Human T-lymphotropic Virus Type 1/2 In Renal Transplant Recipients and Hemodialysis Patients in Khartoum state

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Abstract:

Background: The human T-lymphotropic virus or human T-cell leukemia-lymphoma virus (HTLV) is one of human retroviruses family. There are numerous sorts of HTLV; The human T lymphocyte virus 1 (HTLV-1) is a kind of HTLV that can be a reason for some maladies, for example, HTLV-1 related myelopathy (HAM) and adult T-cell leukemia, (ATL). HTLV-2 is another kind of HTLV however it isn't care for HTLV-1 it is less pathogenesis. Patients with hemodialysis powerless to viral contamination since some infections like HTLV can be transmitted by blood; additionally patients with renal transplantation are defenseless to viral diseases because of their immune compromised background. Objective: This study aims to provide data about prevalence of (HTLV1/2) among renal transplant recipients and hemodialysis in Khartoum State. Materials and methods: A total of 100 patients, 50 patients had renal transplantation and the other 50 patients on hemodialysis. Blood samples were obtained to measure HTLV type 1/2 antibodies using Enzyme-linked Immuno Sorbent Assay (ELISA). The study was done in the period from June to November 2017 in Khartoum state. And SPSS 20 software and Microsoft Excel were used for the statistical analysis. Results: The study showed among hemodialysis patients, 2 out of 50 (4%) were seropositive for HTLV1/2, IgG antibodies and 48 (96%) of the cases were sero-negative. Also showed among renal transplant recipients all of them were sero-negative for HTLV1/2 IgG antibodies. The percentage of male and female in the hemodialysis patients was 62.0 % and 38.0 % respectively and in renal transplantation patients was 76.0 % and 24.0 % respectively. Conclusion: The human T-lymphotropic virus 1/2 seropositive was found among hemodialysis patients, and the HTLV1/2 sero-negative was found in renal transplant recipients in Khartoum, Sudan. Thus the prevalence of HTLV 1/2 in a large sample size in Sudan should be conducted.

Keywords: Renal failure, Human T-lymphotropic Virus, Khartoum state

Correspond to:
Introduction:

Human T-lymphotropic infections (HTLV) one of the Retroviridae family, qualities Deltaretrovirus, now they are arranged into four kinds: 1, 2, 3 and 4. The HTLV-1 was portrayed in 1980 (1) also from that point forward has been recognized on each of the five mainlands, with an expected of 15 to 20 million contaminated individuals (2).

Regions of incredible predominance for HTLV-1 incorporate Japan, Sub-Saharan Africa, Caribbean bowl, South America, Melanesia and the Middle East. The HTLV-2 was portrayed in 1982 (3) and it is endemic in African and Amerindian populaces, yet its overall convayance has been attributed to transmission among intravenous medication clients. HTLV-3 and 4 were found in a country zone of southern Cameroon and, at show, they are limited to that area (4). HTLV-1 and 2 are transmitted sexually and vertically, right off the bat by breastfeeding, and also parenterally, by tainted blood transfusion, sharing of polluted needles and syringes, or transplantation of contaminated organs and tissues. The levels of HTLV-1 proviral load and hostile to HTLV-1/2 antibodies are critical to sexual or vertical infection transmission, other than the time of presentation to hazard factors (sex or breastfeeding). In endemic territories for HTLV-1, around 25% of newborn children's breastfed by HTLV-1 seropositive moms secure the contamination. In view of HTLV-1/2 transmission by blood transfusion, distinctive nations have presented at various circumstances screening for the infections in blood donation centers, some of them the nation o
ver and others just in endemic zones

The effectiveness of HTLV-1 transmission by blood transfusion may rely upon sort and time supply of the blood segment, other than the proviral heap of the blood contributor, since the transmission is needy of the nearness of tainted cells. Think back investigations have indicated diverse rates of seroconversion in patients who have gotten HTLV-1 contaminated blood, which is higher in zones with high commonness than those with low predominance. Hence, HTLV-1/2 screening of blood units is critical to keep the most instances of transfusion transmitted disease, yet the generally long HTLV immunological window period (51 days) may prompt its transmission, been vital build up haemovigilance activities in blood donation centers.

HTLV-2 isn't known to have an exact pathologic part. It isn't related with any malignancies, yet just with uncommon instances of subacute myelopathy like HAM/TSP, that have an all the more gradually movement. In any case, HTLV-2 seems, by all accounts, to be related with an expanded rate of pneumonia, asthma and bronchitis, bladder and kidney disease, incendiary conditions, for example, joint pain, and with expanded mortality, being recommended that HTLV-2 may repress immunologic reactions to respiratory contaminations and incite fiery or immune system responses.

