Clinical Features of the 2019 Coronavirus (COVID-19) Disease in Patients at a Movement Disorders Center

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Abstract

Beyond the susceptibility linked to older age, it is unknown if SARS-CoV-2 (COVID-19) patients with mobility problems are at a higher risk for more serious outcomes than the overall COVID-19 population. The demographics and clinical outcomes of individuals examined at our Movement Disorders Center who tested positive for COVID-19 between March 8 and June 6, 2020, were gathered through the evaluation of electronic medical records and telephone interviews. Thirty-six patients were found, with a median age of 74.5 years, 23 men, and 13 women. The majority of them (n=22, or 61%) and the remaining (n=7, or 19%) had diagnoses of atypical parkinsonism and idiopathic Parkinson disease, respectively. As common signs of COVID-19, 27 patients (or 75%) showed altered mental status, while 15 patients (or 42%) had abnormal movements; in 61% and 31%, respectively, these were the disease's presenting symptoms. In our group, 67% of patients needed to be hospitalised, and 36% of patients died. These findings show that the risk of hospitalisation and death following COVID-19 infection was higher in people with mobility impairments than in the general population. Frequently, but not always, patients with movement problems manifested with deteriorating mobility, generalised weakness, or changed mental status.

Keywords: Coronavirus • COVID-19 • Neurology • Movement disorders • Ataxia • Adamantanes • Parkinson disease

Introduction

The first case of the rare respiratory disease coronavirus disease 2019 (COVID-19) was discovered in December 2019. The symptoms of COVID-19 can range from a moderate (or asymptomatic) disease to a serious condition those results in respiratory failure and death. According to the most recent research, older age (>50 years), male sex, residence in long-term care institutions, and medical comorbidities such cardiovascular disease, hypertension, diabetes, chronic lung disease, renal illness, and immunosuppression are all linked to worse outcomes [1]. Parkinson's Disease (PD) and other movement disorders have not been identified as specific risk factors for COVID-19's more severe aftereffects as of yet. It was noted early in the pandemic that this patient population may be particularly susceptible to the illness because they are frequently older, tend to have an increased incidence of physical comorbidities (including identified risk factors for more severe manifestations of COVID-19), have increased frailty, and are more likely to be residents of long-term care facilities. On March 8, 2020, Connecticut's first patient with laboratory-confirmed COVID-19 received a diagnosis; by June 6, 2020, the time of this reporting, there were 4.3818 104 cases in the state [2]. To reduce the risk to our patients, our team at Hartford HealthCare's Chase Family Movement Disorders Center immediately implemented initiatives in accordance with the early recommendations published in Movement Disorders journals as the number of cases infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) increased in our region. These included early conversion to telemedicine visits, holding several bilingual virtual educational COVID-19 lectures, and more. Despite these precautions, we found that from 8 March 2020 to 6 June 2020, 36 patients in our programme tested positive for COVID-19.

Discussion

Patients with Parkinson disease and other movement problems are thought to be more susceptible to COVID-19, which raised concerns in the early months of the epidemic [3]. It is very conceivable that these patients are especially vulnerable given their population's comorbidities and intrinsic traits. This patient population, especially those with Parkinson disease, had older age, a preponderance of males, a higher likelihood of comorbid cardiovascular diseases, and a higher risk of respiratory dysfunction all mentioned as potential risk factors for worse outcomes in COVID-19. Additionally, it has been noted that PD patients may be less able to handle the effects of this pandemic due to their cognitive and motor rigidity, decreased stress response mechanisms, sensitivity to the negative effects of social isolation, and loss of physical exercise. However, until recently, systematic data did not indicate an apparent higher risk of acquiring COVID-19 or for worse disease outcomes in individuals with PD. In Lombardy, one of the regions of Italy most severely impacted by COVID-19, a community-based observational study of 141 Parkinson disease patients found 12 cases, or an 8.5% incidence of infection. The authors reported that, with the exception of one patient, there were no deaths from COVID-19 in their cohort and that most patients only experienced mild to moderate symptoms that did not necessitate hospitalisation. However, due to the high mortality rate observed for this subset of patients in their series, Antonini and colleagues suggested that PD patients, particularly those who are older and on advanced therapies, should be considered as a specifically susceptible group in their report on the outcomes of 10 PD patients affected by COVID-19 at the Parkinson and Movement Disorders unit in Italy and at King's College Hospital in London [4]. Our study includes information on a cohort that was collected over a similar time period and is three times bigger than those of the articles previously mentioned. However, our sample includes a wide range of patients with movement abnormalities, not just those with a PD diagnosis. Nevertheless, in this series, we discovered that PD or parkinsonism was present in 85% of patients who passed away and 81% of patients who developed COVID-19 inside a Movement Disorders specialist practise. It is difficult to determine if this is due to a real increase in COVID-19 risk in Parkinson disease patients or if movement disorders programmes typically see more cases of PD than other movement disorders. People with PD and parkinsonism make up one-third of all patients at the CFMDC, which is excessive given the proportion of patients with parkinsonism who developed COVID-19 in this cohort. Our cohort's characteristics, including its majority of males (64%), average age of 60 or older (89%), presence of high-risk comorbidities for COVID-19 (78%), and residence in an extended care facility (64%), are consistent with those of patients who developed COVID-19 in the general population. Notably, 21 patients (58%) in this cohort also had concomitant dementia. In a recent retrospective analysis of 627 patients admitted to an acute hospital in northern Italy, 82 patients (13%) had a prior dementia diagnosis, but they also had a startling 62% death rate, as opposed to 26% for patients at the same facility without dementia. Nine (69%) of the 13 individuals in our group who passed away had concomitant dementia. For individuals with concomitant dementia in our dataset, the overall death rate was 43%. This was greater than the cohort's 37% mortality rate for patients with parkinsonism. In contrast, a study of 191 inpatients with COVID-19 in Wuhan, China, found that those with known high-risk medical comorbidities had a mortality rate of 67%, while those without any of these comorbidities had a mortality rate of 33%. Overall death rates for COVID-19 patients admitted to hospitals in China and the United Kingdom were 28% and 26%, respectively, in two sizable investigations. Dementia and parkinsonism were therefore linked

