

Depression in Parkinson's disease: clinical-epidemiological correlates and comparison with a controlled group of non-parkinsonian geriatric patients

Depressão na doença de Parkinson: análise clínico-epidemiológica e comparação com um grupo de pacientes geriátricos não parkinsonianos

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Abstract

Objective: To evaluate and compare the frequency and severity of major depression in patients with Parkinson's disease and in individuals older than 60 years without neurological, rheumatological and/or oncological comorbidities. **Method:** We studied 50 patients with Parkinson's disease older than 60 years and 50 geriatric patients. Subjects with scores of Mini Mental State Examination indicating cognitive impairment were excluded. We used Diagnostic Statistical Manual of Mental Diseases-IV criteria to diagnose major depression and the Hamilton Depression Scale and the Beck Depression Inventory to rate it. The Unified Parkinson's Disease Rating Scale part 3 and the Hoehn and Yahr Scale were used to evaluate the motor severity of Parkinson's disease. **Results:** Major depression was found in 42% of Parkinson's disease patients and in 10% of the geriatric patients ($p < 0.001$). The scores of the Hamilton Depression Scale and the Beck Depression Inventory were higher in Parkinson's disease patients ($p < 0.001$). Depressed Parkinson's disease patients had longer duration of Parkinson's disease ($p = 0.020$) and higher scores on the Unified Parkinson's Disease Rating Scale part 3 ($p = 0.029$) and the Yahr Scale ($p = 0.027$). **Conclusions:** The frequency (42%) and severity of major depression were higher in Parkinson's disease patients. Longer duration of Parkinson's disease, higher scores on the Unified Parkinson's Disease Rating Scale part 3 and the Hoehn and Yahr Scale were significantly associated with major depression.

Descriptors: Parkinson's disease; Depression; Prevalence; Patient selection; Geriatrics

Resumo

Objetivo: Avaliar e comparar a frequência e intensidade de depressão em um grupo com doença de Parkinson e um grupo sem doença de Parkinson, sem doença neurológica, reumatológica e/ou oncológica acompanhados na Universidade Federal de São Paulo. **Método:** Avaliaram-se 50 indivíduos com doença de Parkinson (grupo Parkinson) e 50 indivíduos sem doença de Parkinson (grupo controle) acima de 60 anos. Excluíram-se indivíduos que demonstravam alterações cognitivas pelo Mini Exame Estado Mental. Todos foram submetidos à entrevista estruturada para depressão maior do Diagnostic Statistical Manual of Mental Diseases-IV, Escala de Depressão de Hamilton e Inventário de Depressão de Beck. O grupo Parkinson foi submetido à avaliação física por Unified Parkinson Disease Rating Scale 3 e Hoehn-Yahr. **Resultados:** 42% do grupo Parkinson e 10% do grupo controle ($p < 0,001$) apresentaram depressão maior, segundo os critérios do Diagnostic Statistical Manual of Mental Diseases-IV. As médias de pontuação da Escala de Depressão de Hamilton e do Inventário de Depressão de Beck foram maiores no grupo Parkinson ($p < 0,001$). Em tempo de doença ($p = 0,020$), as médias dos escores de Hoehn-Yahr ($p = 0,027$) e Unified Parkinson Disease Rating Scale 3 ($p = 0,029$) foram maiores nos parkinsonianos com depressão. **Conclusões:** A frequência (42%) e a intensidade de depressão maior foram maiores no grupo Parkinson. A depressão maior também esteve significativamente relacionada à pior função motora dos parkinsonianos.

Descritores: Doença de Parkinson; Depressão; Prevalência; Seleção de pacientes; Geriatria

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Introduction

Depression is considered the most common neuropsychiatric disorder associated with Parkinson's disease (PD). Depression in PD patients has many clinical aspects. Apart from adding to the distress of the patients and caregivers, it increases the patients' impairment and dependence¹.

The actual rate of depression in persons with PD is unknown but reported rates vary from 7 to 76%. This may be due to the different criteria used to diagnose depression and to the different characteristics of the population to be screened. Higher rates are observed in subjects of outpatient neurologic clinics when compared to community setting studies².

Clinical interview-based studies considering the Diagnostic Statistical Manual of Mental Diseases-IV (DSM-IV) criteria tend to report lower depression rates in PD patients than those using self-report questionnaires².

