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Suicide and suicidal ideation in Parkinson's disease

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ABSTRACT

Little is known about the prevalence and correlates of suicidal behavior in Parkinson's disease (PD). In the first part of the study, we followed a cohort of 102 consecutive PD patients for 8 years and found that the suicide-specific mortality was 5.3 (95% CI 2.1–12.7) times higher than expected. In the second part, we tested 128 PD patients for death and suicidal ideation and administered an extensive neurological, neuropsychological and psychiatric battery. Current death and/or suicidal ideation was registered in 22.7%. On univariate logistic regression analysis, psychiatric symptoms (depression, but also anxiety and hopelessness), but not the PD-related variables, were associated with such ideation. On multivariate logistic regression analysis this association held for major depression (odds ratio = 4.6; 95% CI 2.2–9.4; $p < 0.001$), psychosis (odds ratio = 19.2; 95% CI 1.4–27.3; $p = 0.026$), and increasing score of the Beck Hopelessness Scale (odds ratio = 1.2; 95% CI 1.0–1.4; $p = 0.008$). In conclusion, the suicide risk in PD may not be as high as it is expected, but it is certainly not trivial. According to our data almost a quarter of PD patients had death and/or suicidal ideation, that may significantly influence their quality of life.

1. Introduction

Suicide is a major public health problem [1]. Psychiatric disorders, particularly mood disorders (e.g. major depression), are the diagnoses most commonly associated with suicide [1–4]. Suicidal ideation is a core symptom of major depression, and the two are highly associated [2–5]. In completed suicides, about a half are driven largely by depression, but a half are motivated by other sufferings, including psychosis, substance abuse or alcoholism [6], loss of the sense of meaning and purpose, lack of social ties [3], etc. A cohort of individuals who committed suicide had no apparent psychiatric diagnosis [7]. A number of factors unrelated to psychopathology (e.g. demographic factors such as male sex and increasing age, access to weapons) have been shown to be independently associated with suicidal ideation and/or completed suicide [8,9]. Also, significant association was found between medical conditions (pain, congestive heart failure, pulmonary diseases, some neurological disorders) and suicidality, that persisted after adjusting for depressive illness and alcohol use [10]. In a prospective study of suicidal ideation in a consecutive series of patients who had been newly referred to the general neurology outpatient clinic, Carson et al. [11] reported the prevalence of 9% for significant suicidal ideation, which was profoundly higher than in primary care and community settings.

Suicide-related thoughts and behaviors may be categorized as suicide-related ideation, suicide attempts, and completed suicide [12], the former two being among the most important risk factors for completed suicides [13].

Parkinson's disease (PD), a chronic, progressive and disabling disease, is frequently complicated by depression. In a systematic literature search, Reijnders et al. [14] found that the weighted prevalence of major depression in PD patients was 17%, that of minor depression 22% and dysthymia 13%. Depression in PD may be distinguished from other depressive disorders by greater dysphoria, irritability, sadness, pessimism about the future and suicidal ideation, while there is a reduced frequency of guilt, self-blame, feeling of failure and completed suicide [15].

Since there is a paucity of studies regarding suicide in PD, the aim of this study is to evaluate (a) suicide-specific mortality in a cohort of PD patients, and (b) suicidal and death ideation in PD, and their relationship to clinical and demographic data.

2. Patients and methods

The study has two parts. Informed consent was obtained from all of the studied patients, and the study protocols were approved by the Ethical Committee of the School of Medicine, University of Belgrade. In all patients from both parts of the study, the diagnosis of PD was made according to the British Brain Bank criteria [16]. Severity of PD was assessed with the modified Hoehn and Yahr staging scale [17], and cognitive status with the Mini-Mental State Examination (MMSE)

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[18]. Patients with the MMSE score ≤24 were not included in the study. Diagnosis of a depressive disorder was made using the depression module of the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID), administered to each patient by the psychiatrist trained for SCID interview (A.P.) [19]. Subjects were given a DSM-IV diagnosis of no-depression, major depression, and non-major depression (dysthymia and minor depression). Severity of depression was measured with the Hamilton Depression Rating Scale (HDRS; 21 items) [20], usually on the same day.

(I) Study on suicide as an outcome in a cohort of patients with Parkinson's disease.

In the first part, we conducted an 8-year follow-up of a cohort of 102 consecutive PD patients, recruited in our outpatient clinic from January to April, 2000. After recruitment, patients were followed in yearly intervals, or in the case they failed to present, we contacted their spouses or other caregivers. For patients who died, we requested a copy of the death certificate to control for the exact date and cause of death.

(II) Cross-sectional study on suicidal and death ideation in Parkinson's disease.

In the second, cross-sectional part of the study, 128 consecutive patients with PD at the outpatient clinic of our Institute were involved. Patients were subjected to a comprehensive semi-structured clinical interview that included age, sex, years of education, marital status, employment, duration of the disease, duration of treatment, complications of levodopa therapy, history of depression, history of current or previous antidepressant treatment, history of any impulse control disorders (ICD) behaviors during the course of PD, family history of depression or other mental disorders, suicides in family, current alcohol use (>14 drinks weekly) and smoking, and surgical interventions. Co-morbid disorders (asthma, arthritis, cancer, chronic bronchitis, diabetes mellitus, hypertension, myocardial infarction, lupus, gout, disorders of thyroid gland, etc.) were focused.

