



## Can COVID-19 Cause Relapses in the Control of Epilepsy among Epileptic Patients Who were on Treatment and Controlled? A Case Report, Sudan, Khartoum, 2021

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**Received:** April 24, 2021

**Published:** May 11, 2021

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### Abstract

**Introduction:** Corona viruses are a group of related viruses that cause diseases in mammals and birds. Epilepsy is one of the commonest neurological disorders. It is a clinical syndrome characterized by recurrent attacks of unprovoked seizures.

**Case Presentation:** A 45 years old Sudanese male who was diagnosed as a case of generalized tonic-clonic epilepsy in the last two years and used to take levetiracetam 1000mg bid. He was well controlled; the last attack was two years ago. He was brought to the casualty complaining of generalized tonic-clonic convulsions. The attack was so severe to a degree that it didn't respond to I.V diazepam; so he received I.V phenytoin and it didn't respond also. He received I.V levetiracetam, general anesthesia and then he was connected to a ventilator. His wife mentioned that he used to take his medication regularly and the condition was preceded by febrile illness, headache, sore throat and dry cough. A comprehensive and full neurological history and examination were done. Routine blood investigations were done including: complete blood count, random blood glucose, blood urea and creatinine, and radiological imaging including chest x-ray, brain MRI and EEG. Screening of COVID-19 was positive. This condition of COVID-19 on top of epilepsy caused induction of status-epilepticus attack that resulted in the death of the patient due to respiratory muscles paralysis.

**Conclusion:** COVID-19 can cause relapse in the control of well-controlled epileptic patients. Also it can cause status-epilepticus and increases resistance against anti-epileptic drugs during the attack of status-epilepticus causing prolongation of attack period and difficulty in management and control.

**Keywords:** Epilepsy; COVID-19 Case Reports; Status Epilepticus

## Introduction

Corona viruses cause diseases in mammals and birds. Transmission between humans occurs among close contacts via respiratory droplets.<sup>1</sup> Symptoms are: Fever, sore throat, cough, shortness of breath, diarrhea and generalized fatigability. Complications include: Acute distress respiratory syndrome, myocarditis, heart failure, renal failure and recurrent attacks of pulmonary embolism. COVID-19 can present with loss of taste and smell, headache, dizziness, peripheral neuropathy, encephalitis, convulsions and hemiplegia [1].

One of the commonest neurological disorders is epilepsy. It is characterized by recurrent attacks of seizures that are unprovoked. It is either idiopathic or secondary when there are underlying causes such as: Brain tumor, trauma, degenerative diseases, CVA, early birth trauma, encephalitis and meningitis. Most of the patients are controlled (70 - 80%) using antiepileptic drugs. Factors triggering epilepsy attacks are: Fever (whatever the underlying cause), cessation of the treatment, high tone music, lack of sleep, bathing with hot water and menstrual cycle.

When focal group of neurons are affected this cause focal epilepsy, and when both hemispheres are affected it causes generalized epilepsy [2].

COVID-19 presents with high grade fever; hence it can provoke an attack in an epileptic patient. Until recently no data supports that epilepsy can increase the risk of getting COVID- 19, or epilepsy can increase the severity of COVID-19 infection [3].

## Case Presentation

A 45 years old Sudanese male who was diagnosed as a case of generalized tonic clonic epilepsy in the last two years and used to take levetiracetam 1000mg bid. He was well controlled; the last attack was two years ago. He was brought to the casualty complaining of generalized tonic clonic convulsions. The attack was so severe to a degree that it didn't respond to I.V diazepam; so he received I.V phenytoin and it didn't respond also. He received I.V levetiracetam, general anaesthesia and then he was connected to a ventilator.

His wife mentioned that he used to take his medication regularly and the condition was preceded by febrile illness, headache, sore throat and dry cough. Also he has loss of taste and smell. Brain

MRI and EEG were normal. Chest X-ray was normal. Urine general test was normal. Blood urea and serum creatinine were normal. COVID-19 screening was positive. This condition of COVID-19 on top of epilepsy caused status-epilepticus attack which resulted in the death of the patient due to respiratory muscles paralysis.

## Discussion

Epilepsy is one of the commonest neurological disorders. No age is immunized, so it can affect children, adults and elderly. Almost 70-80% of epileptic patients will show remarkable improvement on antiepileptic drugs. The outbreak started in Wuhan China December 2019 and then spread all over the world. Until now there is no available data suggesting that there is an increased risk of infection among epileptic patients. Also there is no available data suggesting that epilepsy can affect the severity of COVID-19 infection [4].

In certain conditions epileptic patients may have higher risks for complications from COVID- 19 infection, these conditions include: epileptic patients with chronic disease like diabetes, renal failure and heart failure, epileptic patients with malignancy, epileptic patients with difficulty in swallowing result in recurrent attacks of aspiration pneumonia, patients with autoimmune epilepsy (e.g. autoimmune encephalitis), epileptic patients who used to take drugs that affect the immunity (e.g. ACTH) and in children [5].

Until now there is still no data on the association between COVID-19 and the sudden unexpected death among the epileptic patients. Epileptic patients when they get covid-19 they may get recurrent attacks of seizures. Most commonly due to the high grade fever associated with COVID-19 infection as we know fever is one of the risk factors for provocation of seizures whatever the underlying causes [6]. Also it may be due to other factors such as anxiety and panic attacks and sleep deprivation. Some patients may stop the medications during a period of isolation Insomnia [7].

Epileptic patients should follow: Washing hands regularly and avoid touching hands, eyes, nose and mouth, disinfecting surfaces regularly, to avoid contact with sick people and social distancing [8].

## Conclusion

COVID-19 can harmfully affect patients with epilepsy causing relapses and increases the risk for developing status epilepticus

and increasing the time period needed for treatment. According to our findings, we believe that COVID-19 can cause increased resistance against anti-epileptic drugs during the attack of status-epilepticus causing prolonged attack period and difficulty in management.

### Data Availability Statement

Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

### Acknowledgements

Not applicable.

### Funding

There was no funding for this report.

### Contributions

AH drafted the case report and all other authors edited the report. All authors read and approved the final manuscript.

### Ethics Approval and Consent to Participate

Ethical approval was obtained from Sudanese ministry of health.

### Consent for Publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

### Competing Interests

The authors declare no conflict of interest or funds.

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