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# Delusional misidentification syndrome and other unusual delusions in advanced Parkinson's disease



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#### ABSTRACT

Background: Unusual delusional syndromes are rare protean diseases with speculative etiopathogenic mechanisms

Methods: Seven consecutive patients with advanced PD were evaluated over a 15-year period at the Movement Disorders Unit in the Neurology Service, Hospital de Clínicas, Federal University of Paraná, and the Paraná State Parkinson's Patients Association.

Results: We describe advanced Parkinson's disease patients presenting with unusual delusional syndromes, including cases of Ekbom, Othello, Capgras' and Diogenes syndromes, reduplicative paramnesia and mirrored-self misidentification.

Conclusion: There are a few isolated reports of unusual neuropsychiatric disorders in patients with PD. We believe that these syndromes associated with advanced PD in elderly patients presenting with cognitive impairment and polypharmacy are probably often underestimated. Neurologists should be aware for these rare and treatable conditions.

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#### 1. Introduction

Advanced Parkinson's disease (PD) patients typically present with motor complications, such as fluctuations and dyskinesias. However, this group of patients usually present with disabling non-motor symptoms, including cognitive impairment (dysexecutive syndrome, subcortical and frontal dementia), dysautonomia (postural hypotension, urinary dysfunction, constipation, sexual dysfunction, pain), sleep disorders, depression, anxiety, and psychosis (with characteristic visual hallucinations and delusions) [1,2]. Neuropsychiatric conditions are common in patients with advanced PD, particularly dopaminergic psychosis, and more rarely impulse control disorders, such as pathological gambling, compulsive shopping, binge eating, punding and hypersexuality, as well as dopamine dysregulation syndrome (Lees' syndrome) [1–3].

In addition to these typical conditions, rare neuropsychiatric complications can also be observed [4]. Unusual delusional syndromes, as described in Table 1, are a group of neuropsychiatric disorders characterized by the false identification or reduplication of persons, places or objects [4].

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Is this study we describe seven Brazilian patients with advanced PD [Hoehn & Yahr (HY) scale score  $\geq$  3] presenting with rare neuropsychiatric disorders.

#### 2. Methods

Seven consecutive patients with advanced PD were evaluated over a 15-year period at the Movement Disorders Unit in the Neurology Service, Hospital de Clínicas, Federal University of Paraná, and the Paraná State Parkinson's Patients Association. Neurological and psychiatric evaluations were carried out. The diagnosis of a neuropsychiatric disorder was based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). Informed consent forms were obtained by patients relative and were approved by local ethics committee.

#### 3. Results

Four patients were male, mean age of PD onset was  $63.2 \pm 2.1$  years (range 60-66 years), disease duration was  $13.5 \pm 1.7$  and mean age at the time of assessment was  $77.6 \pm 2.1$  years. HY stage was rated as III for 5 patients and IV for the remaining.

From the neuropsychiatric standpoint, we found cases of unusual delusional syndromes including: Capgras', Othello, Ekbom, and Diogenes syndromes, reduplicative paramnesia and mirrored-self misidentification.

All the patients met the criteria for dementia using the Minimum Data Set, and 71.4% were using dopaminergic agonists (mainly pramipexole).

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**Table 1** Unusual delusional syndromes.

Case	Delusional syndrome	Description
1	Ekbom syndrome	Patient believes that is infected by a parasite
2	Othelo syndrome	Pathologic or delusional jealousy
3	Mirror sign	Misidentification of oneself in the mirror
4	Capgras syndrome	Familiar persons are perceived to be impostors or to have doubles with different psychic identities
5	Diogenes syndrome	Severe self-neglect, domestic squalor, social withdrawal and syllogomania
6	Reduplicative paramnesia	Pathological belief that a place simultaneously exists in two or more physical locations

We briefly describe the cases below (Table 2).

#### 3.1. Case 1: Ekbom syndrome

An 82-year-old male presenting with PD since the age of 65. He started to treat with levodopa-benserazide 200/50 mg (1/2 tablet three times/day), with a significant improvement in his clinical picture. Four years later, when his motor symptoms worsened, a range of drugs was prescribed: selegiline (10 mg/day), piribedil (100 mg/day), clonazepam (0.5 mg/night), sertraline (50 mg/day), pramipexole (2 mg/day), citalopram (20 mg/day), amantadine (100 mg/day) and entacapone 200 mg (3 times/day). Five years later, the patient (Hoehn-Yahr stage III) was on levodopa-benserazide 200/50 mg (1 tablet four times/day), entacapone 200 mg (4 times/ day) and amantadine (200 mg/day), and, as his motor symptoms worsened after one year, entacapone was replaced by ropinirole (3 mg/day). The motor symptoms improved, but the patient started to experience visual hallucinations and believed that was an armed person at his house. He also had the delusional belief that when he was looking through another building from the window it "was moving". Around three weeks later he started to complain about "small worms/white worm-like grains of rice" that were moving around under the skin, on his nose and forearms. He started to repeatedly pick them up and keep them in a jar to bring to the physician. Ropinirole was reduced until be discontinued, levodopabenserazide was continued and quetiapine was started at 50 mg at night. He stopped to hallucinate and the symptoms were stabilized. However, in the following years the patient was diagnosed with progressive cognitive impairment and dementia, and donepezil (10 mg/day) was started. Nowadays, he is on HY stage V, bedridden, using a gastrostomy tube and totally dependent on caregivers.

