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Frequency and correlates of co-morbid psychosis and depression in Parkinson's disease

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Abstract

Though both psychosis and depression are common in Parkinson's disease (PD), it is not clear if an association between the two disorders exists. One hundred and thirty PD patients were divided into four groups based on a comprehensive psychiatric assessment: (1) no depression or psychosis (47.7%); (2) psychosis only (16.2%); (3) depression only (26.2%); and (4) psychosis and depression (10.0%). Co-morbid psychosis and depression did not occur more frequently than expected by chance ($P = .77$). Psychosis was associated with dopamine agonist use ($P = .02$), depression with mild-cognitive impairment ($P = .03$), and their co-occurrence with higher daily levodopa dosages ($P < .01$). These results suggest that psychosis and depression in PD are distinct neurobehavioral disorders.

Keywords: Parkinson's disease; Depression; Psychosis; Co-morbidity

1. Introduction

Numerous psychiatric complications are common in Parkinson's disease (PD). The most prevalent and well-studied disorders in specialty care settings are depression (20–40%), psychosis (15–30%), and dementia (20–30%) [1–3].

By chance alone, psychosis and depression should co-occur in PD. If the two disorders have similar risk factors or neurobiological underpinnings, the co-occurrence of psychosis and depression would be greater than expected by chance alone, and previous research suggests that there may be an association between the two disorders [4–7]. If so, this may be due to common risk factors, including increasing age [6,8], greater cognitive impairment [4,9], and greater PD severity [6,9]. Other purported risk factors for individual disorders include exposure to most dopaminergic therapies (psychosis) [10], and female sex, predominantly right-sided motor symptoms, and treatment with higher levodopa doses (depression) [9,11,12].

Though psychosis and depression have been reported to commonly co-occur in PD, the relationship between the two disorders has not been studied in detail. Specifically, we sought to: (1) determine the frequency of depression, psychosis, and co-morbid psychosis and depression in a sample of PD patients; (2) determine if an association exists between the two disorders; and (3) probe for clinical correlates of co-morbid psychosis and depression.

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2. Methods

2.1. Subjects

The study population consisted of a convenience sample of 130 outpatients with a diagnosis of possible or probable idiopathic PD [13], confirmed by a movement disorders specialist. Subjects were established patients at the Parkinson's Disease Centers at the University of Pennsylvania ($N = 25$) or the Philadelphia Veterans Affairs Medical Center (VAMC) ($N = 105$), and were evaluated as part of a study of the frequency and correlates of depression in PD. The typical subject was an older white male (Table 1), reflecting the fact that the majority of subjects were male patients at the Philadelphia VAMC.

2.2. Procedures

The Institutional Review Boards at the University of Pennsylvania and the Philadelphia VAMC approved the study, and written informed consent was obtained prior to study participation. A trained research assistant administered the psychiatric and neuropsychological instruments and conducted a chart review. If the subject demonstrated memory impairment on clinical interview, collateral information about the presence of psychotic symptoms was sought from an informed other(s). Neurological assessments were completed by movement disorders' neurologists, nurses with expertise in PD, or a geriatric psychiatrist (DW) with training in the administration of neurological assessments.

Table 1
Demographic and clinical characteristics ($N = 130$)

Variable	Mean (SD) or percentage
Demographics	
Age	71.4 (8.8)
Sex (% male)	87.5%
Race (% white)	93.8%
Education (# years)	15.4 (8.1)
Psychosis	
Any psychotic symptom (% yes)	26.2%
Hallucinations (% yes)	23.8%
Paranoia (% yes)	6.2%
Depression	
GDS positive (% yes)	36.2%
Motor	
PD duration (# years)	7.0 (5.4)
Sidedness (% right-sided PD)	41.9%
Levodopa/carbidopa dosage (mg/day)	442.1 (349.8)
Dopamine agonist (% yes)	51.2%
UPDRS motor score	22.7 (11.2)
Cognition	
MMSE score	27.9 (2.1)
Other	
ESS score	10.1 (5.1)

2.3. Measures

2.3.1. Demographic and clinical characteristics

As part of the screening process patients provided the following information: age, sex, race, years of education, current medications, duration of PD, and initial side predominance of PD.

2.3.2. Psychiatric

Depression was assessed with the 15-item Geriatric Depression Scale (GDS-15) [14], which is a self-rated depression screening questionnaire (range = 0–15, higher scores indicating greater severity of depression). A GDS-SF cutoff of $\geqslant 5$, which has demonstrated good sensitivity and specificity for a DSM-IV-TR [15] diagnosis of depression in PD [16], was used to indicate the presence of clinically significant depression.

Psychosis was assessed with the Parkinson's Psychosis Rating Scale (PPRS) [17], a 6-item clinician-administered questionnaire (range 6–24, higher scores indicating greater severity of psychosis). As three of the items on the PPRS are not specific to psychosis (i.e., sleep disturbances, confusion, and sexual preoccupation), only the three items that queried for visual disturbances (either hallucinations or illusions) and paranoid ideation were used for analyses (range 3–12, higher scores indicating greater severity of psychosis). For the purposes of this study, a subject was considered to be experiencing psychosis if any of these three items was endorsed.

Global cognition was assessed with the Mini-Mental State Examination [18]. Daytime sleepiness was assessed with the Epworth Sleepiness Scale (ESS) [19] (range = 0–24, higher scores indicating greater somnolence).

2.3.3. Neurological

Severity of PD was assessed with the Unified Parkinson's Disease Rating Scale UPDRS [20] motor section (UPDRS items #18–31, range = 0–108, higher scores indicating greater motor impairment). Prior to study initiation, all UPDRS motor section raters viewed the UPDRS Teaching Tape [21] and received a certification documenting acceptable interrater reliability (i.e., rating scores that fit within the 95% confidence interval range established by 3 experts on all 4 test videotapes of PD subjects) [22].

2.4. Statistical analysis

All statistical procedures were performed with SPSS 13.0 for Windows [23]. Comparisons between psychotic and non-psychotic subjects and between depressed and