Difficulty in diagnosing depression in PD is quite complex due, in part, to the overlap of symptoms of PD with those of depressive syndromes. Symptoms such as bradykinesia, lack of concentration, weakness and sleep disturbances are also observed in patients without depression.

The aim of this study is to evaluate and to compare the frequency and severity of major depression (MD) in PD patients and in subjects older than 60 years without neurological, rheumatological, or oncological comorbidities.

Patients and method

1. Sample and data collection procedure

This study was a cross-sectional study performed during the period from January 2006 and August 2007, at the Movement Disorders outpatient clinic and the Geriatric outpatient clinic both of the University Hospital of Universidade Federal de São Paulo.

We evaluated 100 subjects over 60 years old. Fifty patients had PD (25 males and 25 females) and 50 were patients attending the Geriatric clinic (six males and 44 females). Exclusion criteria were age less than 60 years, presence of cognitive impairment and PD patients who presented mood symptoms only related to motor fluctuations.

Written Informed Consent was obtained from the patients. The study was approved by the Ethics Research Board of Universidade Federal de São Paulo, SP, Brazil (1538 05).

2. Instruments

All individuals underwent a mental evaluation using the Mini Mental State Examination (MMSE)³. To assess the influence of education in MMSE performance we used Bertolucci et al. cut off values: illiterate, 13; elementary and middle educational level (< 8 years), 18; and high educational level (> 8 years), 26⁴.

MD was diagnosed based on a structured interview using DSM-IV⁵ diagnostic criteria. Its severity was further rated with the Beck Depression Inventory (BDI)⁶ and the Hamilton Depression Scale (HAM-D)⁷. PD was diagnosed according to the Parkinson's Disease United Kingdom Brain Bank criteria⁸. We rated motor and functional performance on PD patients by the Unified Parkinson's Disease Rating Scale (UPDRS)⁹ part 3 (motor evaluation) and the Hoehn and Yahr Scale (HY)¹⁰.

3. Data analysis procedure

The statistical analysis consisted initially of descriptive measures for variables under study. For this purpose, frequencies and percentages were used for category variables, while means, medians

and standard deviations were used for quantitative variables. Analysis of variance was used to verify if the means of age of all individuals differ. In order to compare the frequencies of depression between the Parkinson group and the Geriatric group, we used the chi-square test. Also between these two groups, covariance analysis was used to compare total MMSE, BDI and HAM-D scores. Fisher's exact test was used to show the relation between gender and MD either in the Parkinson group or in the Geriatric group.

PD motor symptoms duration was compared in depressed and non-depressed PD patients by means of Kruskal-Wallis test. Spearman's correlation coefficients were used to evaluate the correlation between PD duration and HY and UPDRS-3 scores. A covariance analysis was used to compare HY and UPDRS-3 means in depressed PD individuals and non-depressed PD individuals.

Significance was assumed for $p < 0.05$.

Results

Table 1 shows the frequencies of MD according to the DSM-IV criteria in patients of the Parkinson (42%) and Geriatric (10%) groups. It also shows descriptive measures for HAM-D and BDI scales scores in both groups according to the presence or not of MD. There was significant difference in the means of HAM-D and BDI scores between the Parkinson group and the Geriatric group. Parkinson group had higher scores on the HAM-D and BDI scales. But when the means of HAM-D and BDI scores were compared between depressed individuals of the Parkinson group and depressed individuals of the Geriatric group, only the means of BDI scores were higher in the Parkinson group.

Analysis of variance (ANOVA) showed no significant difference in the means of age between the Parkinson group and the Geriatric group ($p = 0.283$) and in the means of age between depressed and non-depressed individuals ($p = 0.193$) in both groups.

Fisher's exact test showed no association between gender and MD either in the Parkinson group ($p > 0.999$) or in the Geriatric group (0.487). However, the percentage of women was higher than the percentage of men in the Geriatric group, and in the Parkinson group these percentages were equal.

Analysis of covariance showed no significant differences in the means of MMSE scores between Parkinson and Geriatric groups ($p = 0.717$).

