

## INCREASED SEIZURE FREQUENCY AS AN UNUSUAL MANIFESTATION OF COVID-19 IN ADULT CEREBRAL PALSY: CASE REPORT

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### ABSTRACT

**Introduction:** There is a wide range of symptoms of COVID-19 in the literature. The most common neurological manifestations are confusion, headache and loss of sense of taste and smell. Only a few studies described seizures in COVID-19 patients. Individuals with severe cerebral palsy have difficulties in expressing their complaints due to mental retardation, cognition problems or speech problems, so these patients also experience diagnostic delays in their internal problems. This case report emphasizes the need for increased awareness of neurological symptoms in adult disabled individuals.

**Case presentation:** A 41-year-old spastic bilateral cerebral palsy patient who is wheelchair dependent with known mental retardation, vision, speech problems, epilepsy and osteoporosis was evaluated at the emergency service upon his recurrent seizure episodes, and a thorax CT and PCR was performed due to coarseness in the lung sounds in the examination. CT findings compatible with COVID-19 pneumonia and PCR result were positive. The patient has not had a seizure after 2nd day of the treatment. He was followed up stably and discharged on the 5th day of his hospitalization.

**Conclusion:** There may be an increase in neurological findings, neurological symptoms may be the sign of presentation of COVID-19. There is a need for increased awareness of neurological symptoms in adult disabled individuals.

**Keywords:** seizure, epilepsy, disability, cerebral palsy, COVID-19.

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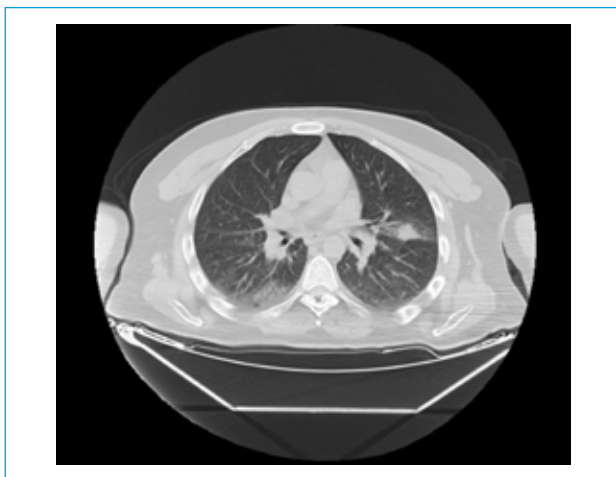
### Introduction

Epilepsy is one of the most common neurological disorders accompanying patients with cerebral palsy. While the incidence in the normal pediatric population is 3-6 per 1000, epilepsy is seen at an average rate of 15-55% in children and adults with cerebral palsy<sup>(1)</sup>. The effects of COVID-19 on epilepsy are currently unknown. We aimed to present a case followed-up by a psychiatrist during COVID-19 assignment with increased seizure frequency as an unusual presentation of COVID-19 infection in an adult patient with cerebral palsy.

### Case report

A 41-year-old spastic bilateral cerebral palsy patient who is wheelchair dependent with known mental retardation, vision, speech problems, epilepsy and osteoporosis was evaluated at the emergency service upon his seizure, and a thorax CT was performed due to coarseness in the lung sounds in the examination. Upon detection of findings compatible with COVID-19 pneumonia (Figure 1), PCR was taken and the patient followed up in an outpatient setting. The next day, the patient, who normally had no seizure history for 2 years, was admitted to the inpatient clinic because of 4 recurrent

generalized tonic clonic seizures and positive PCR result (Figure 2). The patient had fever for 1 day 2 days ago, loss of appetite for 10 days, agitation and recurrent seizures, and there were no dyspnea, tachypnea, at room air SpO<sub>2</sub>: 99, Respiratory rate: 20 /min. Laboratory findings of the patient were as follows: creatinine:0,93mg/dL, Urea: 28mg/dL, AST: 35U/L, ALT:23U/L, albumin:40g/L, Ca:8 mg/dL, CRP:1,53mg/dL, hmg:13,7g/dL, plt:271,0 10<sup>3</sup>/uL, lym:1,9 10<sup>3</sup>/uL, neut:11,26 10<sup>3</sup>/uL, wbc: 14,4 10<sup>3</sup>/uL, INR: 1,1, PT:15 sec, APTT:26,4 sec. The drugs used by the patient were leviratetam 2x1500mg, lacosamide 2x200mg, quetiapine 1x25mg, escitalopram 1x10mg, alendronate sodium 70mg/week, metoprolol 1x50mg. The patient's treatment plan was arranged as favipravir 2x1600mg loading dose + 2x600mg maintenance/5 days, ceftriaxone 1x3 gr/5 days, doxycycline 2x100mg/5 days, enoxaparine sodium 1x6000 anti-Xa IU/ 0.6 ml.



