

COGNITIVE IMPAIRMENT IN PATIENTS WITH COVID 19

Ataniyazov Maksud

Candidate of Medical Sciences, Docent of the Department of Nervous Diseases

Rakhimov Nurillo

3rd year Master of the Department of Nervous Diseases

Tohirov Zhonibek

3rd year Master of the Department of Nervous Diseases of the Tashkent Medical Academy

<https://doi.org/10.5281/zenodo.7314376>

Abstract. *Currently, postcovid syndrome is very often manifested, characterized by symptoms from various body systems, but neurological disorders are particularly important: cognitive disorders, asthenic, vegetative and anxiety disorders, leading to a decrease in the quality of life of patients and a slowdown in the rate of recovery. The coronavirus pandemic (COVID-19) is still developing, causing hundreds of millions of infections worldwide. The long-term effects of COVID-19 and neurological syndromes after COVID remain poorly understood. The present study aims to characterize the cognitive abilities of patients experiencing cognitive symptoms after COVID infection.*

Keywords: *cognitive decline; Cognitive dysfunction after COVID-19 infection; Cognitive symptoms after COVID-19 infection; Executive dysfunction; Memory symptoms; post-COVID; Cognitive impairment after COVID.*

КОГНИТИВНЫЕ НАРУШЕНИЯ У ПАЦИЕНТОВ С COVID 19

Аннотация. *В настоящее время очень часто проявляется постковидный синдром, характеризующийся симптомами со стороны различных систем организма, но особое значение имеют неврологические расстройства: когнитивные расстройства, астенические, вегетативные и тревожные расстройства, приводящие к снижению качества жизни больных и замедлению в скорости выздоровления. Пандемия коронавируса (COVID-19) все еще развивается, вызывая сотни миллионов инфекций во всем мире. Долгосрочные последствия COVID-19 и неврологических синдромов после COVID остаются малоизученными. Настоящее исследование направлено на то, чтобы охарактеризовать когнитивные способности пациентов, испытывающих когнитивные симптомы после заражения COVID-19.*

Ключевые слова: *снижение когнитивных функций; Когнитивная дисфункция после заражения COVID-19; Когнитивные симптомы после заражения COVID-19; Исполнительная дисфункция; Симптомы памяти; пост-COVID; Когнитивные нарушения после COVID.*

The widespread spread of COVID–19, the high frequency of health disorders after an acute period of the disease require studying the condition of patients after an infection caused by the SARS-CoV-2 virus. The concept of postcovid syndrome (PKS) was introduced to characterize a symptom complex that develops during or immediately after COVID-19 and lasts for more than 12 weeks, which cannot be satisfactorily explained by other alternative diagnoses. Common symptoms include fatigue, shortness of breath, cognitive dysfunction, as well as a number of other manifestations that, as a rule, lead to violations and restrictions of daily activities. There may be the appearance of symptoms following the recovery period after acute COVID-19 infection or the persistence of symptoms since the initial illness. In addition, there may be a

periodic occurrence or recurrence of symptoms over time. The manifestations of PKS are diverse, characterized by symptoms from various body systems, but neurological (neuropsychic) disorders are particularly important: cognitive disorders, asthenic, vegetative, and anxiety disorders, leading to a decrease in the quality of life of patients and a slowdown in the rate of recovery. Various manifestations of PKS occur in the majority of patients who have undergone COVID-19: one third of patients have increased fatigue, and a fifth have cognitive impairment. After the completion of the acute phase of COVID-19, the subsequent course of the disease and the dynamics of its clinical manifestations differ. Changes in the mental and physical components of health are closely related to each other, whereas cognitive impairments are largely independent of other manifestations of PKS. It can be assumed that there is a difference in the mechanisms of the formation of manifestations of PKS, which will ensure the stratification of patients and the implementation of personalized rehabilitation measures. The results of experimental and clinical studies have made it possible to clarify many mechanisms of the formation of PKS. Thus, during positron emission tomography (PET) of the brain with ¹⁸F-phosphodesoxyglucose (¹⁸FDG) in patients who had no signs of structural changes during magnetic resonance imaging (MRI) of the brain (including with contrast enhancement), zones of hypometabolism in the cortex (cingulate gyrus) were detected. Neuropsychological examination revealed in these patients a decrease in memory and the ability to remember, as well as some other neurocognitive disorders. Subsequently, a bilateral decrease in metabolism in the orbital cortex (olfactory gyrus), temporal lobe (amygdala and hippocampus), medulla oblongata and cerebellum on both sides in the absence of structural lesions of the medulla was found in patients with PKS during PET with ¹⁸FDDG. Functional changes were accompanied by corresponding cognitive impairments.

