

## Clinical and Neurological Features of Complications in Patients After Covid-19

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### Abstract

COVID-19 infection, which was known to all and attracted the attention of medical professionals due to its effects on the body, is considered one of the current problems, and in addition to the new clinical sign of the disease, its impact on the course of chronic diseases also manifests itself in different ways. With the end of the pandemic, the manifestation of complications in this disease is a new medical condition that requires new research and observation.

The degree to which infectious diseases affect the nervous system, as well as their clinical manifestations, are known in the literature and have been confirmed for several years. However, in 2020, the Covid-19 infection reached the level of a pandemic in the whole world, and having different clinical symptoms, affecting different systems at the level of the organism entered all areas of medicine in a new way, and for this reason, it became the basis for starting new research. In particular, world scientists have been expressing their research and opinions since the name of this disease.

In the first period when the infection of COVID-19 was detected, an opinion was expressed about its clinic and course, by now it is known to everyone that its complications are manifested. In particular, damage to the nervous system from the infection of COVID-19 continues as both a complication and a new clinical manifestation. Accordingly, the origin of neurological symptoms under the influence of the SARS-CoV-2 virus can be divided into 2 groups: Group 1 includes the development of neurological diseases under the direct influence of the virus; Changes in the course of pre-existing chronic neurological diseases to Group 2 [2].

It has also been suggested that the SARS-CoV-1 and SARS-CoV-2 strains directly affect the brain [2]. For this reason, the various cases and news that the neurologists of the world have encountered so far in their observations are published as separate information and made available to the public. The

coronavirus infection has also affected the central and peripheral nervous system damage in patients with the most chronic diseases, including the progression of diabetes and the exacerbation of diabetic polyneuropathy in patients at an early age, which also required a new approach to self-medication. [5] In particular, we can see cases of several diseases being affected by COVID-19. The most common of them are acute disorders of cerebral circulation, epileptic seizures and infectious diseases of the nervous system, and diseases of the peripheral nervous system. [4]

These conditions led to the development of the normal peripheral nervous system to the central nervous system. The extent to which the disease is symptomatic depends on its pathogenetic factors and effects [4]. From a pathogenetic point of view, this condition is associated with a "cytokine storm", hypoxemia, homeostasis disturbance, and changes in the blood-vascular system and blood components [1]. According to a systematic review, cerebral infarction 5-31%, hemorrhagic stroke 6%, and venous sinus thrombosis 0.5% cases were observed [9,12]. Loss of appetite and presence of organic changes in neuro visualization of such patients, changes in blood circulation as a result of local inflammation, venous congestion, cerebral edema, hypoxemia, increased intracranial pressure, and epileptic seizures were detected. [13,8]. GAMKergic neuron activation, hypocalcemia, and hypoxia play a key role in the genesis of seizures. [18,7]. The virus itself does not cause an epileptic seizure and does not affect its frequency, on the contrary, it can be observed that it

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causes disorganization of neurons in the focus of inflammation, and it is this mechanism that can cause the observation of epileptization [10]. However, Kuroda N. according to information (2020), in addition to the increase in seizures of epileptic patients brought to the hospital, their fall into status epilepticus was also observed.[11]

According to the above opinion, the pathogenesis of the infection of COVID-19, in addition to thinking about the appearance of seizures due to the structural disorder and disorganization of neurons, the percentage of the effect on the vascular system was also given. According to Elkind, and Warren-Gash (2021), respiratory infections are a direct factor in cerebrovascular diseases [16]. That is, the virus is the most common cause of acute circulatory disorders in the brain in terms of its effect on fibrinogen and coagulation system in the blood system. Several pathogenetic disorders as a result of the effect of the SARS-CoV-2 virus on the observation of cerebrovascular diseases: a local brain tumor, thrombosis, endothelial dysfunction, hypo-, and hypertension, stenosis of vertebral arteries, sudden increase of type B brain natriuretic peptide, etc. [14,17]. Hemorrhagic disorders in the brain can be caused by the GEB integrity violation of the SARS-CoV-2 virus, which increases in body titer, and the response to general intoxication in the body. Hemorrhagic stroke is sometimes thought to be late in such cases, the presence of meningeal signs suggests infectious meningitis and cases of delayed diagnosis of hemorrhagic stroke have also been observed in periods when coronavirus infection is now spreading [3]. The autopsy and laboratory examination of those who died as a result of the SARS-CoV-2 virus revealed that this virus caused changes in the structure of neurons and glial cells in the brain parenchyma and the vascular network. [6].

