Original Article

Relative frequency of Human T-cell Lymphotropic Virus I/II in HIV/AIDS patients

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Abstract

Background: Human T-cell lymphotropic virus HTLV-I/II is a *retrovirus* that has been associated with different diseases. HTLV-I/II routes of transmissions are exposure to contaminated blood, blood transfusion, needle sharing, breast feeding, and sexual contact. The seroprevalence of HTLV-I/II in HIV infected patients has not been well characterized in Iran. We conducted a serological survey to determine the relative frequency of HTLV-I/II in HIV+/AIDS and healthy blood donors in Isfahan.

Materials and Methods: In this cross-sectional study, we compare the relative frequency of HTLV-I/II in HIV+/AIDS group (56 persons) with asymptomatic blood donors (57 persons) in Isfahan. Participant completed the questionnaires that include demographic information, age, sex, and sexual partnership during last 6 months, sexual behavior and past history of blood transfusion or other blood products. We confirm the HIV+ status in patients group with western blot test. Evaluation of HTLV-I/II were done using ELISA test with DRAPIO third generation kit. Questionnaire data and laboratory results were analyzed by SPSS18.

Results: During the period of 2010-2011, a total of 56 HIV-infected patients and 57 healthy persons participated in this study. Among HIV positive patients, one person had positive test for HTILV-I/II representing the relative frequency of 1.8%, and in healthy individuals none of them were positive.

Conclusion: In our survey, relative frequency of HTLV-I/II was 1.8% in HIV+ patients. This study reveals that relative frequency of HTLV-I/II in HIV positive patients is considerable but determining the need for screening of HTLV-I/II requires further investigation.

Key Words: AIDS, HIV, HTLV-I/II, Iran

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INTRODUCTION

Human T cell Lymphotropic Virus (HTLV-I/II) is a Deltavirus member of *Retroviridae* family that has been associated with different diseases such as: aggressive T lymphoma and leukemia (in era that virus is endemic); HTLV-I associated mylopathys/tropical spastic paraparesis (HAM/TSP); these are conditions which are inflammatory and autoimmune;

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HTLV-I associated uveitis (mainly in Japan), HTLV-I associated infective dermatitis (mainly in Jamaica).[1-4] HTLV-I was first discovered in 1980 in Japan, and about 10-20 million people were infected worldwide.[5] Nevertheless, the reported seroprevalence has been variable depending on geographic era, high risk groups and socio demographic characteristics of the population.[6] High HTLV-I prevalence clusters in the world is southern Japan, the South Pacific, parts of West Africa, part of Southern America, and the Middle East (North east of Iran; Mashhad). HTLV-II is predominant in Native American populations and between intravenous drug users.[7,8] To avoid HTLV-I/II transmission by transfusion, screening of blood donation for HTLV-I/II infection has been mandatory in several countries: in 1986 in Japan; in 1989 in the United States; in 1990 in Canada.[9] Mother-to-infant transmission; mainly through breastfeeding, sexual transmission; mainly from male-to-female and parenteral transmission (blood transfusion or intravenous drug use) seems to be the major routes of transmission for HTLV-I/II and it varies in deferents geographic area.[6] In high endemic area, because most of the patients that had seropositive test for HTLV-I/II were below 30 years old, it is believed that vertical transmission could have an important role in these patients. However, in nearly half of the cases, the transmission route cannot be identified.[10] Establishing prophylactic rules needs the accurate data of seroprevalence rate, which could help us to decrease the rate of transmission from infected individuals. Some studies in determining the seroprevalence of HTLV-I/II in HIV+/AIDS were done in Mashhad; the capital of Razavi Khorasan Province in Iran but in Isfahan it has not been investigated yet. We conducted a serologic survey to determine the relative frequency of HTLV-I/II in HIV+/AIDS patients and healthy blood donors.

MATERIALS AND METHODS

In this cross-sectional study, we used serum sample of 56 HIV+/AIDS and 57 healthy blood donors and then we compared the relative frequency of HTLV-I/II in this group with asymptomatic blood donors. The participants were selected by simple enumeration from those who were take part in counseling center for behavioral disease in Isfahan. We gathered the entire sample needed for the study in 2010-2011. We explained all participants that this study is to identify relative frequency of a virus that is in the same family of HIV. Participants completed the questionnaires that included: age, sex, sexual behavior, sexual partnership during last 6 months, sexual behavior, and past history of blood transfusion and other blood products. We got 5cc of venues blood sample and serum was separated then plasma sample were store in –20°C before testing. All blood specimens were tested in an anonymous fashion and labeled by specific numeric code to provide subjects' secretly. We confirm the HIV+ status in patients group with western blot test. Evaluation of HTLV-I/II were done using ELISA test with DRAPIO third generation kit. Questionnaires and laboratory results were analyzed by SPSS18.

RESULTS

During the period of 2010-2011; a total of 56 HIV-infected patients and 57 healthy persons participated in this study. The mean age in patient group was 37 ± 8.7 and in healthy group was 39.3 ± 9.1. There is no significant differences between two groups ($P = 0.64$). Forty-seven persons in patient group (83.9%) and 47 persons in healthy group were males. Nine persons in patient group and 10 persons in healthy group were females. Among HIV positive patients, one of them tested positive for HTILV-I/II representing the relative frequency of 1.8%; and in healthy individual none of them were positive for HTLV-I/II.

DISCUSSION

Many parts of the world are endemic for HTLV-I and high endemic region is defined as the era with the seroprevalence of more than 2%.[5,8] In the USA, the seroprevalence of HTLV-I infection is estimated to varies from 0.016 to 0.1 among those without obvious risk factors, such as being in endemic era, IVDU.[2] HTLV infection is generally seen in northeast of Iran including Mashhad and neighbor cities. The seroprevalence of HTLV-I in Mashhad, the capital of Razavi Khorasan Province, is reported 3% and so is considered as an endemic era for HTLV-I/II. In 2002, screening test for HTLV infection by enzyme-linked immunosorbent assay (ELISA) represent a prevalence of 3.4% in Neyshabour, the third largest city of the province.[11] "In Mozambique (MZ) country, an overall HTLV-I/II prevalence of 2.3% was observed, and increased with age. Regional variation in prevalence of HIV and HTLV-I/II was observed; 32.2%, 65.5%, and 44% of individuals tested HIV-positive in Northern, Central, and southern MZ, respectively, and 2.4%, 3.9%, and 0.9% tested HTLV-I positive in same regions".[12] "In Brazil, moderately high seroprevalences were found for both HIV and HTLV-I/II infections, HIV/HTLV-I co-infection being of special concern".[13] In Argentina, HTLV-I/II prevalence rates of infection detected 32.1%, 16.9%, and 4.6%, respectively.[14] In all studies that were done in Isfahan, it seems that seroprevalence of HTLV-I/II is not very high in different high risk group.[15,16] For

example, Meidani *et al* reported the seroprevalence of HTLV-I/II in IV drug users 2.7% in Isfahan in 2009.[15] Besides in moayedie study that was done in 1998, the seroprevalence of HTLV-I/II was 2.27% in thalassemic patients in Isfahan.[16] In the current survey, relative frequency of HTLV-I/II was 1.8% in HIV positive patients. The main limitation of our study was the relatively small sample size.

CONCLUSION

This study reveals that relative frequency of HTLV-I in HIV positive patient is considerable but determining the need for screening of HTLV-I/II requires further investigation. In our opinion, in epidemiologic studies we not only need more cases but we should also consider the trend of increasing prevalence in different time period.

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