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Brief communication

HAM/TSP and major depression: the role of age



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ABSTRACT

Objective: To investigate the role of demographic variables in the relationship between the presence of HAM/TSP and current major depression.

Methods: It is a cross-sectional study of 108 HTLV-1 infected patients (47 with TSP/HAM) resident of Salvador, Brazil. The Mini International Neuropsychiatric Interview, Brazilian Version 5 was used to evaluate the presence of depression. Prevalence ratios were used to describe relationship between HAM/TSP and depression. The HAM/TSP classification was carried out according to the criteria proposed by Castro-Costa et al.

Results: Prevalence of depression was 37.96%. No association was observed between presence of HAM/TSP and diagnosis of current major depression in the global analysis of patients (PR: 0.94; CI 95%: 0.57–1.55). In the stratified analysis, however, greater prevalence of depression was observed amongst individuals with HAM/TSP in the 18–39 age group (PR: 2.59; CI 95%: 1.36–4.95).

Conclusion: Our findings suggest that age is an effect modifier in the relationship between HAM/TSP and depression, and this aspect should be considered in future studies on the topic.

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Human T-lymphotropic virus Type-1 (HTLV-1) is the retrovirus that causes HTLV-1-associated myelopathy/tropical spastic paraparesis (HAM/TSP).^{1,2} It occurs in up to 5% of HTLV-1 carriers and leads to onset of symptoms in the fourth and fifth decades of life with an insidious and progressive evolution.³

Symptoms of bowel, bladder and sexual dysfunction may constitute initial complaints and gait disorders, weakness and stiffness of the lower limbs are consequences of a gradual decline in muscle strength and spasticity.⁴ The patient

gradually decreases ambulation, requiring locomotion aids (canes and walkers) over a period of time that varies from a few months to several decades and may leave the patient wheelchair-bound.⁴

Psychiatric disorders constitute a common comorbidity for patients with chronic diseases, such those with HAM/TSP.⁵ Furthermore, depressive symptoms may also contribute to progressive disabilities and limitations, thereby reducing the patients' quality of life.^{6,7} Depression, characterized by

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depressed mood or loss of interest or pleasure in nearly all activities, impairs an individual's social and occupational functioning.⁷ Physical incapacity, principally in walking and carrying out activities at work, in one's studies, or at home, may result in secondary anhedonia. These difficulties arise as a result of symptoms such as pain and urinary incontinence, leading patients to recurrent absences from work, job changes, sick leave and even an inability to work at all. In such a context, reduced independence and capacity for self-care are aggravating factors, and are related to sensitive personal issues, such as the need for help in intimate body care, for company to leave the house, and for changes to eating habits.⁶ Family and social relationships are also impaired, due to misunderstandings with relatives and friends, as a consequence of mood alterations, impatience and emotional imbalance, common complications in patients with chronic diseases.^{8,9} Despite this, the association between HAM/TSP and depression has rarely been studied. Stumpf et al.¹⁰ reported a greater prevalence of depression in asymptomatic HTLV-1 patients compared to a seronegative group (39% vs. 8%), while Souza¹¹ demonstrated the presence of depressive symptoms in 28% of patients with HTLV-1, in 20% of those with HAM/TSP and in 8% of asymptomatic patients. Similarly, Gascón et al. observed that the frequency of depression in HAM/TSP patients (59.3%) was 2.7 greater than that in asymptomatic HTLV-1 patients (22.4%).⁷ Contradicting previous studies, Galvão-Castro et al.⁶ did not find differences in the prevalence of depression between patients with or without myelopathy. Additionally, Gultinan et al. observed that the prevalence of major depression among infected subjects was comparable to the prevalence in the US general population.¹²

These discrepancies are possibly due to the socio-demographic context of the patients studied. A range of factors may influence the development of mental disorders, including poverty, gender, conflict and disasters, physical diseases, family and social environment, as well as age.^{7,13} In fact, several studies show that there is a greater prevalence of episodes of depression in developed countries, and is less prevalent in patients of a more advanced age than in younger patients, in contrast to the situation in developing countries, where incidence does not decrease with age.¹⁴

Given the influence of these physical limitations on mood disorders and the greater prevalence of physical deficiencies in older patients, it is therefore necessary to further investigate the role of demographic variables in the relationship between the presence of HAM/TSP and depression.