Human T-lymphotropic infection 2 (HTLV-2) is endemic in some African populaces and in Amerindians clans from North, Central and South America, particularly in Brazil, where a few clans indicate predominance of 30%.
venous medication clients (IDU), for the most part in the United States and in Europe \(^{(11)}\).

**Material and Methods:**
This study is a cross sectional study, which was conducted in Khartoum state from June 2017 to November 2017. It included 100 patients, 50 hemodialysis patients at Military hospital, the other 50 were renal transplant recipients at Ahmed Gasim hospital.

Blood sample was collected and allowing stand at room temperature for one hour to obtain serum, centrifuged at 3000 rpm for 5 min, then serum was kept at \(-20^\circ\text{C}\) until analysis of HTLV antibodies. HTLV type 1/2 antibody analysis was done by standard ELISA technique (Dia Pro diagnostic bio probe kits made in Italy) in the microbiology lab of International University of Africa (IUA).

Permission to carry out this research was obtained from the health authorities. Patients were fully informed about this work.

**Statistical analysis**
For data analysis the Statistical Package for Social Science (SPSS-20) and Microsoft Office Excel was used.

**Result:**
The frequency of hemodialysis patients and renal transplant recipient were equal to 50 patients, (ie.50 % each), (Table 1). The percentage of male and female in the hemodialysis patients was 62.0 % and 38.0 % respectively and in renal transplantation patients was 76.0 % and 24.0 %, respectively (Figure 1).

This study also represent that among hemodialysis patients, 2 out of 50, (4%) were seropositive for HTLV1\(\text{2}\), IgG antibodies and 48,
(96%) of the cases were seronegative, (Table 2). The 2 HTLV positive cases were on hemodialysis 2–3 times per week. As among renal transplantation recipients all of them were seronegative for HTLV V1\2 IgG antibodies (Table 3). All the cases under this study were transplanted just once and no history of graft rejection.

Table (1): Represent the frequency of patients in both cases:

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Hemodialysis patients</td>
<td>50</td>
<td>50 %</td>
</tr>
<tr>
<td>Renal transplant recipients</td>
<td>50</td>
<td>50 %</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100 %</td>
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</tbody>
</table>

Figure (1): Shows the distribution of patients according to gender
Table (2): The percentage of HTLV1/2 positive cases in hemodialysis

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>HTLV1/2 IgG Positive</td>
<td>2.0</td>
<td>4.0 %</td>
</tr>
<tr>
<td>HTLV1/2 IgG Negative</td>
<td>48</td>
<td>96 %</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100 %</td>
</tr>
</tbody>
</table>

Table (3): The percentage of HTLV1/2 positive cases in renal transplantation recipients

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTLV1/2 IgG Positive</td>
<td>0</td>
<td>0.0 %</td>
</tr>
<tr>
<td>HTLV1/2 IgG Negative</td>
<td>50</td>
<td>100 %</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100 %</td>
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Discussion:
This illustrative investigation was directed to give some epidemiological information with respect to the commonness of HTLV1/2 in chance gathering patients, the hemodialysis and renal transplant beneficiaries in Khartoum state –Sudan. Using ELISA, the overall seroprevalence of HTLV1/2 was 4 % from hemodialysis patients.

As stated in the Introduction, there are few articles in this regard, worldwide. Nakamura and colleagues from Japan, in an endemic region for HTLV-1, reported the seroprevalence of HTLV-1 as 8.3% to 9.9 % in renal transplant recipients.
ents (12); another study by Linhare and colleagues found the HTLV seropositivity of renal transplant recipients to be 11.1%; in Brazil (13). Both mentioned frequencies much higher values than those achieved in our study, which can be justified by the higher HTLV seroprevalence among their population compared to ours. However, another study by Perez reported only 2 HTLV-1 seropositive cases, (0.89%), in a population of 224 American renal transplant recipients (14).

The current study revealed no significant difference between the seroprevalence of HTLV among hemodialysis patients and renal transplant recipients. The frequency is higher in hemodialysis patients. Constrained accessible information from Japan uncovered that in HTLV-1 endemic territories of Japan, (for example, Okinawa), the seroprevalence of HTLV-1 in transplant beneficiaries is much lower than that of hemodialysis patients (just about 9% versus 20%) (15).

Conclusions

The study concludes that the frequency of HTLV-1/2 seropositive was found among hemodialysis patients, in Khartoum State, and all the renal transplant recipients in the study were seronegative for HTLV-1/2.

Limited sample size in the study probably interfered and had an influence on the final results, so implementing further studies with large amounts of participants to study the prevalence of HTLV-1/2 infection is strongly recommended.

References:

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