
Anti-HTLV-I/II Seroprevalence in Healthy Blood Donors in İzmir, Turkey

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ABSTRACT

Human T-cell lymphotropic virus type I (HTLV-I) is the first human retrovirus to be associated with malignant disease-namely, adult T-cell leukemia/lymphoma. HTLV-I has also been associated with several diseases. HTLV-I has a worldwide distribution with major endemic foci in the Caribbean and Southern Japan. HTLV-II is a closely related retrovirus that shares considerable genomic homology with HTLV-I but has not been proven to be a pathogen. Major routes of transmission are blood transfusion, breast milk and sexual activity. In this study, we examined the seroprevalence of HTLV-I/II among healthy blood donors attended to Ege University Hospital in İzmir. 913 healthy blood donors were examined for the presence of anti-HTLV-I/II antibody in their sera. Serum specimens were tested with an enzyme immunoassay (EIA) (Organon Teknika, Vironostika HTLV-I/II Microelisa System, Holland). All of the 913 healthy blood donors were seronegative with EIA. These findings indicate that screening of blood donors for HTLV I/II is not necessary at present time.

Key Words: HTLV, Blood donor.

ÖZET

Türkiye, İzmir'de Sağlıklı Kan Donörlerinde Anti-HTLV-I/II Seroprevalansı

Human T-cell lymphotropic virus tip I (HTLV-I), özellikle erişkin T-hücreli lösemi/lenfoma olmak üzere malign hastalıklarla ilişkisi gösterilen ilk insan retrovirüsüdür. HTLV-I başka hastalıklarla da ilişkilidir. HTLV-I dünyada yaygın olup, en önemli endemik bölgeler Karayipler ve Güney Japonya'dır. HTLV-II, HTLV-I ile belirgin genomik homolojisi olan bir retrovirüstür ancak patojen olduğu gösterilememiştir. En önemli geçiş yolları kan transfüzyonu, anne sütü ve cinsel bulaştır. Bu çalışmada, Ege Üniversitesi Hastanesi'ne başvuran sağlıklı bireylerde HTLV I/II seroprevalansını çalıştık. Dokuzyüzonüç sağlıklı vericinin serumlarında anti-HTLV-I/II antikor bakıldı. Serum örnekleri enzim immünoassay (EIA) ile çalışıldı. Dokuzyüzonüç olgunun tümü seronegatif bulundu. Bu bulgular bu durumda kan ürünlerinin HTLV-I/II için taranmasının gerekli olmadığını gösterdi.

Anahtar Kelimeler: HTLV, Kan donörleri.

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INTRODUCTION

HTLV-I and HTLV-II are two closely related retroviruses. Two diseases have been definitively associated with HTLV-I: Adult T-cell leukemia/lymphoma and a chronic degenerative neurologic disease (HAM/TSP)^[1]. There is some evidence of neurologic abnormalities and increased mortality associated with HTLV-II^[2]. Rare cases of HAM/TSP like neurologic illnesses, and of mycosis fungoides and large granular lymphocytic leukemia have been reported in HTLV-II infected persons^[3-5].

Nearly all HTLV-I infected persons remain asymptomatic; only 1 to 4 of infected persons develop disease, with a mean time following infection of more than 40 years for the development of ATLL and 10 years for the development of HTLV associated HAM/TSP^[6].

HTLV-I has a worldwide distribution with major endemic foci in the Caribbean, Southwestern Japan, Melanesia, Central and South America. HTLV-II is endemic in several native Indian populations in the Americas and Pygmy tribes in Central Africa^[1].

Infections with HTLV-I/II are widely distributed among recipients of multiple blood transfusions, intravenous drug users, female prostitutes and patients attending sexually transmitted disease clinics^[7]. HTLV-I is also transmitted from mother to child primarily through breastfeeding^[1].

In this study, we examined the seroprevalence of HTLV-I/II among healthy blood donors attended to Ege University Hospital in İzmir.

MATERIALS and METHODS

Serum specimens of 913 healthy blood donors, 802 male and 111 female, ages between 19 and 62 (mean age 33) who attended to Ege University Hospital Blood Bank were examined for the presence of anti-HTLV-I/II antibody in their sera. All the donors received written information about the risks of transmitting disease through blood and were asked to fill out a questionnaire to determine if they met the criteria for donating blood. Serum specimens were then screened for anti-HTLV-I/II antibodies with an EIA (Organon Teknika, Vironostika HTLV-I/II Microelisa System, Holland). Routine testing for HBsAg, for HIV-1 and 2 antibodies, and HCV antibodies were also performed (AxSYM, Abbott, USA).

RESULTS

All of the 913 healthy blood donors were seronegative for HTLV-I/II, and HIV while 12 samples (1.3%) were reactive for HBsAg and 3 samples (0.3%) were reactive for HCV antibodies.

DISCUSSION

HTLV-I is known to be endemic in Southern Japan, the Caribbean, Melanesia, sub-Saharan Africa, and Central and South America with the prevalence rates ranging from 5 to 27% in adult populations^[8]. HTLV-II is endemic in several native Indian populations in the Americas and Pygmy tribes in Central Africa, with prevalence rates of 7% to 9%^[9]. In the United States HTLV-I and HTLV-II prevalence ranges from 0% in asymptomatic blood donors to 7 to 49% among injecting drug users and prostitutes^[8,10].

Because of the risk of blood born infections associated with HTLVs, screening of volunteer blood donors was implanted first in Japan in 1986 and then in the United States in 1988^[11]. Donor screening is also performed in Canada, Trinidad, and Tobago, the French West Indies, France, and the Netherlands^[7]. These screening programs to identify an increasing number of persons infected with HTLV-I and II resulting in lowered risk of transfusion related transmission^[8].

The most common assays used for screening HTLV-I/II detect antibodies in serum or plasma. However, such assays detect only past exposure. Direct detection of virus in body fluids can be achieved by assays for viral proteins or nucleic acids. Common serological, virological and nucleic acid detection methods for HTLV-I/II are EIA, western blot (WB), antigen capture, southern blot hybridization (SB), polymerase chain reaction. EIA is the method of choice for testing donated blood. If the initial screening EIA is positive, a repeat assay is performed. All repeatedly reactive specimens are tested by a confirmatory WB^[8].

Studies that determine the seroprevalence of HTLV-I/II in Turkey are limited. In a study about HTLV-I seropositivity was performed in 419 healthy blood donors and 244 patients with various diseases. One sample (belonging to a healthy HBsAg carrier) which reacted repeatedly positive, was negative by both WB and indirect immunofluorescence assay^[12]. Another study from

İstanbul, 82 injecting drug users were screened for anti-HTLV-I and no seropositivity was determined^[13]. In a study from İzmir, 43 non-Hodgkin lymphoma and 15 chronic lymphocytic leukemia patients were screened for HTLV-I/II antibodies and no seropositivity was determined (our unpublished data). In this study, 913 blood donors were screened for HTLV-I/II antibodies and no reactivity was determined.

These findings and this study indicate that these viruses are not endemic human retroviruses in İzmir. It seems that screening of blood donors for HTLV-I/II is not necessary at present but studies regarding the seroprevalence from different regions of Turkey should be performed.

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