2.1. Neurological and psychiatric assessment

Patients were always assessed during their "on" state. Disability was assessed with the Schwab and England Scale [21]. Severity of anxiety was measured with the Hamilton Anxiety Rating Scale [22]. Psychosis was assessed with the Parkinson's Psychosis Rating Scale (PPRS) [23]. A positive response to any hallucination or the paranoia item was considered a positive response for the presence of psychosis [24]. The experience of despair or extreme pessimism about the future was assessed with the Beck Hopelessness Scale (BHS), a 20-item self-report instrument in writing. Each item was scored with a true/false response. Total scores ranged from 0 to 20, with higher scores indicating a greater degree of hopelessness [25]. We also applied the Scale for Suicide Ideation (SSI), a 19-item clinical research instrument designed to quantify and assess suicidal ideation [26].

Similar to the approach of Nazem et al. [24], we addressed death ideation through two questions: (Q1) "Has there been a time in the last month when you felt life was not worth living?", and (Q2) "Has there been a time in the last month that you wished you were dead, for instance that you would go to sleep and not wake up?" Addressing suicidal ideation we also used two questions: (Q3) "Has there been a time in the last month that you thought of taking your own life, even if you would not really do it?", and (Q4) "Has there been a time in the last month when you reached the point where you seriously considered taking your own life, or perhaps made plans how you would go about doing it?". A positive response to either of the two questions for both items (Q1 and Q2 for death or Q3 and Q4 for suicidal ideation) was considered positive response. Finally, patients were asked whether they had ever made suicide attempts on their lives (Q5).

2.2. Statistical analysis

Logistic regression analysis was used to determine the association between demographic and clinical variables (independent variables) and the presence of suicidal and/or death ideation (dependent variable). Odds ratio (OR) and 95% confidence interval were separately calculated for each variable using univariate logistic regression analysis. All statistically significant variables ($p<0.05$) that were associated with the presence of suicidal and/or death ideation were entered into the final multivariate logistic regression model to evaluate their independent contribution. The standardized mortality ratio (SMR) for suicide was estimated as a ratio of observed-to-expected suicides. The number of expected suicides was obtained through a comparison with mortality due to suicide in the general population of Serbia.

3. Results

(I) Study on suicide as an outcome in a cohort of patients with Parkinson's disease.

Hundred and two patients with PD (55 males; age 58.4 ± 9.9 years; disease duration 4.7 ± 4.2 years) were followed for 8 years. During that period 36 deaths were recorded (35%); out of these two patients committed suicides. First patient (male, age 73 years) had well controlled PD (duration of the disease 10 years, Hoehn and Yahr stage 2.5; MMSE score 28), with the exception of functionally insignificant peak-of-dose dyskinesia, and was diagnosed as major depression (HDRS score 23). He committed suicide in the fourth year of follow-up. Second, female patient (age 71 years) had slightly more advanced PD (duration of the disease 12 years; Hoehn and Yahr stage 3; MMSE score 28), with moderate wearing-off phenomenon and peak-of-dose dyskinesia. She also had major depression (HDRS score 21) and committed suicide after 5 years of follow-up. The suicide-specific mortality was 5.3 (95%CI 2.1–12.7) times higher than expected in the sex- and age-matched Serbian population.

(II) Cross-sectional study on suicidal and death ideation in Parkinson's disease.

Demographic and clinical characteristics of 128 patients with PD are presented in Table 1. Overall rates of depression (41.5%), and in

Table 1
Demographic and clinical data of 128 patients with Parkinson's disease involved in a cross-sectional study of death and suicidal ideation.

Age (years)*	62.7 ± 9.3
Male:female ratio#	88 (68.8%):40 (31.2%)
Education (years)*	11.5 ± 3.7
Married patients#	98 (76.6%)
Retired or unemployed#	98 (76.6%)
Disease duration (years)*	7.9 ± 10.1
Hoehn and Yahr stage*	2.4 ± 0.7
Schwab and England score*	88.7 ± 7.3
Presence of dyskinesia#	44 (34.4%)
Presence of motor fluctuation#	77 (60.2%)
MMSE score*	27.6 ± 2.3
Presence of depression (any)#	53 (41.5%)
Major depression#	24 (18.8%)
Nonmajor depression#	29 (22.7%)
HDRS score*	11.7 ± 7.7
HARS score*	9.2 ± 8.6
BHS score*	6.6 ± 4.9
SSI score*	0.8 ± 2.2
Presence of psychosis#	16 (12.5%)
Positive history of IDC during PD#	10 (7.8%)

*Values present means ± SDs; #values present numbers of patients with percentages in parentheses; HDRS = Hamilton Depression Rating Scale; HARS = Hamilton Anxiety Rating Scale; MMSE = Mini-Mental State Examination; BHS = Beck Hopelessness Scale; SSI = Scale for Suicide Ideation; IDC = impulse control disorders; PD = Parkinson's disease.