with considerable mortality in our group, higher than that seen in general populations, although the rates were lower than those seen in individuals with other comorbidities that are known to be associated with poor outcomes. Age over 60, PD or parkinsonism diagnosis, residence in an extended care facility, comorbid dementia, and comorbid medical problems were all associated with an elevated mortality rate in our group of patients with movement disorders. We discovered that two-thirds of patients (67%) needed hospitalisation based on clinical manifestation and disease course, which is nearly three times greater than the estimated 23% hospitalisation rate for the general population in Connecticut [5]. This finding lends credence to the idea that COVID-19 patients with mobility impairments are particularly vulnerable to negative consequences. Regarding the specific clinical presentation, we discovered that COVID-19 frequently showed signs of altered mental status, generalised weakness, worsening mobility or the motor symptoms of the underlying movement disorder, and hypotension. Fever, cough, dyspnea, and malaise were almost always present in this series, but 61% of patients also had changes in their mental states, and 31% had poor mobility or balance as one of the main symptoms that prompted SARS-CoV-2 testing. Gait instability is a frequent presenting sign of hospitalised individuals with movement disorders who acquire acute infectious-metabolic diseases, and encephalopathy has increasingly been recognised as a presenting symptom of COVID-19 [6]. Only one patient who was referred to our programme for new-onset cerebellar ataxia and who did not already have a diagnosis of a movement disorder reported anosmia. We hypothesise that because many patients with pre-existing parkinsonism or dementia already have chronic anosmia related to their neurodegenerative illness, they are less likely to report anosmia as a presenting symptom of COVID-19. For the treatment of their parkinsonism, three of the patients in this series were on amantadine, and three were taking memantine for dementia. Because adamantanes can block the viroporin protein channels that RNA viruses use to escape from infected cells, there has been interest in their potential to change the course of COVID-19. Recent research has also shown that amantadine, in particular, inhibits the expression of the CTSL gene, which codes for cathepsin L, a lysosomal protease essential for SARS-CoV-2 cell entry. It was suggested that adamantanes could act as an effective treatment by reducing the reproduction and contagiousness of the virus and possibly improving clinical outcomes based on these putative antiviral actions. Then, Rejdak and colleagues found 22 patients who tested positive for SARS-CoV-2 and were taking either amantadine or memantine, and they reported that none of these patients experienced any COVID-19 clinical signs or a material alteration in their neurologic condition [7-9]. Three of the six patients in our cohort who were using adamantanes and experienced substantial COVID-19-related symptoms died. In conclusion, because of the inherent vulnerabilities of this patient population, our study supports the idea that doctors should be on the lookout for both acute and chronic consequences of COVID-19 while treating patients with Parkinson disease and other movement disorders. Our cohort produced a number of intriguing findings that either supported or refuted earlier hypotheses and findings relating to COVID-19 in patients with PD and other movement disorders. Only 2% of patients admitted for COVID-19 were people with PD and parkinsonism, according to a sizable database of inpatient cases across our hospital system. However, compared to the general population, people with mobility problems had a three times greater chance of being hospitalised after catching COVID-19. Furthermore, we discovered that more serious morbidity and death were linked to older age, PD diagnosis, residing in an extended care facility, concomitant dementia, and comorbid medical disorders. Although greater than that reported for general populations, the death rate for patients with PD or dementia in this sample was still much lower than that previously documented in patients with other high-risk conditions. Additionally, we found that patients with movement problems typically displayed COVID-19's first symptoms of altered mental status, widespread weakness, or deteriorating mobility, but not anosmia. Last but not least, contrary to what Redjak et al, claimed in their work, we were unable to find evidence in this small dataset that either amantadine or memantine had different protective characteristics against COVID-19 [10] .

Conclusion

We are aware that our study's primary limitations are the retrospective data collection from a wide-ranging (hospital) data source and the patient self-reports from our Movement Disorders Center. We were also unable to do multivariate adjusted analyses due to the sample size of 36 patients, despite the fact that our cohort was bigger than other cohorts previously reported. Despite these drawbacks, our findings help us learn more about how COVID-19 manifests clinically in patients with mobility problems. In order to do robust statistical analyses and identify the unique vulnerabilities of patients with movement disorders, future multicenter research will be required to generate a dataset with a sizeable enough sample size.

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