

## COVID-19 Infection and Guillain Barré Syndrome Case Report

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### Abstract

The coronavirus pandemic (COVID-19) has caused global changes by affecting the whole world, starting from the Chinese city of Wuhan in December 2019. Acute respiratory syndrome is defined as coronavirus 2(SARS-CoV-2). SARS-CoV-2 has been reported to be associated with neurological signs such as headache, nausea, dizziness, anosmia, agusia, and peripheral nervous system symptoms. Guillain-Barré syndrome (GBS) is an inflammatory disease of the peripheral nervous system. Neurological symptom has reported, emphasizing the importance neurological effects of the disease. GBS can occur after various infections. The patient was admitted to the hospital with complaints of widespread muscle pain, skin itching, rash and difficulty in movement. Symptoms included the inability to walk and difficulty eating by lifting his arm. We aimed to review the case report that may be related to COVID-19 infection.

**Key Words:** COVID-19, Guillain-Barré syndrome, Neurological finding

### Klinik Veriler Kullanılarak Veri Madenciliği Yöntemleriyle Koroner Kalp Hastalığının Tespiti Özet

Coronavirüs pandemisi (COVID-19) Aralık 2019'da Çin'in Wuhan kentinden başlayarak tüm dünyayı etkisi altına alarak küresel değişikliklere yol açtı. Akut solunum sendromu koronavirüs 2(SARS-CoV-2) olarak tanımlanmaktadır. SARS-CoV-2'nin baş ağrısı, mide bulantısı, baş dönmesi, anosmi, aguzi ve periferik sinir sistemi semptomları gibi nörolojik bulgular ile ilişkili olduğu bildirilmiştir. Guillain-Barré sendromu (GBS), periferik sinir sisteminin enflamatuar hastalığıdır. Hastalığın nörolojik etkilerinin öneminin vurgulandığı nörolojik belirtiler rapor edilmiştir. GBS'nin çeşitli enfeksiyonlar sonrası ortaya çıkabilir. Olguda yaygın kas ağrısı, deride kaşıntı, döküntü ve hareket etmede zorluk şikayeti ile hastaneye başvurdu. Semptomlar arasında yürüyememe ve kolunu kaldırarak yemek yemede zorluk yer alıyordu. Bu doğrultuda COVID-19 enfeksiyonu ile ilişkili olabilecek olgu sunumun gözden geçirmesini amaçladık.

**Anahtar Kelimeler:** COVID-19, Guillain-Barré sendromu, Nörolojik bulgu

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## INTRODUCTION

Wuhan, China, is associated with an increasing number of neurological symptoms and COVID-19; although the coronavirus disease is a challenging world problem, COVID-19 patient primarily develops respiratory symptoms. Associated symptoms have been observed (1). The incidence of Guillain-Barré syndrome (GBS), especially in the elderly, is approximately 1 in 100,000 per year, and an increase of 20% is expected in 10 years at all ages (2). At least one subjective neurological symptom has been reported in more than 90% of COVID-19 patients, emphasizing the importance neurological effects of the disease (1).

## CASE

A 55-year-old woman presented to the emergency department with complaints of widespread muscle pain, skin itching, rash and difficulty moving. Symptoms included inability to walk and difficulty eating by raising her arm. It was learned that she had essential hypertension for 20 years and type 2 diabetes mellitus for ten years but had been taking oral antidiabetic drugs for the last two years and smoked 30 packs of cigarettes per year

On physical examination, the patient's general condition was moderate; body temperature, pulse and arterial blood pressure were 120/80mmHg, respiratory rate was 18/minute and oxygen saturation was 95% in room air. There was no dyspnea on examination. Muscle weakness was



Figure 1. Electromyography revealed electrophysiological findings consistent with sensorimotor polyneuropathy with dominant axonal involvement in the lower extremities

3/5 in proximal, 2/5 in distal extremities, 3/5 in proximal and 2/5 in distal upper extremities according to the Medical Research Council (MRC) scale. Deep tendon reflexes were decreased. Vibration and tactile sensation were decreased in the distal parts of the extremities and facial paralysis areas.

Laboratory results serum Glucose: 138 mg/dl, Urea: 86 mg/dl, Creatinine: 3.6 mg/dl, Low: 28 IU/L, Ast: 14 IU/L, Na: 143 mmol/L, Potassium: 4.8 mmol/L, Wbc:  $16.8 \times 10^9/L$  (neutrophils = 82.7%; lymphocytes = 10.4%); Neutrophils/Lymphocytes: 7.95, Erythrocyte sedimentation rate 72 mm/h, C-reactive protein 16.51 mg/l, hemoglobin 11.6 g/dL, D-Dimer:

448 ng/ml, Ferritin: 397.5 µg/L, Procalcitonin: 0.09 and urinalysis showed no glucose and ketones. E. coli was grown in urine culture. COVID-19 polymerase chain reaction (PCR) test was ordered.

Chest tomography showed areas of ground glass density in both lungs. Ground glass densities on lung tomography associated with COVID-19 (Figure 1). Cranial tomography showed structures secondary to cerebellar atrophy. Peripheral and central CSF spaces were enlarged secondary to cortical-subcortical atrophy. Electro-diagnostic parameters of EMG (Electromyography) were compatible with sensorineural polyneuropathy. Neurology was consulted and appropriate cranial sparing medical treatment was given for polyneuropathy and facial paralysis. Infectious diseases were contacted and Favipravin, Prednol, Ultramex, Degastrol, Clexan, Neruda, Hitrizine Tablet treatment and chronic medications were organized.

