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# HTLV I – II infection in an aboriginal population in Northeast Argentina

ORIGINAL

## Summary

In order to estimate the prevalence of HTLV I/II viral infection in people belonging to aboriginal ethnic groups of the province of Chaco (North-East Argentina), 335 adults aged 15-68 were studied. Of those, 122 belong to the *tobas* ethnic group and 213 to the *wichis*. Samples were obtained with the assistance of bilingual social workers who explained the purposes of the study and requested consent for sample drawing. Antibodies against HTLV-I/II were studied with gelatin particle agglutination test, employing a 4 sera pool. In reactive pools the reaction was repeated individually and reactive sera were confirmed with Western blot. Total prevalence of HTLV I/II infection was 0.9% (3/335). Three infected subjects were found in *tobas* group and confirmed with WB, demonstrating HTLV II infection in all three cases, i.e. a 2.46% prevalence for this ethnic group. Of these 3 cases, 2 were women aged 30 to 40, while the other was a 42-year old man, all of them single. No positive cases were found in the *wichi* population. Results confirm that HTLV II infection among the *tobas* is endemic and probably of ancestral origins.

**Key words:** HTLV I/II. Aboriginal population. Amerindians. Prevalence of infection. Viral infection.

## Resumen

A fin de conocer la prevalencia de infección por virus HTLV I -II en las etnias aborígenes de la provincia del Chaco (Noreste de Argentina), se estudiaron 335 personas de 15-68 años de edad, de las cuales 122 pertenecen a la etnia toba y 213 a la etnia wichi. Para la toma de muestras se trabajó con promotores sociales bilingües quienes ilustraron sobre los propósitos del estudio y solicitaron consentimiento para la extracción de sangre. Se investigó Acs contra HTLV-I/II por test de aglutinación de partículas de gelatina, empleando pooles de 4 sueros. En los pooles reactivos se repitió la reacción en forma individual y los sueros reactivos se confirmaron mediante Western blot. La prevalencia total de infección por HTLV I/II resultó del 0,9 % (3/335). Se encontraron 3 sujetos infectados entre los 122 de la etnia toba que fueron confirmados como HTLV II en los tres casos, lo que significa una prevalencia del 2,46 % para esta etnia. De estos 3 casos, 2 fueron mujeres de entre 30 y 40 años y el otro fue un hombre de 42 años, todos solteros. No se hallaron positivos entre la población Wichi. Los resultados obtenidos reafirman que la infección por HTLV II en población toba es de carácter endémico y probablemente de origen ancestral.

**Palabras clave:** HTLV I/II. Población aborígen. Amerindios. Prevalencia de infección. Infección viral.

## Introduction

Human T-cell lymphotropic viruses – HTLV I/II – were the first retroviruses to be discovered. As other members of the *Retroviridae* family they have three protein-enveloped RNA genes and include reverse transcriptase (RT) enzyme which enables proviral DNA synthesis and integration to the cellular genome<sup>1</sup>. Its presence has been proven in populations with risky social behaviors or life habits, e.g. intravenous drug users, polytransfused patients, transplant recipients, subjects with STD, etc. and is associated to T-cell proliferation disorders and degenerative neurological processes<sup>2,3</sup>.

From an epidemiological standpoint, these viruses present two specific features: they are naturally endemic in certain geographic areas, and genetically stable in time. HTLV-I is endemic in certain regions of Japan, Melanesia, some African countries and in the Caribbean, with differences in the prevalences upon the populations under study and progressively increasing with age. On the other hand, HTLV-II is naturally endemic in several aboriginal populations of America; thus some authors consider it as the new world virus, although its presence in Africa was subsequently confirmed, requiring a new hypothesis on its origin<sup>4</sup>.

As part of a project to obtain updated information on the sanitary situation of aboriginal populations of the province of Chaco (North-East of Argentina) which involves the study of various transmissible diseases, we submit data on the prevalence of human lymphotropic viruses HTLV I/II infection in members of the *quom (toba)* and *wichi* aboriginal groups.

## Materials and methods

Three hundred and thirty five adults were studied, aged 15–68, who live in the northwestern region of the province. Of those, 122 belong to the *quom (toba)* ethnic group living in the town of Pampa del Indio, and 213 to the *wichis* group living in two locations within the biogeographically area named *Monte Impenetrable Chaqueño*: 120 in Misión Nueva

Pompeya and 93 in El Sauzalito. Samples were obtained resorting to bilingual social workers who convened the subjects to the closest health care centers to explain the purpose of the study and obtain their consent to draw samples and fill epidemiological forms.