The observation of organic changes due to the pathogenetic effect of the coronavirus infection on the body was mentioned above, and we mentioned that it is schematically presented in the table. Based on the previously known inflammatory reaction, specifically about the effect of the SARS-CoV-2 virus on the structure of the central nervous system, alveolar diffusion disorder leads to increased vasodilation in the central nervous system, which leads to interstitial edema, and increased dampness in blood vessels in these areas leads to increased vascular wall

permeability and hemorrhagic stroke. concluded that it can come. According to Wang M and co-authors (2020), in severe cases of SARS-CoV-2, an increase in D-iron in the blood and a decrease in platelets cause an increase in the risk of acute cerebrovascular diseases [15].

Based on the above considerations, a clinical case of a patient with coronavirus infection complicated by hemorrhagic stroke and epileptic seizures is discussed below.

## 1. Clinical condition.

The patient Allaberdieva M. was born in 1998. The main complaints are seizures, light weakness in the right arm and leg, and seizures in high blood pressure.

Such a situation was not observed before the word patient. 2 years ago, in the last weeks of pregnancy, at 30 weeks, a Covid-19 infection was detected and the patient was treated on an outpatient basis. The birth was physiological and normal, without any complications. One month later, the patient suddenly had twitching in the arms and legs and fainted. The resident was immediately taken to the hospital and given first aid. A sign of a hemorrhagic stroke was revealed during a routine MSCT examination.

According to the neurological status, right-sided hemiparesis, hemihyesthesia, increased tonus in a spastic type, positive pathological reflexes, and signs of central paresis of the 7th and 12th BMN were detected at this time (based on the information in the extract of the hospital discharge epicrisis No.5844 April 2021). After his condition stabilizes, he is discharged from the hospital, and a month later, the patient's blood pressure rises to 200 mmHg and a seizure occurs. Right-sided hemiparesis was restored in 3 months. Carbamazepine 200 mg twice daily was recommended, but the number of seizures did not decrease. A generalized seizure is observed in the tonic form of a seizure. During an attack, blood pressure was found to rise to 200 mm Hg.

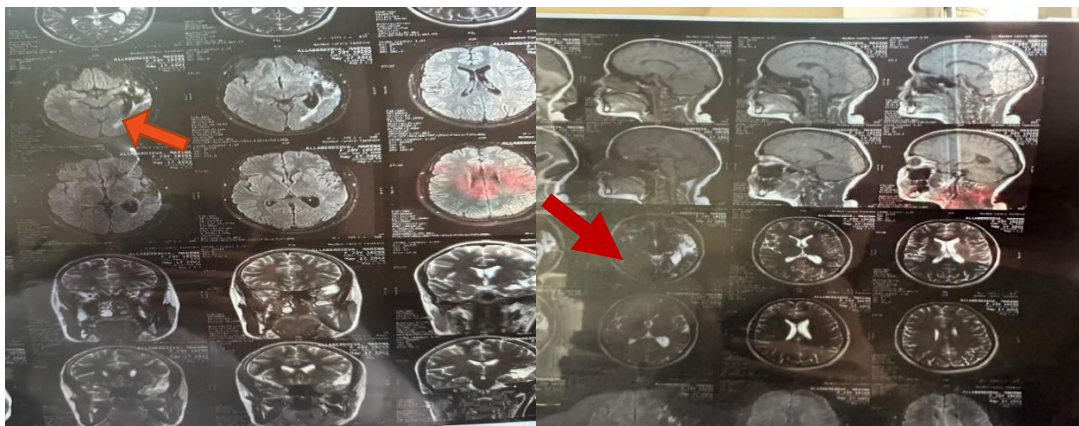
## 2. Initial diagnosis:

