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Impact of Human T-Lymphotropic Virus (HTLV I/II) Diagnosis on the Frequency of Mood Disorders in a Non-Endemic Area

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Abstract

Chronic diseases cause different impact to different people. We performed this study to evaluate the impact of human T-lymphotropic virus (HTLV I/II) diagnosis on the frequency of mood disorders. Of six HTLV I/II infected patients, including one asymptomatic, four reported depression at the moment of HTLV diagnosis. The findings reveal that it is crucial to inform patients of the HTLV diagnosis only after conducting confirmatory tests, as indicated by majority of diagnosis protocols. Usually countries with limited resources and a high prevalence of HTLV I/II infections do not perform confirmatory tests, including Brazil. Psychiatric manifestations and major depression in patients with HTLV I/II need further study. Although a small series, the findings reveal that it is crucial to inform patients of the diagnosis only after conducting confirmatory tests as indicated by majority of diagnosis protocols. Usually countries with limited resources and a high prevalence of HTLV I/II infections do not perform confirmatory tests. The authors reinforce the importance of the handling of the emotional response of the patience to the diagnosis.

Keywords

HAM/TSP, HTLV, Mood disorders, depression, diagnosis

Introduction

Chronic diseases cause different impact to different people. When someone is diagnosed with a certain disease, the experience becomes personal, which determines the emotional response. Sexually transmitted diseases like retroviral infections (human T-lymphotropic virus [HTLV] and human immunodeficiency virus [HIV]) attract greater prejudice. The most important neurologic disease caused by HTLVI/II is HTLV-I-Associated Myelopathy/Tropical Spastic Paraparesis (HAM/TSP). It is essential to study the impact of HTLV I/II diagnosis on people's lives. Blood banks should conduct serological HTLV I/II screening tests for all donors. If positive, the donors are referred to a health service center for confirmatory diagnostic tests like enzyme-linked (Elisa), Quimioluminescence (QMIA) or western blot analysis [1]. The infection diagnosis is very stressful for the patient, the patient is informed of the likelihood of serious disease (HAM/TSP or Adult T lymphotropic leukemia). Another aggravating issue is when the viral pathology cannot be ascertained by health professionals and is not common in other patients [2]. The northeast and southeast regions of Brazil are highly endemic for HTLVI/II, although southern Brazil is non-endemic [3]. This report aimed to evaluate the impact of HTLV-I/II diagnosis in causing mood disorders in a non-endemic area. The ratio of asymptomatic HTLV-I carriers to patients with symptomatic HAM/TSP is approximately 2,000-3,000:1 [4].

Materials and Methods

Six patients, five with HAM/TSP and one asymptomatic HTLV-I infected participant from the neuroinfection outpatient clinic of HC-UFPR, Paraná, Brazil were evaluated by a multiprofessional group. All patients underwent psychiatric evaluation with the Brazilian version of a structured interview (MINI Plus); beck depression inventory (BDI) and beck anxiety inventory (BAI). Functional independence measure (FIM) scale was conducted by trained professionals, FIM Total scores range from 18 (totally dependent) to 126 (totally independent). Cerebrospinal fluid (CSF) and blood samples were collected for QMIA (ARCHITECT *r*HTLV-I/II, Abbott®) and confirmatory Western Blot (INNO-LIA™ HTLV-I/II Score, INNOGENETICS®). Flow cytometry of CSF and blood (FACSCALIBUR BD®, 4 colors, limit of detection 0.1%) was performed for CD4 and CD8 quantification.

Results

Six patients with HTLV infection, confirmed by Western blot, were evaluated in depth demographic; CSF and immunological characteristics of participants with HAM/TSP and asymptomatic are listed on in Table 1 and Table 2 respectively. Among the patients with HAM/TSP (mean ± SD): age 54 ± 18 (years); time of diagnosis (years) 7.6 ± 9.3; time of symptoms (years) 16.8 ± 6.3 FIM scale 98.6

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Table 1: Demographics characteristics of participants with HAM/TSP and HTLV asymptomatic.

Cases	1	2	3	4	5	6
Clinic	HAM/TSP	HAM/TSP	HAM/TSP	HAM/TSP	HAM/TSP	Asymptomatic
Age (Years)	54	75	26	55	58	60
Gender	F	F	F	F	M	F
Time of diagnosis (years)	5	1	5	3	24	17
Symptoms duration (years)	17	10	16	14	27	Not present
transmission	Unknown	Unknown	Vertically	Blood transfusion	Unknown	Blood transfusion

Table 2: Motor evaluation and Psychiatric aspects of participants with HAM/TSP and HTLV asymptomatic.

Cases	1	2	3	4	5	6
Walking aids	Wheelchair	Wheelchair	None	orthosis	orthosis	None
FIM	101	47	119	104	122	124
BDI	Normal	Normal	Mild	Normal	Mild	Mild
BAI	Mild	Normal	Mild	Mild	Moderate	Mild
DSM-IV-TR (Mini-Plus)	Recurrent depression	Depressive episode	Bipolar disorder	Depressive episode	Normal	Depressive episode
Attempted suicide/current risk	No	No	Yes/low	No	No	No
Relationship between Mood disorder episode and HTLV diagnosis	Yes	No	Yes	Yes**	No	Yes
Tendency to substance abuse dependency	No	No	No	No	No	No

**This patient the HTLV diagnosis was a factor of improving.

*FIM: Functional Independence Measure, Total scores range from 18 (totally dependent) to 126 (totally independent); BDI: Beck Depression Inventory, BAI: Beck Anxiety Inventory

Table 3: Blood and serum immunologic characteristics of participants with HAM/TSP and HTLV asymptomatic.

