

## The Effect of Covid 19 on Epilepsy Patients

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**Abstract:** This study aims to know the type of complications and risk factors for COVID-19 patients who suffer from epilepsy in Iraq with a study period from 22-5-2019 to 1-6-2020. A cross-sectional study was established on patients with epilepsy, and Covid 19, where 80 patients were collected from different hospitals in Iraq. This study aimed to determine the complications associated with Covid 19 patients and those who suffer from epilepsy. 80 cases were enrolled with 20-45 years of age, and distribution according to sex was (55 male, 35 female) the most common complications in this study are fever and hyperthermia. Laboratory studies show that high temperatures (>40°C) negatively affect different cells, especially metabolically active brain cells. The available data indicate that the presence of epilepsy increases the risk or severity of the injury, especially for a patient whose condition is unstable and who has other health problems.

**Keywords:** Covid 19, epilepsy, questionnaire, severity, hypertension.

### INTRODUCTION

At the end of 2019, the outbreak of the novel coronavirus disease 2019 (COVID-19) caused by the novel coronavirus (SARS-CoV2) in Wuhan, Hubei Province, China, two months later, the World Health Organization (WHO) declared an outbreak of a coronavirus epidemic [Vollono, C. *et al.*, 2020; Anand, P. *et al.*, 2020].

The course of COVID-19 infection in patients with neurological diseases is of particular scientific interest, as many patients with neurological diseases have an increased risk of contracting COVID-19 [Pilato, M.S. *et al.*, 2020; Hepburn, M. *et al.*, 2020].

The increase in the number of observations of patients with severe and very severe forms of COVID-19, the number of reports on neurological manifestations of infection with the new coronavirus is increasing. Thus, according to information obtained from a retrospective study of 214 hospitalized patients with COVID-19 [Somani, S. *et al.*, 2020; French, J. 2020; Sethi, N.K. *et al.*, 2020] (41.1% with severe manifestations of epilepsy), neurological symptoms were recorded in 36.4% of patients [Assenza, G. *et al.*, 2020]. Complications of COVID-19 were related to symptoms of central nervous system damage - headache, dizziness, impaired consciousness, ataxia, several cases of acute cerebrovascular accident (ACV), and one case of an epileptic seizure; a Decreased sense of smell, decreased sensitivity to taste, and symptoms of the musculoskeletal system were also noted [FDA, 2020; FES, 2020; AES, 2020].

In a retrospective study by Y. Li *et al.* [Chumbler, N.R. *et al.*, 2010; Schwamm, L.H. *et al.*, 2017; Bahrani, K. *et al.*, 2017] For COVID-19 patients with epilepsy, among the 221 patients, 11 had a stroke, 1 had a sinus thrombosis, and 1 had a hemorrhagic stroke. The group at risk for stroke included older patients with comorbidities, a tendency to develop a pronounced inflammatory response, and hypercoagulability. According to other published studies with fewer observations, the most common neurological symptoms were dizziness, headache, and decreased level of consciousness. [Haddad, N. *et al.*, 2015].

### MATERIAL AND METHODS

#### Patient Sample

A cross-sectional study was established on patients with epilepsy, and Covid 19, where 80 patients were collected from different hospitals in Iraq. This study aimed to determine the complications associated with Covid 19 patients and those who suffer from epilepsy.

#### Study Design

This study included 80 patients with COVID-19 suffering from epilepsy, and the study was established by relying on a questionnaire consisting of 40 questions, the responses of which were also

"Yes or no.

In some patients, epilepsy is part of a syndrome or associated with other conditions. Epilepsy is accompanied by other health problems. If they affect the state of the immune system, the risk of infection increases. Patients most at risk are those

who suffer from immunodeficiency, the elderly, and those who suffer from chronic diseases such as diabetes, high blood pressure, heart disease, and chronic lung disease.

Patients with uncontrolled seizures, especially those caused by hyperthermia or infection, are at risk of recurrent seizures when infected.

### Study Period

Cooperated with the relevant committees to obtain licenses for this study to collect information and demographic data for patients who covid 19 patients with epilepsy, and the study period was from 22-5-2019 to 1-6-2020.

### Aim of study

This study aims to know the type of complications and risk factors for COVID-19 patients who suffer from epilepsy in Iraq.

## RESULTS

In this study, 80 patients with coronavirus and suffering from epilepsy were collected, and the average age ranged between 20-45 years.

In this study, the body mass index was calculated, and it was noted that there was a significant increase in the ages ranging between 35-40 years.

