Factors associated with a diagnosis of major depression among HIV-infected elderly patients

Aureo do Carmo Filho[1], Max Kopti Fakoury[1], Walter de Araujo Eyer-Silva[1], Rogério Neves-Motta[1], Rosangela Souza Kalil[1] and Fernando Raphael de Almeida Ferry[1]

[1]. Departamento de Medicina Geral, Hospital Universitário Gaffrée e Guinle, Escola de Medicina e Cirurgia, Universidade Federal do Estado do Rio de Janeiro, Rio de Janeiro, RJ.

ABSTRACT

Introduction: Acquired immunodeficiency syndrome (AIDS) is being increasingly reported among the elderly and major depression (MD) may be associated with suboptimal adherence to treatment. **Methods**: Cross-sectional study on factors associated with MD among 72 HIV-infected elderly individuals. **Results**: Twenty (27.7%) patients were found to have MD. The female gender (odds ratio [OR] = 10.65; p = 0.00586), a low CD4 count during the study (OR = 1.005247; p = 0.01539), and current smoking status (OR = 12.89; p = 0.01693) were independently associated with MD. **Conclusions**: Our data underscore the need to attentively search and treat MD among HIV-infected elderly patients.

Keywords: Aging. Elderly. HIV infection. Major depression.

As of June 2010, a total of 15,601 cases of acquired immunodeficiency syndrome (AIDS) were reported among individuals aged ≥ 60 years old in Brazil[1]. In addition to these elderly patients, a considerable number of cases of individuals who have been diagnosed with AIDS at an earlier age and those growing older with human immunodeficiency virus (HIV) infection have also been reported. The medical management of HIV infection in this growing population of elderly individuals will likely pose unique clinical and immunological challenges to practicing physicians and other health care professionals. HIV-infected elderly patients may be more prone to faster clinical and immunologic deterioration during antiretroviral therapy; may harbor multiple comorbid chronic conditions that require drug treatment; and may be more susceptible to delayed diagnosis, thereby presenting in advanced stages of HIV infection[2].

Previous studies have found that HIV patients might be at a greater risk of developing major depression[3] and that a diagnosis of major depression is associated with suboptimal adherence to antiretroviral therapy[4]. Here, we performed a cross-sectional study on the prevalence and risk factors for a diagnosis of major depression among HIV-infected elderly patients receiving care at our outpatient unit in Rio de Janeiro.

The study was performed at Hospital Universitário Gaffrée e Guinle between January 2008 and July 2009. Patients aged 60 years or older and who were capable of hearing, understanding, and answering the study questions were invited to participate and were asked to sign an informed consent form. Patients were excluded if they had cognitive disorders leading to an inability to answer the study questions and to understand the objectives of the study. They were also excluded if they had any acute disease and/or an acute complication of a known chronic disease causing a change in the mental state or mood at the time of the evaluation, or if they had been continuously using a benzodiazepine, hypnotic, anticonvulsant, mood stabilizer, opioid, antiparkinsonian, antipsychotic, and/or anticholinesterase agent during the past 6 months.

Demographic, clinical, social, immunologic, and virologic data were collected using standardized questionnaires. Psychiatric evaluation was performed by an independent geriatrician who was unaware of the objectives of the study. For the evaluation, the reduced, 15-item version of the Geriatric Depression Scale (GDS-15), which has been a widely used instrument for the evaluation of symptoms of depression in geriatric populations in research studies and clinical settings[5] (major depression is defined as a GDS-15 score of ≥ 7) and which is progressively gaining more space in daily practice because of its ease of application and similar efficacy as a screening instrument for depression in the elderly, was used[6,7]. The present study protocol was reviewed and approved by the Ethics Review Board at Hospital Universitário Gaffrée e Guinle, Rio de Janeiro.

A total of 75 HIV-infected subjects aged 60 years and above were evaluated. Among these, 2 were under treatment for acute opportunistic disorders, and 1 reported chronic use of an antidepressant agent. These patients were excluded from the study, and the following discussion deals with the remaining 72 subjects. A total of 20 (27.7%) patients were found to have a diagnosis of major depression. **Table 1** displays the demographic, clinical, immunological, virological, and social variables among depressed and non-depressed patients.

Address to: Prof. Fernando Raphael de Almeida Ferry. Hospital Universitário Gaffrée e Guinle/UNIRIO. Rua Mariz e Barros 775/10ª Enfermaria, 20270-004 Rio de Janeiro, RJ, Brasil.
Phone: 55 21 2264-4035
e-mail: ferry@unirio.br

TABLE 1 - Univariate analyses of demographic, social, clinical, laboratory, and behavioral variables between HIV-1-infected elderly patients with and without a diagnosis of major depression by the GDS-15 instrument.