Spearman's correlation coefficients showed correlation between the duration of Parkinson's disease and HY ($r = 0.395$, $p = 0.005$) and UPDRS-3 ($r = 0.289$, $p = 0.042$) scores. The

Table 1 – Major depression frequencies according to DSM-IV criteria and descriptive measures for Hamilton (HAM) and Beck scales scores in Parkinson and Geriatric groups according to the presence or not of major depression

	Major depression	Depressed	Non-depressed
Parkinson group			
Frequency N (%) †		21 (42%)	29 (58%)
HAM mean scores (SD) ††		15.8 (5.0)	5.6 (3.8)
Beck mean scores (SD) ††		22.6 (10.2)	7.9 (6.1)
Geriatric group			
Frequency N (%) †		5 (10%)	45 (90%)
HAM mean scores (SD) ††		15.4 (6.9)	3.5 (2.9)
Beck mean scores (SD) ††		15.4 (6.8)	4.5 (3.7)

† Chi-square test: $p < 0.001$

†† Analysis of Covariance - There was significant difference in the means of HAM ($p < 0.001$) and BDI ($p < 0.001$) scores between Parkinson group and Geriatric group. Parkinson group had higher scores in HAM and BDI scales.

scores of the HY and the UPDRS-3 were higher when the duration of Parkinson's disease was longer. Kruskal-Wallis test compared the time of duration of Parkinson's disease between depressed and non-depressed individuals. The means of HY ($p = 0.027$) and UPDRS-3 ($p = 0.029$) scores were higher in depressed individuals.

The diagnosis of MD was made in 21 PD patients but only six (28.6%) were taking antidepressant drugs.

Discussion

This study draws attention to the clinical expressiveness of MD in PD patients who attended regular follow-up visits at a Movement Disorders Unit.

The frequency of MD in PD patients found in this study was 42% and it is similar to some studies of the medical literature^{2,11}. Our study was conducted in a tertiary medical care institution, and the results may have been influenced by this factor.

In the absence of a true gold standard, the DSM criteria is considered an adequate approach for establishing the diagnosis of depressive disorders in elderly patients and in patients with comorbid conditions such as PD¹². We used these criteria to define MD in our sample, and an inclusive approach was considered during the administration of a structured interview. According to Koenig et al.¹³ in their study about depression in medically ill hospitalized older adults, an inclusive approach counts all symptoms toward the diagnosis of depression, regardless whether the clinician judges that the symptom is due to medical or psychological causes. This approach is highly sensitive and reliable, since the only decision is whether the symptom is present or not. However, it has been criticized as having poor specificity and inflating rates of depression. Maybe this inclusive approach has contributed to our higher prevalence of MD when compared to community studies previously shown.

Mental status was assessed using the MMSE. We excluded individuals with scores less than 18 since this would make the administration of our instruments difficult and it was not our purpose to define frequency of depression in PD patients with cognitive impairment.

Gender was not associated with MD in both groups. Prado et al.¹⁴ also revealed no statistically significant correlation between depression and gender in their study with 60 patients with Parkinson's disease. However, one limitation of our study was the clear discrepancy of gender distribution between the Parkinson group and the Geriatric group.

This study used the HAM-D and the BDI to evaluate the severity of depression. We used these two scales since the Movement Disorder Society recommends them as suitable for assessing the severity of depressive symptoms¹⁵.

Our results showed that depressed PD patients had higher UPDRS-3 and HY scores when compared to non-depressed PD patients. There are conflicting studies on the association between depression and PD severity but the majority of them reports a positive association^{11,14}. In this study, MD in PD patients was associated with poorer motor function and longer PD duration.

Conclusions

In conclusion, the frequency of depression in PD patients older than 60 years was higher than the frequency of a control group of elders. Although frequency of depression in PD varies widely, our result is in agreement with the majority of studies conducted in tertiary medical care institutions.

The means of HAM-D and BDI scores were higher in depressed PD patients than in the Geriatric group indicating that PD patients tend to present more severe symptoms than elder people without PD.

Depressed PD patients showed worse motor function and longer disease duration than non-depressed PD patients.

We believe that meaningful prevalence of MD observed in our study indicates that this problem should be addressed by clinicians managing PD patients. A structured interview to detect depressive symptoms such as the one we used in the present study can be a useful tool to recognize MD. Detecting and treating depression may be a decisive measure to improve the quality of life of PD patients.

Disclosures

Writing group member	Employment	Research grant ¹	Other research grant or medical continuous education ²	Speaker's honoraria	Ownership interest	Consultant/ Advisory board	Other ³
Beatriz Azevedo dos Anjos Godke Veiga	UNIFESP	---	---	---	---	---	---
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* Modest

** Significant

*** Significant. Amounts given to the author's institution or to a colleague for research in which the author has participation, not directly to the author.

Note: UNIFESP = Universidade Federal de São Paulo.

For more information, see Instructions for authors.

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