Cases	1		2		3		4		5		6	
	B	CSF	B	CSF	B	CSF	B	CSF	B	CSF	B	CSF
WBC/mm³		6.9*		1.9		6.6*		4.7		1.9		2.2
Glucoses mg/dL		51		78		54		59		65		63
Total Protein mg/dL		28		30		18		34		20		28
QMIA	+	+	+	+	+	+	+	+	+	+	+	+
WB	+	+	+	+	+	+	+	+	+	+	+	+
CD4 cell/*u*L	1003	3.3	1430	1.1	1012	3.0	-	-	-	1.1	477	1.1
CD8 cell/*u*L	1088	3.0	929	0.7	754	3.0	-	-	-	0.7	337	0.7
CD4/CD8	0.92	1.1	1.5	1.7	1.3	1.0	-	-	-	1.6	1.4	1.7

WB: Western Blot

B: Blood, CSF: Cerebrospinal Fluid

*Cell type: lymphocytes 98%; monocytes 2%

QMIA: Quimioluminescence

± 30.3. There was decrease of the CD4/CD8 ratio in blood in only one participant with HAM/TSP on the others the ratio was normal. Two participants with HAM/TSP showed low increase of CSF WBC with predominance of lymphocytes. CD4/CD8 ratio in CSF follows the blood.

Among participants with HAM/TSP and asymptomatic BDI 11 ± 5.5; BAI 12 ± 5.5. In four of six participants there was relationship between mood disorder episode and HTLV diagnosis. Three of six HTLVI/II infected patients, including one asymptomatic patient, reported depression during HTLV diagnosis and a fear of paralysis (Table 3). All participants were diagnosed with HTLV with a follow-up confirmatory test. In this series, the most significant mood change episode directly coincided with the diagnosis time and not with the development of motor symptoms during the onset.

One patient attempted suicide, and disease diagnosis and the possibility of paraplegia were reported to be the main causes. Based on the data obtained from FIM, all HAM/TSP patients who participated in the study had some urinary dysfunction, which contributed to their poor quality of life.

Demographics characteristics and clinical aspects of participants with HAM/TSP and asymptomatic are listed on table 1.

Discussion

The perception that HTLV infection and diagnosis is a stigmatized disease with heavy prejudice attached to it, beyond the physical and social limitations imposed by the HAM/TSP is responsible for the highest frequency of somatic symptoms and mood disorders, which potentiates the severity of the disease [5,6].

Depression has a great impact on the quality of life of patients. In chronic conditions, the emotional, familial, social, physical and functional aspects, among others, are influenced by the type, severity, and duration of illness. The mechanisms of adaptation established by the patient and its family shall determine the patient's perception of quality of life. The development of a chronic disease changes the way an individual perceives and modifies its social and economic life and its plans for the future. In general, the perception of well-being of an individual suffering from a chronic illness is more influenced by mechanisms of self-evaluation of what it means to be sick. HTLV is a sexually transmitted infection which is accompanied by prejudice; usually HTLV is confused with HIV by the patient and even by the primary physician what increases the prejudice. This study was performed in a non-endemic area in southern Brazil [7], which increases the poor knowledge about HTLV infection among the health professionals and the general population.

HTLV is a member of the *Retroviridae* family as the HIV; although HTLV belongs to the subfamily *Oncovirinae* and HIV to *Lentivirinae*. As all retrovirus HTLV has high neurotropism and neurovirulence.

Major depression is a frequent complication in HIV infection, the frequency of depression in HIV- infected Brazilians varies from 21% to 37% across a broad range of HIV+ cohorts including patients on antiretroviral therapy (ART) and those who were ART-naïve [8-10]. The mechanism of neuronal lesion is indirect, as neurons are not infected by HIV due to the lack of CD4 receptors environment. There

is a strong suggestion that cytokines and chemokines have a role in the biology of depression. Some of these immunological factors are described when depression is associated with infectious diseases such as hepatitis C virus and HIV [11-13].

HTLV patients seem to have less frequency of mood disorders than HIV, although this aspect of HTLV infection needs to be more studied. In this series of patients, there was a direct relationship between the presence of the mood disorder episode and the time of HTLV diagnosis in the past. We can conclude that the notice of the diagnosis could have triggered the mood episodes, probably the explanation of this mood disorder could be better explained by fear and misunderstanding of the infection and impact of prejudice than to be related with an immuno-inflammatory or monoaminergic pathways but this needs to be more investigated. None patient, in this series, have diagnosis of major depression in the moment of the interview.

The main limitation of this study is the small number of participants, although the results can leads to some conclusions: psychiatric manifestations and major depression in patients with HTLV I/II need further study. Usually countries with limited resources and a high prevalence of HTLV I/II infections do not perform confirmatory tests. Although a small series, the findings reveal that it is crucial to inform patients of the diagnosis only after conducting confirmatory tests as indicated by majority of diagnosis protocols.

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Ethical Statement

This study was approved by the HC-UFPR IRB and all the participants signed a consent form agreeing to enter the study.

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