

# Seizures as a Primary Presentation of SARS-CoV-2 Infection

**Citation:** Mohamed Alaktaa, et al. "Seizures as a Primary Presentation of SARS-CoV-2 Infection". Clareus Scientific Medical Sciences 2.1 (2025): 30-33.

**Article Type:** Case Report

**Received:** May 29, 2024

**Published:** January 02, 2025



**Copyright:** © 2025 Mohamed Alaktaa, et al. Licensee Clareus Scientific Publications. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license.

**Azzam Alhussein Alhajji<sup>1</sup>, Mohamed Alaktaa<sup>2\*</sup>, Yaman Qoudra Danial<sup>3</sup>, Amjad Alhussein Alhajji<sup>3</sup>, Fateh kashkash<sup>4</sup> and Abdullah Khouri<sup>5</sup>**

<sup>1</sup>Medical Student, Faculty of Medicine, University of Aleppo

<sup>2</sup>MD, Plastic Surgery Resident, Faculty of Medicine, University of Aleppo

<sup>3</sup>MD, Faculty of Medicine, University of Aleppo

<sup>4</sup>MD, Department of Internal Medicine, Faculty of Medicine, University of Aleppo

<sup>5</sup>MD, Professor, Department of Internal Medicine, Faculty of Medicine, University of Aleppo

**\*Corresponding Author:** Mohamed Alaktaa, MD, Plastic Surgery Resident, Faculty of Medicine, University of Aleppo.

## Abstract

After around two years of COVID-19 pandemic, it is well-known that COVID-19 affects mainly the respiratory system. However, our case presents a young female patient aged (30) admitted to the emergency department (ER) complaining of fever, altered mental status and seizures. The patient had no respiratory manifestations. She was managed with antipyretics and anti-epileptics. Although coronavirus commonly affect the respiratory system, this case shed a light on the neurological manifestations which may the patient suffer from due to COVID-19 infection.

**Keywords:** Covid-19; Coronavirus; Seizures; Epilepsy; Pandemic

## Introduction

Over time, coronaviruses have caused many pandemics. The recent one, COVID\_19 that caused by the (SARS-COV-2) virus who had causes a broad spectrum of symptoms such as fever, dry cough, tiredness, sore throat and diarrhoea. It was also noted neurological symptoms in the context of covid-19, which sometimes may precede the typical respiratory manifestations – as headache, loss of taste or smell, dizziness, alteration of the sensorium, ataxia, stroke and more rarely – seizures.

## Case report

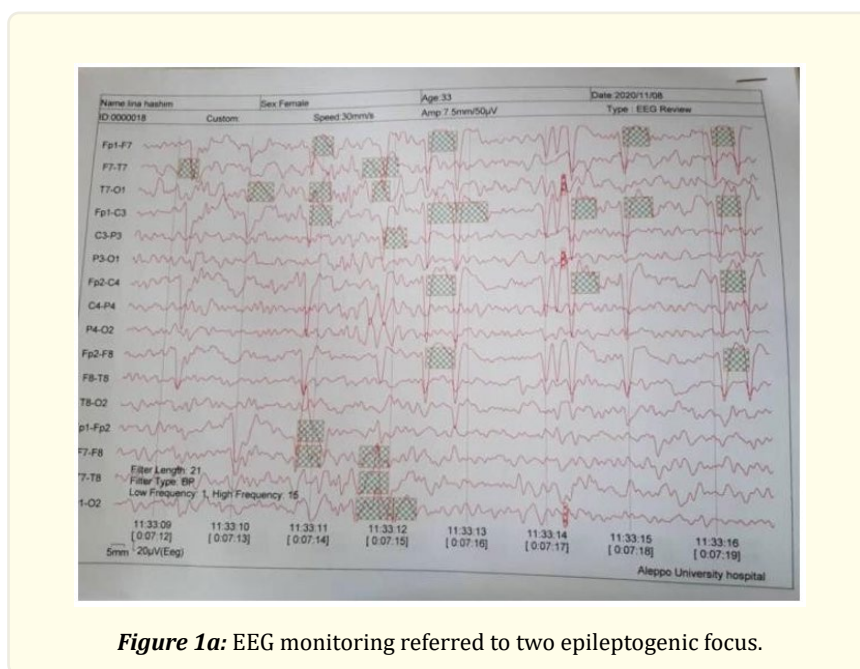
A 30-year-old Syrian woman with no past medical history presented with complaints of seizures, weakness and fever about a few hours ago.

Basically, she was admitted to the ER and shortly developed worsening mental status and tonic clonic convulsion lasted for a few minutes followed by sluggishness and sleep tendency. Accordingly, Blood glucose level test performed and recorded before and after the seizure episodes which did not

show hypoglycemia. Therefore, the seizure was controlled and managed with a single Dosage of Diazepam (5mg/ml, IV). Additionally, the fever was addressed with Paracetamol (1gr, IV). Indeed, the patient had no past history of seizures and her family denied any additional history of seizures. The following results were obtained by measuring vital signs: temperature was 38.9 C, respiration rate was 18 /min, pulse rate was 90/min, Oxygen saturation was 97% and blood pressure was 130/90 mm Hg. Moreover, the clinical examination showed no abnormal features.