To detect antibodies against HTLV-I/II, the gelatin particle agglutination test was employed (SERODIA HTLV-I/II - Fujirebio Inc., Tokyo, Japan), using 4 sera-pool technique (4 individuals at a time), according to the methodology described<sup>5</sup>. In reactive pools the test was repeated individually and reactive sera were studied with Western blot (WB) (Bioblot HTLV (V4), Biokit SA, Barcelona) which confirmed the infection and identified the serotype involved. The criteria employed for the interpretation of bands distribution is shown in Table 1.

## Results

Total HTLV I/II infection prevalence in individuals of the communities screened was 0.9% (3/335). The serological screening test identified three infected subjects in the *toba* group (3/122), which were subsequently confirmed with Western blotting showing HTLV II infection in all three cases, i.e. 2.46% prevalence rate for this ethnic group. Of the three positive cases, two were females aged 30–40 and one was a male aged 42, all of them single. No positive samples were found in the *wichi* population.

## Discussion

Studies on the infection caused by human T-cell lymphotropic viruses in South American aboriginal populations evidence a clear geographical grouping; in the higher areas of the Andes and in the Brazilian shores the HTLV I cluster is found, while HTLV II infection prevails in central plains<sup>6</sup>.

HTLV I and HTLV II human viral infection was described in Argentina many years ago although its origin and distribution is still being studied. Infection has been demonstrated in different population segments, with group-related prevalence variations; e.g. in HIV positive or high-risk individuals living in Buenos Aires and Córdoba<sup>7,8</sup>, blood donors<sup>9</sup> and in aboriginal and native population living in the plains<sup>10</sup> and in the Puna and Jujuy mountains<sup>11</sup>. Results of a multicentric study carried out in various blood banks in Argentina showed that the seroprevalence for HTLV I-II infection is around 0.05%, ranging 0.03 to 0.16%, according to the location<sup>12</sup>.

These agents were first found and described in Argentine aboriginal groups in 1993 and the prevalence values reported ranged from 0.45 to 2.8% for HTLV I and from 2.7 to 21.9% for HTLV II, according to the ethnic group and location<sup>13</sup>. In 1994, Bouzas, *et al.*, studying a group of 222 *tobas* of the northern region found a prevalence of 10.4% for HTLV II<sup>10</sup>, and in 1999 Medeot, *et al.* reported a prevalence of 2.78%, for both HTLV

**Table 1.** Interpretation criteria for Western blotting results

| Pattern   | Interpretation     |
|---|--------------------|
| Positivity in two GAG (p19 and p24) bands and in ENV (rgp 21)   | HTLV positive      |
| Positivity in GAG (p19 or p24) bands and at least in two ENV bands (rgp 46' and rgp 21)                 | HTLV – I positive  |
| Positivity in GAG bands (at least p24) and at least in two ENV bands (rgp 46'' and rgp 21)              | HTLV – II positive |
| No specific HTLV bands  | Negative           |
| Presence of one or more specific HTLV bands but pattern does not meet the positivity criteria described | Non-determined     |

I and II in individuals of the same ethnic group but living in the northeast area, in the province of Chaco<sup>14</sup>.

HTLV II infection has been widely reported in many countries among intravenous drug users and other population segments exposed to the risk of infections. Although the transmission modality is assumed to be the same as for type I, data is still required to define more clearly the specific infection route, the efficiency of transmission through breastfeeding, and its pathogenic role<sup>15</sup>. It is known to predominantly infect CD<sub>8</sub> (+) lymphocytes, differently than HTLV I that has a tropism for CD<sub>4</sub> (+), and is associated to clonal expansion that could explain rare cancer cases<sup>16</sup>. Although the infection has not been thoroughly proven to be linked directly to certain pathologies, an association with neurological disorders, fungal mycosis and lymphocytic leukemia, *inter alia* has been found<sup>17</sup>.

Results reported in this paper confirm the circulation of HTLV II among individuals of the *Toba* ethnic group living in the province of Chaco, although with a low prevalence. The figure of positivity found for type II (2.46%) confirms its endemic nature in some aboriginal communities living in northern Argentina. The positive cases found in this serie were all HTLV II, and most of them (2 out of 3) were females older than 30, which coincides with the description of Medeot *et al.* in 1999<sup>14</sup>. On the other hand, the fact that no cases were found in the wichi population seems to underscore observations by other authors that this group's social behavior is naturally more secluded, with less contact with white population than *tobas*. Even though this is an ongoing research preliminary report, partial results confirm that HTLV II infection in the *toba*

population is endemic and probably of ancestral origin.

As Argentina is considered a non-endemic country for HTLV viruses<sup>16</sup>, systematic studies looking forward further information are necessary and particularly in the aboriginal communities, since it may contribute to clarify the factors governing viral transmission, the natural history of the infection, its emergence and the dissemination routes, as well as the retroviruses historical evolution.

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