### 3.2. Case 2: Othelo syndrome

A 79-year-old male, retired engineer who has PD for 13 years (motor symptoms started on the right side). He was scored at

Hoehn-Yahr stage III and was receiving levodopa-benserazide 200/50 mg (1/2 tablet 5 times/day), levodopa-benserazide HBS (100/25 mg at night), pramipexole (3 mg/day), and sertraline (75 mg/day). The Mini-Mental State Examination (MMSE) score was (22/30) and Movement Disorders Society Task Force recommended diagnostic rating for probable PD-Dementia were compatible, after that rivastigmine patch (9.5 mg/day) was included in his treatment. On the follow-up he presented with nocturnal zoomorphic visual hallucinations and aggressiveness toward his 78-year-old wife, whom he accused of having an affair with her young physical therapist. His delusional symptoms worsened and he became increasingly aggressive with frequent crises of jealousy. He finally drove the physical therapist out of his house and attempted to do a police report. He started to take quetiapine up to 100 mg/day and pramipexole was replaced by entacapone, resulting in an improvement of his delusional symptoms.

#### 3.3. Case 3: mirror sign

A 76-year-old female who has had PD since the age of 64 (motor symptoms started on the right side). She is at Hoehn—Yahr stage III, suffers from dementia and is using levodopa-benserazide 200/50 mg (1 tablet 4 times/day), levodopa-benserazide HBS (100/25 mg at night), pramipexole (3 mg/day), citalopram (20 mg/day) and rivastigmine patch (9.5 mg/day). Her husband, who is her caregiver, reported that in the previous two months the patient presented with an unusual symptom: when she was in her bedroom during the night, she will stare at the bathroom mirror and repeatedly say "Who is this person?" However, she had no difficulty recognizing her relatives. Clozapine was introduced (75 mg/day) and rivastigmine was increased (13.3 mg/day), with partially control of symptom.

#### 3.4. Case 4: Capgras' Syndrome

A 78-year-old male with advanced PD (14 years, with motor symptoms predominantly on his left side). Suffering from dementia, at Hoehn—Yahr stage III and using levodopa-benserazide 200/50 mg (5 tablets/day), entacapone 200 mg (5 times/day), rasagiline (1 mg/day), sertraline (75 mg/day) and rivastigmine patch (13.3 mg/day). His wife reported that when he was visited by his brother, who is 74 years old, he repeatedly declared, "This guy is not my brother, he is not a member of my family, he is another person, not my brother, he is a stranger." Interestingly, his relationship with his brother was always normal, and when the patient is visited by his sister, who is 70 years old, he is always calm and has no delusions about her. After decrease on levodopa-benserazide, and replacement of rasagiline by quetiapine(50 mg/day) the symptoms were improved.

**Table 2** Advanced Parkinson's disease patients.

Case	NP diag.	Age	PD duration	Gender	PK side	НҮ	UPDRS III	MDSD	DA use	Daily dosage L-dopa/DA agonist
1	Ekbom syndrome	82	17	M	Left	III-V	33	+	+	800 mg/3 mg
2	Othelo syndrome	79	13	M	Right	III	28	+	+	600 mg/3 mg
3	Mirror sign	76	12	F	Right	III	26	+	+	900 mg/3 mg
4	Capgras syndrome	78	14	M	Left	III	34	+	_	1000 mg/-
5	Diogenes syndrome	76	13	F	Left	III	29	+	+	1250 mg/3 mg
6	Reduplicative paramnesia	75	14	M	Left	III—IV	33	+	_	900 mg/–
7	Ekbom syndrome	72	12	F	Right	III	28	_	+	800 mg/3 mg

NP diag = neuropsychiatric diagnosis; Age (years); PD duration = duration of the disease (years); M = Male, F = female; PK side = side predominantly affected by parkinsonism; HY = Hoehn—Yahr stage (I–V); UPDRS III = unified Parkinson's disease rating scale (part III); MDSD = movement disorder society task force – diagnostic rating sheet for probable Parkinson's disease dementia; DA use = dopaminergic agonists use.

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