

Impact of COVID-19 Pandemic on Parkinson's Disease: A Tale of Fears and Sorrows!

INTRODUCTION

Coronavirus disease 2019 (COVID-19) pandemic resulted in a significant loss of lives worldwide. While awaiting a targeted therapy or vaccine for SARS-CoV-2, serial lockdowns and social distancing were widely practiced and a significant proportion of the population remained confined to their homes for a long duration.^[1] Parkinson's disease (PD) commonly affect elders, a group already prone for unfavorable outcome in SARS-CoV-2 infection.^[2,3] Available literature about the impact of COVID-19 pandemic on PD can be divided into two major categories: (i) studies that analyzed the effect of SARS-CoV2 infection on PD, and (ii) those which assessed the effect of lockdown (in absence of SARS-CoV2 infection) on symptoms of PD.

COVID-19 pandemic was unprecedented for the present generation because of the highly contagious nature of the viral infection. Although the fear of contracting SARS-CoV-2 infection was a major concern in the minds of PD patients and their caregivers;^[4-6] however, scientific studies have shown that this risk among patients with PD was comparable to that of the general population.^[7,8] A number of other studies have reported changes in symptoms of existing PD after patients contracted SARS-CoV-2 infection. Although a recent study reported no significant worsening of parkinsonian symptoms in a cohort of 12 PD patients infected with SARS-CoV2,^[9] several other series described worsening of PD symptoms following infection.^[10-13] An online survey of Fox Insight (FI) users reported worsening of existing or new-onset parkinsonian symptoms in a sizable proportion of PD patients following SARS-CoV2 infection (63% and 75%, respectively).^[14] This could be attributed to a number of factors viz., aggravated neurodegeneration resulting from systemic inflammation, disrupted intracerebral dopamine transmission and metabolism, and lastly, alteration in the pharmacodynamics of dopaminergic medications.^[15] In addition, after contracting SARS-CoV-2 infection, a higher mortality rate compared to the general population has been reported among PD patients, especially those with hypertension, coexisting dementia, longer duration of PD, and older age.^[10,16]

In this issue of the journal, Saluja A, *et al.*^[17] have performed a single-center cross-sectional study to investigate the impact of lockdown (not SARS-CoV2 infection) on the disease activity, caregiver perceptions, and quality of life in PD patients. They telephonically interviewed 64 PD patients and caregivers, having no signs of SARS-CoV2 infection, using a structured questionnaire including nonmotor symptoms scale (NMSS) and Parkinson Disease Questionnaire-8 (PDQ-8) and equated the PDQ-8 severity index (PDQ-8 SI) scores (percentage of raw

PDQ-8 score of the total score). Authors reported motor and/or nonmotor worsening in 40.6% of their patients during the lockdown. While slowness in activities, gait, and tremor were the commonly aggravated motor symptoms, mood and sleep disturbances were the common nonmotor symptoms to worsen. Worsening of nonmotor symptoms independently predicted the highest quartile of PDQ-8 SI scores i.e., associated with poorer quality of life among PD patients during home confinement (HC).

Scientific literature that examined the effect of the pandemic in absence of SARS-CoV-2 infection among patients with existing PD supports the findings of this study.^[5,14,18] COVID-19 pandemic has also been found to worsen existing symptoms or lead to new-onset symptoms, perhaps resulting from significant lifestyle changes during HC e.g., social disconnection and reduced physical activity.^[2] A single-center telephonic survey from India involving 100 PD patients and 100 caregivers, very early in the lockdown, reported worsening or new-onset parkinsonian symptoms in up to 5% of the patients.^[4] As the pandemic progressed, so did the sufferings of PD patients. In the online survey of FI users involving PD patients without SARS-CoV-2 infection, worsening of motor and non-motor symptoms were observed in 43% and 52% of patients, respectively.^[14] While a multi-center study from India reported symptomatic worsening in nearly one-third of the 832 surveyed PD patients,^[5] another from Spain reported similar findings in nearly two-thirds of 568 PD patients.^[18] Duration of HC appeared to be related to worsening of symptoms. Aggravation of tremors, speech, and urinary problems was more common in patients confined to home for greater than 60 days.^[5] On the other hand, engagement in hobbies and physical activity reportedly reduced slowness.^[5]

The pandemic appeared to have significantly affected the emotional and cognitive status of patients with PD. In a survey from India, more than half of the patients reported dissatisfaction with their quality of life, the most common reasons being worsening of PD symptoms (38.5%) and fear of contracting SARS-CoV-2 infection (19.5%).^[5] Similarly, using Beck Anxiety Inventory, a study from Iran reported severe anxiety in one-fourth (25.5%) of the PD patients surveyed, which was significantly higher than the controls.^[6] Worsening of cognition in PD patients has also been reported, more so in those having mild cognitive impairment in the pre-COVID-19 period.^[19,20]

Studies have tried to explore the factors associated with the worsening of various symptoms of PD. COVID-19 pandemic and HC-related psychological stress, anxiety, social distancing, and disrupted regular support system were the likely

contributors to the global motor and nonmotor worsening in PD.^[5,18,20-22] Patients with worsening of depression, anxiety, or symptoms of easy fatigability showed significant worsening of both motor and nonmotor symptoms.^[5] Increased stress may result in worsening of rest tremor,^[23] freezing of gait,^[24,25] and dyskinesia.^[2] Additionally, fatigue and a confined space may worsen gait and increase freezing in PD.^[25] PD patients living alone and those from a lower income group and non-White race suffered most.^[14] Deficient dopamine-dependent adaptation to cope with stress can explain some of these findings.^[2]

Difficulty availing formal neurological consultation and medications of PD was another major concern, reported by up to 40%–50% the patients.^[5,26] In a survey among members of Movement Disorders Society (MDS), 22.8% of the respondents from high-income countries and nearly 90% from low-income countries were being affected due to inadequate access to health care.^[26] Nearly 60% of those reporting inadequate access to PD medications reported symptomatic worsening.^[26] A report from India described three patients (PD = 2; generalized dystonia = 1) on deep brain stimulation presenting with significant symptomatic worsening, resulting from exhaustion of their batteries, as they were unable to avail proper health care services during the nationwide lockdown.^[27]

Interestingly, a recent study involving PD patients from Denmark and Sweden reported improvement in health-related quality of life (HRQoL) during HC as compared to pre-HC period.^[28] PDQ8 was used in the Danish and EuroQol visual analog scale (EQVAS) in the Swedish cohort. While the improvement in activity-independent EQVAS was nonsignificant, PDQ8 improved significantly. In PDQ8, scores related to “difficulty getting around in public” and “feeling embarrassed by having PD” appear debatable during HC, but this may have been balanced by the inflated negative impact of HC on scores involving “close relationships” and “feeling depressed.” Although worsening in anxiety levels was observed, their sleep improved, probably due to a sedate lifestyle along with a reduction in external pressure and expectations during the COVID-19 pandemic. Thus, the indirect impact of COVID-19 pandemic on PD patients might have been less serious than contemplated.^[28]

In conclusion, the effect of COVID-19 pandemic and consequent lock-down on symptoms of PD has been found variable. Considering the second wave of the pandemic in some of the countries, it is pertinent to continue research in this area.

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