**Figure 1:** Ground-glass opacity in thorax CT of the patient.



**Figure 2:** Patient after admission to inpatient clinic.

The anticonvulsant treatment of the patient, who had 8 generalized tonic clonic seizures on the 2nd day of his hospitalization, was adjusted as 1500 + 200 mg/day.

The patient has not had a seizure after 2nd day of admission. He was followed up stably and discharged on the 5th day of his hospitalization.

## Discussion

Novel coronavirus (SARS-Coronavirus-2: SARS-CoV-2) has affected the whole world. The effects of the virus on many diseases are still unknown. Cerebral palsy (CP) describes a group of permanent disorders of the development of movement and posture, causing activity limitation, that are attributed to nonprogressive disturbances that occurred in the developing fetal or infant brain. The motor disorders of cerebral palsy are often accompanied by disturbances of sensation, perception, cognition, communication, and behavior, by epilepsy, and by secondary musculoskeletal problems<sup>(2)</sup>.

There is a wide range of symptoms of COVID-19 in the literature. The most common neurological manifestations are confusion, headache and loss of sense of taste and smell. Rarely, stroke and epilepsy can be seen<sup>(3)</sup>. Only a few studies described seizures in COVID-19 patients<sup>(4,5)</sup>. Seizure etiology in COVID-19 is explained as follows: Virus entry into the central nervous system leads to the release of pro-inflammatory cytokines (TNF- $\alpha$ , IL-6, IL-1B), nitric oxide, prostaglandin E<sub>2</sub>, and free radicals, and causes chronic inflammation neural hyper-excitability, seizure<sup>(6,7)</sup>.

Adult tetraplegic cerebral palsy patients generally do not reach adulthood<sup>(8)</sup>. However, our case is a 41-year-old patient with spastic tetraplegic type cerebral palsy with mental retardation, vision, speech problems and epilepsy.

Individuals with severe cerebral palsy have difficulties in expressing their complaints due to mental retardation, cognition problems or speech problems, so these patients also experience diagnostic delays in their internal problems. In addition, since there is a strong correlation between epilepsy and intellectual disability, the possibility of intellectual problems in individuals with epilepsy + cerebral palsy is quite high<sup>(9)</sup>. It has been stated in the literature that COVID-19 presents a great risk for people with intellectual and developmental disability, especially at children<sup>(10)</sup>. To our best knowledge, there is no information in the literature regarding the presentation of COVID-19 in adults with disabilities. This case report adds to the literature the increased neurological symptoms presented in COVID-19 and the need for increased

awareness of neurological symptoms in adult disabled individuals.

## Conclusion

It seems more appropriate to be vigilant in approaching disabled patients, to look for another focus under symptoms such as increased seizure frequency or agitation. In this context, detailed physical examination is of great importance.

## References

- 1) Bruck I, Antoniuk SA, Spessatto A, Bem RSd, Hausberger R, Pacheco CG. Epilepsy in children with cerebral palsy. *Arquivos de Neuro-Psiquiatria*. 2001; 59: 35-9.
- 2) Richards CL, Malouin F. Cerebral palsy: definition, assessment and rehabilitation. *Handbook of clinical neurology*. 2013; 111: 183-95.
- 3) Whittaker A, Anson M, Harky A. Neurological Manifestations of COVID-19: A systematic review and current update. *Acta neurologica Scandinavica*. 2020; 142(1): 14-22.
- 4) Moriguchi T, Harii N, Goto J, Harada D, Sugawara H, Takamino J, et al. A first case of meningitis/encephalitis associated with SARS-Coronavirus-2. *International journal of infectious diseases : IJID : official publication of the International Society for Infectious Diseases*. 2020; 94: 55-8.
- 5) Sohal S, Mansur M. COVID-19 Presenting with Seizures. *IDCases*. 2020; 20: e00782-e.
- 6) Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 2020; 395(10223): 497-506.
- 7) Tufan A, Avanoğlu Güler A, Matucci-Cerinic M. COVID-19, immune system response, hyperinflammation and repurposing antirheumatic drugs. *Turk J Med Sci*. 2020; 50(SI-1): 620-32.
- 8) Icagasioglu A, Dogruoz Karatekin B, Mesci E, Yumusakhuyly Y, Murat S, Yasin S. Assessment of adult patients with cerebral palsy. *Turkish journal of physical medicine and rehabilitation*. 2020; 66(4): 429-35.
- 9) Robertson J, Hatton C, Emerson E, Baines S. Prevalence of epilepsy among people with intellectual disabilities: A systematic review. *Seizure*. 2015; 29: 46-62.
- 10) Turk MA, Landes SD, Formica MK, Goss KD. Intellectual and developmental disability and COVID-19 case-fatality trends: TriNetX analysis. *Disability and Health Journal*. 2020; 13(3): 100942.

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