For this, we conducted a cross-sectional study between March and November 2009 with a non-probability sample of 108 patients with HTLV-1. This corresponded to 93.1% of all patients diagnosed through the ELISA and Western Blot test in this period, residing in Salvador and other cities in the state of Bahia, northeastern of Brazil. Included patients were aged over 18 years, with or without HAM/TSP manifestations, and attending the Bahiana School of Medicine and Public Health reference centre for HTLV (CHTLV/EBMSP).⁶ This city of Salvador is characterized by vast socioeconomic imbalance among its population of 2.5 million inhabitants. Roughly 80% are black or racially mixed of African and Portuguese ancestry.¹⁵

All patients were invited to participate while waiting for consultations and, after signing the informed consent form, were included in the study and interviewed by a single psychologist (AVG-C). The CHTLV/EBMSP is an outpatient clinic open to the general public that has provided inter-disciplinary care services to 1500 patients since 2002, including general medical treatment, laboratory diagnosis, psychological counselling and physical therapy. At present, 50% of the HTLV-1 infected patients seen at the clinic are being regularly followed. The majority of these patients are female and approximately 30% have HAM/TSP.

We used the Mini International Neuropsychiatric Interview, Brazilian Version 5.0 (MINI),¹⁶ to evaluate the presence of psychiatric disorders. This instrument consists of a standardized diagnostic interview for the principal psychiatric diseases from group I of the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM IV) and the International Classification of Diseases (ICD-10). The HAM/TSP classification was carried out according to the criteria proposed by de Castro-Costa et al.¹⁷ Only patients classified as probable and definite HAM/TSP were considered. Neurological disability was determined by the Expanded Disability Status Scale (EDSS). This scale ranges from 0 (normal) to 10 (death), and is widely used to determine the severity of neurological damage in patients with multiple sclerosis (MS) or HTLV-1 infection.^{18,19}

HAM/TSP frequency was described in percentages and its association with depression was assessed using the chi-squared test and prevalence ratios (PR). We used the Mantel-Haenszel test of homogeneity to analyze effect modification and compare prevalence ratios for each strata of the following variables: gender (male, female), age (18-39 years old, 40-59 years old and ≥ 60 years old), level of education (<8 years, 8-11 years, >11 years), income (up to 1 minimum wage, ≥ 1 minimum wage), marital status (married, single, separated/divorced/widowed), skin colour (white, non-white), time of HTLV diagnosis (<1 year, 1-5 years, >5 years), migration (no, yes), number of children (none, one or more), and level of disability (EDSS ≤ 2 , ranging from a normal neurological exam to minimal disability; EDSS > 2-7, ranging from moderate disability to essentially wheelchair-bounded).^{18,19} Median time of HAM/TSP symptoms was compared between individuals with depression and no depression using Mann-Whitney test. We utilized STATATM 9.0 and considered type I error $\leq 5\%$ to be statistically significant.

The EBMSP Research Ethics Committee approved the study under protocol number 122/2009. Individuals who presented with depressive symptoms received psychological support and psychiatric assessment at the reference centre.

The mean age (SD) of patients was 46.9 (13.0) years, 68% were female, 60% not married, and 88% non-white. Approximately half had low educational level (52%) and 54% were residents in inland Bahia. Prevalence of major and recurrent depression was, respectively, 37.96% (41/108) and 15.74% (17/108). Nearly 43.52% (47/108) of study patients were diagnosed with HAM/TSP. No association was observed between presence of HAM/TSP and diagnosis of current major depression in the global analysis of patients (PR: 0.94; CI 95%: 0.57-1.55). Similarly, recurrent depression was not associated with HAM/TSP (PR: 1.11; CI 95%: 0.46-2.66). In the stratified

Table 1 – Stratified analysis for the association between HAM/TSP and depression, according to sex, age, income, level of education, marital status, skin colour, time of HTLV diagnosis, migration, number of children and level of disability in 108 patients with HTLV-1. Salvador, Bahia, 2009.

Variable	n (%)	HAM/TSP n (%)	PR ^a	CI ^b (95%)	p-Value (M-H) ^c
Gender					
Male	23 (21.3)	11 (47.8)	0.54	0.06–5.21	0.593
Female	85 (78.7)	37 (43.5)	1.02	0.62–1.65	
Age in years					
18–39	34 (31.5)	06 (17.7)	2.59	1.36–4.95	0.003
40–59	55 (50.9)	31 (56.4)	0.51	0.23–1.11	
≥60	19 (17.6)	11 (57.9)	1.21	0.40–3.66	
Level of education					
<8 years	29 (26.9)	11 (37.9)	2.59	0.53–12.5	0.286
8–11 years	39 (36.1)	19 (48.7)	0.67	0.33–1.36	
>11 years	40 (37.0)	18 (45.0)	0.98	0.50–1.94	
Income (min. wage)					
≤1	45 (41.7)	18 (40.0)	1.20	0.64–2.20	0.419
>1	63 (58.3)	30 (47.6)	0.80	0.37–1.72	
Marital status					
Married	54 (50.0)	20 (37.0)	0.95	0.50–1.82	0.369
Single	30 (27.8)	14 (46.7)	1.71	0.60–4.86	
Div./sep./widowed	24 (22.2)	14 (58.3)	0.53	0.15–1.90	
Skin colour					
White	20 (20.4)	10 (50.0)	5.00	0.70–35.5	0.048
Non-White	78 (79.6)	37 (47.4)	0.68	0.39–1.19	
Time of HTLV diagnosis					
<1 year	18 (16.8)	4 (22.2)	7.00	0.83–58.77	0.104
1–5 years	46 (43.0)	14 (30.4)	0.91	0.45–1.86	
>5 years	43 (40.2)	29 (67.4)	0.62	0.29–1.32	
Migration					
No	73 (67.6)	29 (39.7)	0.95	0.50–1.79	0.976
Yes	35 (32.4)	19 (54.3)	0.96	0.45–2.07	
Number of children					
None	26 (25.5)	12 (46.2)	1.40	0.57–3.45	0.360
One or more	76 (74.5)	33 (43.4)	0.84	0.46–1.55	
Level of disability (EDSS)					
0–2	70 (64.8)	10 (14.3)	1.04	0.46–2.38	–
3–10	38 (35.2)	38 (100.0)	–	–	

