implemented for

confirmation of some borderline results.

Statistical analysis

Data was analyzed by SPSS software version 11.5 by descriptive statistics and chi-square test. Significance was set as P value < 0.05.

Results

HTLV infection in 1 of the 3 seropositive hemodialysis patients was confirmed by western blot. One was indeterminate and western blot ruled out HTLV infection in the third.

Most of HD patients (56 (58.9%) subjects) included in our study were 40-69 years old, 23% were more than 70 years, and 17.8% ≤ 39 years; 50.5% were males. One of the HTLV seropositive HD patients was male (2.1%); one was 39 years old and two were in 40-69 years group. 79 HD patients (80%) were residing in the city; one of the HTLV seropositive patients was residing in the city. Eighty-five (89%) HD patients were married; all the seropositive patients were married. Of the HD patients, 53 (55.7%) were illiterate; 2 of the 3 HTLV seropositive patients were illiterate.

Eighty-eight (92.6%) were dialyzed 3-4 times a week; all the seropositive HD patients were on maintenance HD 3-4 times/week. Sixty-four (68.4%) HD patients had continued treatment for less than 5 years, 17.8% for 5-10 years, and 12.6% for more than 10 years; One of HTLV seropositive HD patients had dialysis for less than 5 years, another for more than 10 years, and no information could be obtained about the third patient.

Nineteen (20%) HD patients had no history of blood transfusion, while 76 (81.5%) previously received blood products; 2 of the 3 HTLV seropositive HD patients had no history of transfusion.

In the control group of 2046 healthy blood donors, the mean age was 31.9 ± 10.2 years, 1910 (93.4%) were males, 217 (6.2%) were illiterate, and 2035 (99.5%) donated blood for the first time. Only 49 (2.4%) were seropositive for HTLV; western blot confirmation test among these seropositive patients con-

firmed 7 (14.3%) as positive, 37 (75.5%) as negative and 5 (10.2%) had intermediate state.

The 7 HTLV positive blood donors had a mean age of 34 (range from 20-44), 5 (71.4%) were males, 5 (71.4%) were married, and all were residing in Urmia. Of the 7 subjects, 2 (28.6%) were confirmed with western blot, 6 (85.6%) were infected with HTLV type I and 1 (14.3%) was infected with HTLV-I/II VI/II. HTLV-II was not detected among our study patients.

Discussion

This study was designed to determine whether HTLV infection was also endemic in our town, Urmia, in the northwest of Iran.

In this study, infection with HTLV in both groups of hemodialysis and healthy blood donors was also observed in our region along with the previously reported areas of Iran such as Mashhad and Bushehr.^{8,11,12}

In most literature, infection with HTLV is determined only with the ELISA method, however, in our study, we further confirmed this by western blot. Among hemodialysis patients, 3 were seropositive for HTLV, and only one patient was confirmed by western blot. Among blood donors, 49 were seropositive for HTLV in ELISA test, but only 7 subjects were confirmed by western blot.

The frequency among the population of blood donors is 0.013 in America, 0.001 in Sweden, 0.002 in Netherlands, 0.003 in Denmark, 0.004 in France, 0.007 in Italy,¹³ 0.056 in Saudi Arabia,¹⁴ 0.05 in Argentina,¹⁵ and is therefore more frequent in our region.

Blood transfusion is probably the major route of HTLV transmission in Iran, since determination of HTLV antibodies is not a routine laboratory test in all blood transfusion centers.

The majority of our HTLV positive blood donors, 5 (71.4%) were male likely due to more male blood donors in our study. None of the HTLV positive blood donors had a history of high risk behaviors and were also negative for Hepatitis B, C and HIV. All of HTLV infected blood donors were first time blood donors.

It was not documented in our study about the

history of residence in our HTLV positive subjects since they might have been infected while residing in another endemic area of Iran prior to moving to Urmia. It is also not clear whether they were married to individuals from the HTLV endemic areas of Iran. Further genotyping of the HTLV infected cases might suggest the origin of the virus.

Only one HTLV case was confirmed among the seropositive HD patients. It is not clear at this stage whether isolating these positive cases will be helpful in preventing the transmission to other HD patients. Based on our study findings we recommend screening of HTLV among End-Stage Renal Disease patients planning to initiate maintenance HD. Current HD patients in our region should be screened for HTLV and positive cases isolated in the dialysis unit till further studies are available.

We conclude that infection due to HTLV in both groups of hemodialysis and healthy blood donors was observed in our region, and the prevalence of HTLV among healthy blood donors of Urmia was significantly high 0.34%, further studies exploring the transmission routes of HTLV among HD patients' recipients of blood products should be undertaken. Leukocytes attenuating methods in providing blood products and using leukotrap filters during infusion are recommended. HTLV screening of all blood donors is also recommended in this region.

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