There is no doubt that the most severe course of COVID-19 occurs in patients with concomitant diseases, the presence of cardiovascular risk factors, as well as with various forms of cerebrovascular pathology, in particular with chronic cerebral ischemia. Acute systemic infectious disease, systemic inflammatory reaction, hypoxia, endothelial dysfunction, activation of neurodegenerative processes and other factors can cause deterioration of the course of cerebrovascular disease. Of undoubted interest is the possibility of using neurotrophic and neuroprotective polypeptide drugs. As a result of the analysis of the material, it was found that some patients suffered from COVID-19 of moderate severity, which was associated with deterioration in the form of an increase in memory disorders, attention, mood decline, increased anxiety, sleep disorders. These complaints, which have been going on for at least 3 months, along with the existing somatic disorders, made it possible to diagnose in these patients a combination of PKS and BMS with cognitive and emotional disorders. Cognitive disorders - decreased memory, perception, mental abilities, speech disorders - indicate a violation of the normal functioning of the brain. The causes of such disorders can be chronic fatigue, constant overexertion, stress, brain damage as a result of diseases, age-related changes and insufficient blood supply to the brain. Cognitive impairment has three degrees of severity. In the initial stages, they cause minor discomfort, and in the latter stages they noticeably worsen the quality of life.

Minor violations. With mild cognitive impairment, concentration decreases, memory deteriorates slightly, the patient gets tired quickly with certain types of intellectual activity.

- Moderate. Memory deteriorates more, dips may occur. Patients forget some life events, the way home.

- Heavy. The patient cannot serve himself on his own, is disoriented in time, does not remember recent events, forgets his home address. Sometimes patients suffer from hallucinations, delirium, urinary incontinence.

Postcovid neurological disorders lead to a significant decrease in the quality of daily life in a large number of patients, including patients of working age. The mechanisms of formation of changes on the part of the nervous system in a new coronavirus infection are not fully understood. The currently available recommendations for the treatment of patients with PKS are mainly empirical in nature, which requires the search for reasoned approaches to treatment. The use of neurotrophic and neuroprotective polypeptide drugs is of undoubted interest. The results of our study give grounds to consider the use of the drug Cellex in the treatment of patients with cognitive impairment.

REFERENCES

1. Ceban F., Ling S., Lui L.M.W. et al. Fatigue and cognitive impairment in Post-COVID-19 Syndrome: A systematic review and meta-analysis. *Brain Behav Immun.* 2021;
2. Frontera J.A., Lewis A., Melmed K. et al. Prevalence and Predictors of Prolonged Cognitive and Psychological Symptoms Following COVID-19. 2021.
3. Wyrwich K.W., Yu H., Sato R., Powers J.H. Observational longitudinal study of symptom burden and time for recovery from community-acquired pneumonia reported by older adults surveyed nationwide using the CAP Burden of Illness 2015.
4. Almeria M., Sehudo J. K., Sotoka J., Deus J., Krupinski J. (2020) Cognitive profile after COVID-19 infection: clinical predictors leading to neuropsychological disorders.
5. Karfi A., Bernabei R., Landi F., Gemelli V. CP-ACSG. Persistent symptoms in patients after acute COVID-19. 2020