After four weeks, the patient's complaints regressed and she was discharged with the recommendations of the Neurology and Physical Therapy and Rehabilitation departments.

## DISCUSSION

In December 2019, the virus, which started in Wuhan, China and spread around the world, was identified as SARS-CoV-2, and in February 2020, the World Health Organization (WHO) named the disease coronavirus disease 2019

(COVID-19) (3). Various neurological symptoms have been reported in hospitalized patients with COVID-19(4). In this context, COVID-19 has been associated with many neurological findings such as confusion, anosmia and ageusia (5). According to neuropathologic studies, immune-mediated inflammation, cytokine storm, systemic inflammation and hemodynamic disturbance resulting in neurological symptoms (6). The concept of direct viral neurotoxicity, where the pathogen directly targets the immune system, or the antibodies formed by activating it in another way, targeting peripheral nerves and spinal roots has also been discussed (7). Therefore, it should be evaluated early regarding neurological symptoms, including pathological signs. Our patient had a history of respiratory tract infections lasting two weeks. Guillain-Barre Syndrome; It is an acute, inflammatory, demyelinating neuropathy. It can also be seen after gastroenteritis or respiratory tract infections. The first case was reported from China. SARS-CoV2 was isolated in the nasopharyngeal swab of a 61-year-old patient who first developed severe fatigue and weakness in the lower extremities, followed by fever and cough. Since most cases had respiratory symptoms and coincided with the epidemic period, the causative agent was demonstrated in the nasopharyngeal swab sample taken (8). But data on GBS patients associated with COVID-19

infection are scarce (9). When we look at the literature, prevalence was estimated at 15 cases per 100,000 SARS-CoV-2 infections (10). Our case report is COVID-19 without respiratory or general symptoms. Patient with GBS. It highlights that it induces immunological processes independent of the absence of prodromic symptoms. Great attention should be paid to neurological complications such as GBS, early detection of symptoms and diagnosis is important.

### CONCLUSION

International cohort studies are needed to establish an association of outcome to reveal the possible causal relationship between the virus and developing neurological disorders.

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**Ethics Committee Approval:** Consent form was obtained from the patient. An informed consent form was signed by the patient/relatives for the case presentation and applied by the Helsinki principles.

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Concept: AA. Design: AA . Literature search: AA . Data Collection and Processing: AA . Analysis or Interpretation: AA . Written by: AA .

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### REFERENCES

1. Harapan BN, Yoo HJ. Neurological symptoms, manifestations, and complications associated with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease 19 (COVID-19). *J Neurol*. 2021;268(9):3059-3071. doi:10.1007/s00415-021-10406-y
2. Mirian A, Nicolle MW, Budhram A. Guillain-Barré syndrome. *CMAJ*. 2021;193(11):378. doi:10.1503/cmaj.202710
3. Mao L, Jin H, Wang M, Hu Y, Chen S, He Q, et al. Neurologic Manifestations of Hospitalized Patients With Coronavirus Disease 2019 in Wuhan, China. *JAMA Neurol*. 2020;77(6):683–690. doi:10.1001/jamaneurol.2020.1127
4. Gençler OS. Neurological Symptoms in Hospitalized Patients with COVID-19 Diagnosis and the Relationship with Disease Severity. *YIU Saglik Bil Derg*. 2021;2:76-82. doi.org/10.51261/yiu.2021.00037
5. Niazkar HR, Zibae B, Nasimi A, Bahri N. The neurological manifestations of COVID-19: a review article. *Neurol Sci*. 2020;41(7):1667-1671. doi:10.1007/s10072-020-04486-3
6. Topçuoğlu MA, Öztürk Ş. Neurological Spectrum of COVID-19: A Practical Review. *Turk J Neurol* 2021;27(1):6-8. doi:10.4274/tnd.2021.92891
7. Ünlütürk Z, Öncel ÇH, Haytı B, Erdoğan Ç.

- Different Guillain-Barré Syndrome Variants Associated with COVID-19: Report of 4 Clinical Cases. *Turk J Neurol.* 2022; 28(1):51-54
8. Zhao H, Shen D, Zhou H, Liu J, Chen S. Guillain-Barré syndrome associated with SARS-CoV-2 infection: causality or coincidence? *Lancet Neurol.* 2020;19(5):383-384. doi:10.1016/S1474-4422(20)30109-5
9. El Otmani H, El Moutawakil B, Rafai MA, Benna NE, Kettani CE, Soussi M. et al. Covid-19 and Guillain-Barré syndrome: More than a coincidence! *Rev Neurol (Paris).* 2020;176(6):518-519. doi:10.1016/j.neurol.2020.04.007
10. Palaiodimou L, Stefanou MI, Katsanos AH, Fragkou PC, Papadopoulou M, Moschovos C. et al. Prevalence, clinical characteristics and outcomes of Guillain-Barré syndrome spectrum associated with COVID-19: A systematic review and meta-analysis. *Eur J Neurol.* 2021;28(10):3517-3529. doi:10.1111/ene.14860