	Patients with a diagnosis of depression (n = 20)	Patients without a diagnosis of major depression (n = 52)	P value
Female sex: n (%)	15 (75.0)	22 (42.3)	0.01779
Age at diagnosis (years): mean ± SD	59.8 ± 8.9	59.7 ± 6.1	0.995
Age as of the study (years): mean ± SD	68 ± 6.9	67.3 ± 5.1	0.9849
CD4 count/mm^3 at baseline: mean ± SD	257 ± 188	223 ± 195	0.3996
Current CD4 count/mm^3: mean ± SD	344 ± 146	557 ± 340	0.002603
Viral load below detection limits: n (%)	13 (65.0)	37 (71.1)	0.7758
Level of education (years): mean ± SD	5.5 ± 4.2	6.9 ± 4.7	0.3466
Length of antiretroviral therapy (years): mean ± SD	8.2 ± 5.9	7.5 ± 3.6	0.9649
Antiretroviral regimen included efavirenz: n (%)	5 (25.0)	12 (23.0)	1
Body mass index (kg/m^2): mean ± SD	22.6 ± 3.9	24.8 ± 6.0	0.3131
Arterial hypertension: n (%)	11 (55.0)	25 (48.0)	0.793
Dyslipidemia: n (%)	8 (40.0)	18 (34.6)	0.7855
Diabetes mellitus: n (%)	4 (20.0)	9 (17.3)	0.7457
Sedentary lifestyle: n (%)	20 (100.0)	44 (84.6)	0.09614
Current cigarette smoker: n (%)	6 (30.0)	4 (7.7)	0.02309

HIV-1: Human immunodeficiency virus type 1; GDS-15: Geriatric Depression Scale-15; SD: standard deviation; CD4: cluster of differentiation 4.

Patients with a diagnosis of major depression were compared with those without major depression. Differences between categorical and continuous variables were compared by applying the Wilcoxon rank sum test and the Fisher´s exact test, where appropriate. The null hypothesis was that the 2 groups were samples from the same or identical populations. A type I error was pre-specified as $p < 0.05$. Multivariate logistic regression was used to identify variables independently associated with a diagnosis of major depression (response variable). Gender, age at the diagnosis of HIV-1 infection, age at the start of the study, baseline cluster of differentiation (CD4) cell count, CD4 cell count during the study, viral load below detection limits as during the study, time on antiretroviral therapy, current use of an efavirenz-including antiretroviral regimen, years of education, body mass index, current cigarette use, regular physical activity, diagnosis of arterial hypertension, diabetes mellitus, and dyslipidemia were studied as explanatory variables. Statistical analyses were performed using R software version 2.2[8].

No statistically significant difference was recorded between the 2 groups when variables age at diagnosis of HIV-1 infection, age at the start of the study, level of education, CD4 cell count at baseline, viral load below detection limits during the study, current use of an efavirenz-including antiretroviral regimen, body mass index, arterial hypertension, diabetes mellitus, and dyslipidemia were studied on univariate analyses. However, patients with major depression were more likely to be women, have a lower CD4 cell count during the study, and be current smokers **(Table 1)**.

A stepwise multivariate logistic regression analysis was performed to identify variables independently associated with a diagnosis of major depression. Variables previously used on univariate studies were included in the model. We found that the female gender (odds ratio [OR] = 10.65; 95% confidence interval [CI] = 8.96 to 12.33; p = 0.00586), a low CD4 cell count during the study (OR = 1.005247; 95% CI = 1.009480 to 1.001013; p = 0.01539), and current smoking status (OR = 12.89; 95% CI = 10.79 to 14.98; p = 0.01693) were independently associated with a diagnosis of major depression in our study population.

In summary, we found a 27.7% prevalence of major depression among our study population of HIV-infected elderly individuals. We also found that the female gender, current smoking status, and low CD4 cell counts during the study period were factors independently associated with this diagnosis. Physicians caring for HIV-infected elderly patients should be aware that depressive symptoms may pose barriers to successful antiretroviral therapy and immune reconstitution. A similar association between depressive symptoms and CD4 cell decline had already been reported during the pre-highly active anti-retroviral therapy[9]. Additionally, larger studies would be necessary to determine why depressed patients had lower CD4 cell counts during the study period. This might have resulted from suboptimal adherence to treatment, even though no difference in the prevalence of a plasma viral load below detection limits was found between depressed and non-

depressed patients. Since antidepressant treatment has been shown to be effective in the setting of HIV infection[10], the present data underscore the need to attentively screen for and treat major depressive symptoms among the growing population of elderly HIV-infected individuals.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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