Acute cerebral circulation disorder with seizure syndrome

In October of this year, his condition worsened again and he was hospitalized in the neurology department

of the Tashkent Hospital for Somatic Diseases with high blood pressure. In May 2022, a repeat MRI examination was performed and cystic-atrophic degeneration and encephalomalacia were found in the left hemispheres of the brain (Fig. 1).

In February 2023, he applied to the Department of Neurological Diseases of the 7th Tashkent City Hospital with the above complaints.



**Figure 1.** The results of the MRI examination

**Neurological status:** BM.N has signs of central paresis on the right side of the face, and the corner of the lip and nose is smoothed. From the sphere of action: right-sided mild hemiparesis. Leg reflexes are slightly increased on the right. Muscle strength is 3.0 points in the proximal-distal muscles of the right arm and leg. Babinski, Oppenheim, and Rossolimo reflexes have been identified as pathological reflexes. Also from pseudobulbar symptoms: Marinesko-Rodovich and Khartoum reflexes were identified. Surface and depth perception are preserved. Due to hemiparesis, the coordinator was unable to check the tests. Meningial and withdrawal symptoms were not observed. O.N.F. Answers questions. Happy. Speech saved. Emotionally good.

**Laboratory analyses:** Mine general analysis: NV-98.0, erythrocyte,3,3; TR-196.0; L-6.8; SOE-8-mm/s. Segment nuclei-60; Eosinophils-4; Lymphocytes-34.

Peshobn UT: Mikdor-41.0; Color-yellow, Clarity-clear, oxyl-0.033%, bile acid was not found. Flat-8-10 p/m; Leukocytes-7-11; p/m unchanged-1-3p/m; Salts-Urate salts-16-15 p/m.

Fecal analysis amount-3.3 p/m; form-always color-yellow, undigested food residue-6-7 p/m.

Visible-9-10 p/m. Indigestible plant fiber-4-5 p/m, leukocytes 6-7 p/m

ECG - pathology was not detected.

Urologist's conclusion- Neurogenic bladder.

**Clinical diagnosis:** Acute cerebral circulation disorder, in the basin of the left middle cerebral artery, hemorrhagic type, with seizure syndrome. Complications of Covid-19 infection.

### 3. Summary:

1. Therefore, SARS-CoV-2 infection depends on the exacerbation of chronic disease in the body and its deep organic changes, its pathogenetic effect, and the effect on the specific type of chronic disease.

2. based on infection with the SARS-CoV-2 virus, a change in homeostasis can lead to the development of a new disease, depending on the intensity and duration of the inflammatory process in the body's blood-vascular system.

### List of used literature:

- [1] V.V. Belopasov, Ya. Yasha, E.M. Samoilo, V.P., Baklaushev. // Damage to the nervous system in Covid-19//<https://cyberleninka.ru/article/n/porazhenie-nervnoy-sistemy-pri-Covid-19>
- [2] Gusev E.I., Martynov M.Yu., Boyko A.N., Voznbk I.A., Lashch N.Yu., Sivertseva S.A.,