Comorbidities were found to patients by distributing a questionnaire consisting of a set of questions, and arterial hypertension was detected; the most common in this study was for 24 patients, asthma for 21 patients, heart disease for 20 patients, diabetes for 15 sick as shown in Table 1.

**Table 1:** Demographic results of patient CO-19 with epilepsy

Variable	Value
Age (Mean±SD)	33.7±9.8
Sex	
Male	55
female	25
BMI	27±4.4
comorbidities	
asthma	21
heart disease	20
diabetes	15
arterial hypertension	24
Marital status	
Married	30
Divorced	20
Single	30

A questionnaire was created and distributed to patients to know the demographic results related to epilepsy. It was divided into two parts, Seizure

frequency, and Seizure duration, as shown in Table 2.

**Table 2:** Demographic data related to epilepsy

Variable	Value
Seizure frequency	
More frequent	20
No change	30
Less frequent	30
Seizure duration	
Longer	12
No change	40
Shorter	28
Severity	
More severe	15
No change	45

Less severe	20
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**Table 3:** Outcomes results of patients

Variable	Value
mental illness in the past	59
High temperature	66
receiving treatment for a mental illness	50
Having trouble sleeping	49
Anorexia	22
Depression	56
feel tired most of the time	30
Sorrow	20
anxious	11
tension	38
lacking in concentration	9
brain attack	4

**Table 4:** Death rate of covid 19 patients according to the severity of epilepsy

Variable	Value
More severe	3
No change	1
Less severe	1

**Table 5:** Logistic analysis of death rate of covid 19 on epilepsy patients

Variable	ci-95%	P value
severity epilepsy	1.52(0.8-2.2)	<0.001
Age	1.12(0.8-1.55)	0.044
Sex	0.88(0.4-1.3)	0.88
Seizure frequency	1.77(1.2-2.4)	<0.001
arterial hypertension	1.80(0.99-2.77)	0.0023

## DISCUSSION

This study aimed to know the results generated in patients with Covid 19 virus who suffer from epilepsy, and it was relied on the statistical analysis program to analyze data and demographic information, IBM soft spss 22, and the mean sd of patients' ages was  $33.7 \pm 9.8$ . In this study, the prevalence rate of males was more than females (55, 35), respectively. It was also noted that the frequency of epilepsy was more prevalent for 20 patients and no change for 30 patients, and less prevalent for 30 patients.

By distributing the questionnaire to the patients, the most frequent types of complications in this study were identified. It was noted that mental illness in the past was for 59 patients.

70% of patients in this study were found to suffer from depression, and this contributed to the deterioration of their health later. In addition, fatigue was detected. Severe to 30 patients, and the mortality was low for five patients in this study, and it was especially for patients who suffer from severe epileptic seizures.

Through previous studies, we note the similarity of our study with 80% of the published studies related to this topic, as in the Lee Tun 2020 study [Hatcher-Martin, J.M. *et al.*, 2020], in which 200 patients in China suffering from Covid 19 and epilepsy were collected, it was noted that the death rate was 6% and that the most frequent complications were depression, which It spread to 100 patients, as is the case in the San Huariro study in France in 2020, where 177 patients were collected, the vast majority of which were males, and a statistically significant relationship was found between the severity of epileptic seizures and the prevalence of complications as Covid 19 [Rametta, S.C. *et al.*, 2020; Wirrell, E.C. *et al.*, 2020].

The data was analyzed logistically to find out the risk factor that really affects patients, and it was revealed that the severity of epilepsy was statistically significant by having a positive relationship with the increase in the number of deaths of 1.52 (0.8-2.2) with a p-value of <0.001 and the second factor that contributed to the

increase in risk Seizure frequency of 1.77 (1.2-2.4) on patients that led to death, with a statistically significant relationship p value < 0.001.

## CONCLUSION

The available data indicate that the presence of epilepsy increases the risk or severity of the injury, especially for a patient whose condition is unstable and who has other health problems. Through logistic analysis, the most risk factors for death were found (age, severity of epilepsy, arterial hypertension).

## RECOMMENDATION

VEEG is recommended in patients with moderate to severe covid-19, in addition to status epilepticus and suspected encephalopathy, as well as in patients with covid-19 who present with a first crisis.

The Neurophysiology and Epilepsy Coordinator must identify the human team that will conduct the diagnostic study based on a careful assessment of risks to determine the appropriate person to carry out the procedure

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