Div., divorced; Sep., separated.

^a PR, prevalence ratio.^b CI, confidence interval.^c M-H, Mantel-Haenszel test.

analysis, however, greater prevalence of major depression was observed amongst individuals with HAM/TSP in the 18–39 age-group (PR: 2.59; CI 95%: 1.36–4.95). Results for the association between HAM/TSP and presence of major depression are described in Table 1. The median duration of HAM/TSP symptoms among patients with major depression was 12.0 (9.0–14.0) years compared to 11.0 (9.0–13.0) years among those without depression ($p = 0.735$).

Compared to asymptomatic patients, more than double the number of HAM/TSP patients presented with depression in the 18–39 age-group, suggesting that the impact of myelopathy on the mental health of younger patients is notably greater than on middle-aged and elderly patients. Moderate or severe disability levels among young people were lower (14.6%) compared to older patients (43.6%). In addition, the time since

onset of the symptoms of HAM/TSP was not different between patients with and without major depression.

We should note the process of losses that occurs in HAM/TSP patients, resulting from movement limitations, erectile dysfunction, and urinary and bowel incontinence, manifestations that lead the patient to refer to a past when they were healthy and which has been irredeemably lost. It is therefore highly likely that these events could culminate in depression, a mental disorder that is intimately related to the process of loss.^{9,20}

Previous studies^{20,21} support our findings in relation to the physical limitations imposed by HAM/TSP and their impact on the mental health of patients at an economically active age range. The vast majority of these studies demonstrate a lack of satisfaction with life following spinal cord injury, principally

related to the social disadvantage provoked by such physical limitations.²¹ Social skills are essential for a person to live well in society, acquiring knowledge about themselves and the world, and giving life meaning, thus enabling the construction of identity.²¹ Engagement in social activities has been associated with an increase in the sense of well-being in adults, as well as with improvements in physical functioning.²⁰

Social networks appear to be sources that protect and maintain health, since social bonds may stimulate a sense of meaning or coherence in life, and emotional support may help to minimize stress.⁷ The social support that social networks provide reduces isolation and increases satisfaction with life. In general, social activities are more intense and numerous between the ages of 18 and 39, while in the more advanced age groups these relationships are less frequent. This fact may partially explain why we only found an association between HAM/TSP and depression amongst younger patients.

Although not assessed in this study, another possible explanation relates to the greater incidence of sexual dysfunction amongst HAM/TSP patients, which may have a greater impact on younger as opposed to older patients.²⁰ Sexual activity is not only essential for reproduction but also for self-satisfaction and its exercise rejuvenates the ego.²² Suaid et al.²² found that being paraplegic for many male meant being impotent, demonstrating an accentuated preoccupation with the sexual sphere. Similarly, Hajiaghababaei et al.²³ reported that women with spinal cord injury reported a significantly higher level of sexual distress compared to healthy women. Furthermore highest scores of depression were observed in migraineurs women with sexual dysfunction.²⁴ Although there are no studies about female sexual dysfunction in patients with HTLV-1, due to functional similarity of the lesions observed in these patients with spinal cord injury individuals,^{23,25} may suggest that the sense of impotence that affects paraplegics, causes significant maladjustment, making them feel inferior, due to their body image as defective and useless in HTLV-1 subjects.

The use of a non-probabilistic sample represents a limitation of this study. Nevertheless, the number of patients evaluated corresponded to over 90% of the individuals attending during the study period. This fact could have reduced the impact of a possible selection bias.

In summary, our findings suggest that age is an effect modifier in the relationship between HAM/TSP and depression, rendering it necessary to consider this possibility in future studies on this theme.

Conflicts of interest

The authors declare no conflicts of interest.

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