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Rapid worsening in Parkinson's disease may hide COVID-19 infection

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COVID-19 is global pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1]. Patients with COVID-19 usually present with fever, pain, respiratory illness and sometimes digestive symptoms. Older age is one of the risk factor associated with more severe form of COVID-19 that may cause acute respiratory distress syndrom (ARDS) and death [2]. Parkinson's disease (PD) is a common neurodegenerative whose prevalence is increasing with age [3]. Currently, there is no information regarding COVID-19 presentation, course and outcome in patients with PD [4]. In addition, in order to limit SARS-Cov-2 diffusion, many countries took drastic measures such as complete lock-down that were associated with dramatic changes in PD patients' routines and life style [5]. Here we report on two patients with PD treated by subthalamic deep brain stimulation (STN-DBS) that develop COVID-19 with misleading presentations and poor outcome.

Patient 1: A 83-year-old man with a 21-year history of PD was regularly seen in our abnormal movement outpatient clinic to monitor his STN-DBS. From the 2020/03/19, he presented gradually worsening of his motor state with falls, postural instability, dysarthria, chewing and swallowing disorders without cognitive alteration. Fever and cough appeared after 5 days of motor evolution. COVID-19 was diagnosed on reverse transcription polymerase chain reaction (rt-PCR) testing for SARS-Cov-2 nucleic acid and on chest CT abnormalities (Table 1). After 3 days of motor and respiratory stabilization in hospitalisation, he developed ARDS leading to death in few hours.

Patient 2: A 73-year-old woman with a 23-year history of PD, who received STN-DBS 13 years ago, was admitted because of unexplained falls and speech disturbance that started suddenly two days earlier. She had no comorbidity. On admission, she had no fever, respiratory or digestive symptoms. She was confused and her PD motor symptoms were unusually severe. Brain CT was normal and STN-DBS was functional. Her main clinical features are shown in the table. Because elevated CRP, chest CT was performed that displayed typical aspect of viral pneumonia with minimal severity. Detection of SARS-Cov-2 RNA by rt-PCR was positive in nasopharyngeal swab. Her PD condition remained severe despite increase of L-Dopa dose. Ten days after the admission, she developed ARDS and died within a few hours.

Those two cases illustrate that early and accurate diagnosis of COVID-19 in PD patients may be challenging. COVID-19 may mimic PD evolution triggered by usual causes of worsening such as battery's end-of-life or by deleterious effects of the lock-down (increased psychological stress or reduced physical activity) [5]. In addition, COVID-19 symptoms such as fatigue, anosmia, hot flush or painful limbs also belong to the spectrum of non-motor PD signs [6]. Finally, this study draws attention to the potential severity of COVID-19 in PD and highlights the need of larger studies to assess the exact prevalence and fatality rate of COVID-19 in PD population.

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Authors' roles

Research project – Conception and execution: Pr Grabli and Dr Hainque.

Manuscript - Writing of the first draft: Pr Grabli and Dr Hainque.

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Table 1
Clinical features of the patients.

Variable	Patient 1	Patient 2
Demographics		
Age (y)	**83**	**73**
Gender	**Male**	**Female**
PD characteristics		
Disease duration (y)	21	23
Dopaminergic drugs (LED, mg)	300	550
STN-DBS duration (y)	13	10
COVID-19 characteristics at the first assessment		
Fever	Yes	No
Respiratory disease	Yes	No
Digestive signs	No	No
Blood oxygen saturation (%)	83	98
CRP (mg/L)[a]	79	55
Lymphocytes count (per mm^3)[a]	560	1640
Chest CT	Typical; moderate severity	Typical; minimal severity
PCR SARS-Cov-2	+	+

y: years; LED: levodopa equivalent dose; STN-DBS: subthalamic nucleus deep brain stimulation; CRP: C-reactive protein; CT: computed-tomography; PCR: polymerase chain reaction; SARS-Cov-2: severe acute respiratory syndrome coronavirus 2.

[a] Normal range: CRP < 6mg/L; Lymplocytes [1500;4000].

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Declaration of competing interest

None.

The authors report no conflict of interest relative to the research covered in the submitted manuscript.

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