The patient was admitted to the medical floor and observed until the general status got improved. Many laboratory tests were performed such as FBC, Electrolytes and KFT. However, all tests were within the normal range, except CRP which was 27.4 mg/dl. Additional investigations implemented when the patient restored her consciousness. Starting with CT-Brain, which showed no abnormal features. Then, Venous Thrombosis was suspected. Therefore, MRI Scan (1.5 T) was performed and it showed no abnormal enhancement within venous period. Moreover, the MRI brain study was within normal.

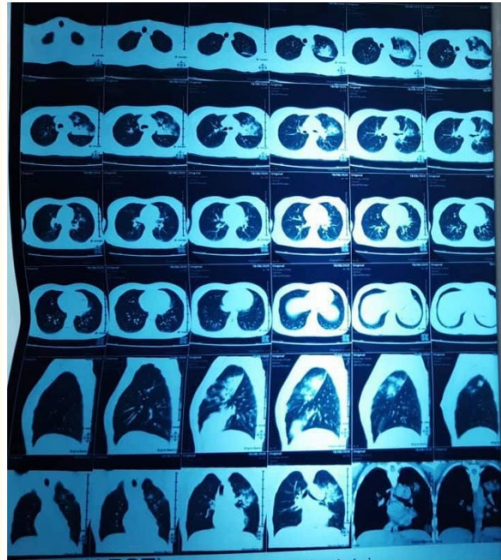
CSF puncture was obtained and demonstrated normal results. Consequently, Video-EEG monitoring which is the standard test for classifying the type of seizure was done and referred to two epileptogenic focus. (Figure 1a).



**Figure 1a:** EEG monitoring referred to two epileptogenic focus.

Although there were no respiratory symptoms, COVID-19 PCR smear was performed due to the outbreak of the disease. In fact, the smear was positive. Furthermore, CT-Chest was performed and showed pulmonary density and ground glass appearance at the top of the inferior lobe of the left lung. (Figure 1b). Subsequently, COVID-19 was diagnosed. The highly interesting point in this case was that the patient did not complain of any respiratory symptoms.

Encephalitis due to COVID-19 was diagnosed to be responsible for the seizures. Anticonvulsants were prescribed for six months. Consequently, the seizures stopped and the patient improved.



**Figure 1b:** CT-Chest: showed pulmonary density and ground glass appearance at the top of the inferior lobe of the left lung.

## Discussion

In practice, coronavirus disease may present in a wide variety of symptoms and affects different body systems including respiratory system (the most cases), gastrointestinal system and rarely the nervous system.

There are several mechanisms that may explain neurological manifestations of coronavirus disease, including: ACE-2 receptor cells, which SARS-COV-2 can travel to infect the endothelial cells of the blood- brain barrier and then accumulate in the various ACE-2 heavy brain regions causing direct infection with neurological sequelae. A second route through which the SARS- COV-2 is theorized to enter the CNS is the olfactory nerve via the nasal cavity. Hypoxia in the context of pneumonia, and hypoperfusion within ischemic brain injury can also contribute to the development of seizures [4].

In literature, there are some corona cases with neurological symptoms or signs, but generally there were a combination of respiratory and neurological symptoms unlike our case where the patient did not experience any pulmonary features and presented primary with confusion and seizures [3].

In humans, there are different neurotropic viruses can cause encephalitis including some types of herpes, Japanese encephalitis virus (JEV) and viruses within the Picornaviridae Family, and others [2].

Patients with viral encephalitis have 22-fold higher risk to develop unprovoked seizures [1].

This case provides further clinical evidence of CNS involvement in COVID-19 and clarify that coronavirus could present as confusion and other neurological manifestations even without any pulmonary symptoms. However, more studies need to be performed to emphasize if we should add coronavirus to neurotropic viruses.

### ***Learning Point for Clinicians***

SARS-COV-2 virus typical symptoms are fever, dry cough, tiredness, sore throat and diarrhoea. Neurological symptoms are also noted in the context of COVID-19, which sometimes may precede the typical manifestations – as headache, loss of taste or smell, dizziness, alteration of the sensorium, ataxia, stroke and more rarely – seizures.

All authors read and approved the final version of the manuscript.

An informed consent was obtained from the patient's family.

### ***Funding***

None.

### **References**

1. Vezzani A., et al. "Infections, inflammation and epilepsy". *Acta Neuropathol* (2016): 211-234.
2. Libbey JE and Fujinami RS. "Neurotropic viral infections leading to epilepsy: focus on Theiler's murine encephalomyelitis virus". *Future Virol* (2011): 1339-1350.
3. Hwang ST, et al. "Acute Seizures Occurring in Association with SARS-CoV-2". *Front Neurol* (2020).
4. Narula N., et al. "Seizure and COVID-19: Association and review of potential mechanism". *Neurol Psychiatry Brain Res* (2020): 49-53.