- Spirin N.N., Shamalov N.A. New coronavirus infection (Covid-19) and damage to the nervous system: mechanisms of neurological disorders, clinical manifestations, organization of neurological care // *Journal of Neurology and Psychiatry named after S.S. Korsakov*, 2020; 120(6): 7-16 b.
- [3] Usanova A.A., Kunyaeva T.A., Usanova T.A., Ratin K.Yu. Neurological risks of a new coronavirus infection Covid-19 // *Journal of Modern Problems and Education*, 2022, No. 6 part 2 P.25
- [4] Matmurodov R.J., Umirova S.M. The role of coronavirus infection in the development of diabetic polyneuropathy and its effect on the complement system // *Tashkent-2021, Journal of Biomedicine and Practice*, volume 6, issue 3, page 256.
- [5] Matmurodov R.J., Umirova S.M. Rezulyt primeneniya kombilepena v lechenii diabeticheskoy polyneuropatii u lits molodogo vozrasta // *Journal of cardiorespiratory research*. No. SI-1 (2021), p. 187
- [6] R.G. Esin, O.R. Esin, E.A. Gorobets, I.M. Fattakhov. //Neurological complications of the new coronavirus infection Covid-19// *Educational and methodological manual for neurologists and clinical psychologists* UDC 616.8; LBC 56.12; H12 Kazan 2021.
- [7] Elgamasy S, Kamel MG, Ghozy S, et al. The first case of focal epilepsy is associated with sars-coronavirus-2. *J Med Virol*. 2020;10.1002/jmv.26113. doi: 10.1002/jmv.26113
- [8] Fasano A, Cavalieri F, Canali E, Valzania F. First motor seizure as presenting symptom of SARS-CoV-2 infection. *Neurol Sci*. 2020;1-3. doi: 10.1007/s10072-020-04460.
- [9] Guillan M, Villaceros-Alvarez J, Bellido S, Perez-Jorge Peremarch C. et al. Unusual simultaneous cerebral infarcts in multiple arterial territories in a COVID-19 patient. *J.Thromb Res*. 2020 Jun 9;193:107-109. doi 10.1016/j.Thomas.2020.06.015
- [10] Hepburn M, Mullaguri N, George P, et al. Acute symptomatic seizures in critically ill patients with COVID-19: Is there an association? *Neurocrit Care*. 2020;1-5. doi 10.1007/s12028-020-01006-1.
- [11] Kuroda N. Epilepsy and COVID-19: Associations and important considerations. *Epilepsy Behav*. 2020;108:107122. doi: 10.1016/j.yebeh.2020.107122.
- [12] Li Y, Wang M, Zhou Y, et al. Acute cerebrovascular disease following COVID-19: a single, retrospective, observational study. *Lancet*. 2020. doi 10.2139/ssrn.3550025.
- [13] Lu L, Xiong W, Liu D, Liu J. et al. New-onset acute symptomatic seizure and risk in Coronavirus Diseases 2019: A retrospective multicenter study. *Epilepsia*. 2020;61(6):e49-e53. doi 10.1111/epi.16524.
- [14] Lai C-C, Liu YH, Wang C-Yi, et al. Asymptomatic carrier state, acute respiratory disease, and pneumonia due to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2): facts and myths. *J Microbiol Immunol Infect*. 2020;53(3):404-412. doi 10.1016/j.jmii.2020.02.012
- [15] Mao L., Jin H., Wang M., Hu Y., Chen S., He Q., Chang J., Hong C., Zhou Y., Wang D., Miao X., Li Y., Hu B. Neurologic Manifestations of Hospitalized Patients With Coronavirus Disease 2019 in Wuhan, China. *JAMA neurology*. 2020; 77(6): 683-690. <https://doi.org/10.1001/jamaneurol.2020.1127>
- [16] Nordvig A.S., Fong K.T., Willey J.Z., Thakur K.T., Boehme A.K., Vargas W.S., Smith C.J., Elkind M. Potential Neurologic Manifestations of COVID-19. *Neurology. Clinical practice*. 2021; 11(2): e135-e146. <https://doi.org/10.1212/CPJ.0000000000000897>
- [17] Tu W.J, Cao J, Yu L, et al. Clinicolaboratory study of 25 fatal cases of COVID-19 in Wuhan. *Intensive Care Med*. 2020;46(6):1117-1120. doi 10.1007/s00134-020-06023-4.
- [18] Zubair A.S, McAlpine LS, Gardin T, et al. Neuropathogenesis and neurologic manifestations of the Coronaviruses in the age of Coronavirus disease 2019: A review. *JAMA Neurol*. 2020. doi: 10.1001/jamaneurol.2020.2065