



CLINICAL AND NEUROLOGICAL ASPECTS OF MULTIPLE SCLEROSIS DURING INFECTION WITH COVID-19 IN UZBEKISTAN.

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ABSTRACT: *The COVID-19 problem is relevant all over the world, in particular in Uzbekistan. At the end of 2019, WHO declared a new disease caused by SARS-CoV-2 - COVID-19 (Coronavirus Disease), in the status of a "pandemic" [9]. Coronavirus primarily affects the respiratory tract, being a significant pathogenetic agent. However, damage to the respiratory system is not the only and exclusive COVID-19 syndrome. Many studies have described the involvement of the nervous system in this disease. The coronavirus pandemic contributed to the assessment of the comorbidity of neurological pathologies, the degree of course and complication of existing diseases, including multiple sclerosis. The outcome in this case can become sharply threatening health which becomes social in nature as a result.*

Keywords: multiple sclerosis, Coronavirus Disease, pandemic, remission

I. Introduction

Relevance. According to the data of many scientists, viruses can enter the central nervous system by the hematogenous route or by means of retrograde neuronal transport [4] and lead to changes in neurons. Scientists J. Gu and his co-author also testify this [5] They found histopathological changes in the hypothalamic cortex in patients with SARS-CoV-2. For the first time, doctors from a hospital in Wuhan described the neurological manifestations of SARS-CoV-2 infection. The results were based on data from 78 patients who had a laboratory-confirmed diagnosis and received treatment for COVID-19 [8]. The observed neurological symptoms were divided into three groups: symptoms of damage (central nervous system) of the central nervous system (headache, dizziness, impaired consciousness, ataxia,

strokes and epilepsy); symptoms of damage to the peripheral nervous system (neuralgia); musculoskeletal symptoms (myalgia).

SARS-CoV-2 penetrated into the central nervous system by hematogenous or retrograde perineural pathway, more often through the olfactory pathway, which was confirmed in some patients by the development of olfactory and gustatory disorders (hyposmia, anosmia and dysgeusia) [10,3,7]

In addition, a pronounced decrease in the number of lymphocytes was revealed against the background of lesions of the central nervous system. This phenomenon may be a sign of immune-suppression caused by COVID-19 in patients with CNS damage, especially in the presence of a severe course of the disease [2]. According to the authors, the infection manifests itself not only clinical, but also radiological. On computed tomography (CT), the lesions look hypodense and are characterized by an increase in the MRI signal in the T2 and FLAIR sequences and the presence of internal hemorrhages, ring-shaped contrasting of the lesions is possible [11], but the pathomorphology of the lesion has not yet been clearly clarified, a combination of necrotic process and demyelination is possible. In the available literature, we did not find data on how the COVID-19 coronavirus affects the course of multiple sclerosis (MS). Despite this, today there are a number of recommendations for the introduction of patients with MS [1,12,6].

MS, like other neurological diseases is associated with COVID-19, can be divided into three groups:

1. patients who have not had contact with the sick and do not have a viral infection;
2. patients who have had contact with the infected - the risk group for COVID-19;
3. patients who have proven COVID-19 infection of varying severity (mild, moderate and severe), who are taking preventive measures to reduce the risk of COVID-19 infection with this pathology [1].

We did not find more information in the available literature on how the COVID-19 coronavirus affects the course of MS in connection with the COVID-19 pandemic, as in the whole world, and in Uzbekistan, preventive measures will also be introduced for patients with MS. Questions about the clinical course and therapy of multiple sclerosis are resolved individually in the country.

Considering the abovementioned problem of COVID-19 in MS remains unsolved.

The purpose of our study: to study the clinical and neurological aspects of COVID-19 patients with multiple sclerosis and their outcomes.

II. Materials and research methods.

The object of this study was 115 patients with MS aged 20 to 56 years (average -32.8 ± 0.8 years), of which 78 women (average age 31.6 ± 0.6) and 37 men (average age 37.0 ± 8.2). Of 115 patients, 78 (%) had a cerebral form (of which 24 had a cerebellar form), 26 (%) had a cerebrospinal form, and 11 (%) had a spinal form. Depending on the course of the disease, RT (remitting course) is observed in 86 (78%) patients, PP (primary progressive course) - in 9 (8%), CAP (secondary progressive course) - in 15 (14%) patients. The average age of patients with RT, VPT and PPT, respectively, was 35.4 ± 9.3 ; 40.5 ± 9.4 and 48.0 ± 11.2 years; the duration of the disease with RT - 7.9 ± 6.4 years, with VPT - 15.2 ± 8.1 years, with PPT - 14.3 ± 6.7 years. All patients with were divided into three groups in relation to COVID-19: the first group consisted of 98 patients who had no contact with the sick and no viral infection; the second group - 12 patients who had contact with an infected COVID-19, in the third group - 5 patients who have proven COVID-19 infection of varying severity (4 patients are mild, 1

medium). All patients of 3 groups were examined clinically and neurologically and were followed up for 1 month. The dynamics of the neurological status was assessed using the Kurtzke scale, and the disability using the EDSS scale.

III. Results

58% (67) of MS patients in group 1 were not at risk for COVID-19. They had no symptoms or worsening of their condition. 37% (43) patients of the second group involuntarily became contacted patients with COVID-19, but despite this, they did not have symptoms of COVID-19 for 1 month. 5% (5) of patients from the third group had proven COVID-19 infection of varying severity (4 patients - mild, 1 - moderate). All patients of the first and second groups did not show symptoms of COVID-19. In this regard, a clinical analysis was carried out in patients of group 3 before and after the manifestation of COVID-19. In the third group, 4 patients had mild symptoms such as headache, fever up to 37.2 ° C, decreased appetite, impaired and disappeared sense of taste (hypogeusia, ageusia) and sense of smell (hyposmia, anosmia), dry cough. All of these violations, regardless of the severity of the COVID-19 disease, recovered within three weeks. In 1 patient, the body temperature remained for 2-3 days, after which it was stopped without relapse, and in 3 patients it remained for 14 days in the form of sub-febrile condition. Patients of the first and second groups with MS, but without COVID-19, did not have it for 30 days. All indicators of body temperature by day are offered in table No. 1

Table 1

№	Dynamics of body temperature by days since the manifestation of COVID-19.	* Body temperature by day since the onset of COVID-19 in patients with MS (n = 5)	**Body temperature readings in MS patients without COVID-19. (1,2 group) (n = 20)	P<(in comparison with MS patients with COVID-19 and MS without COVID-19)
1	1-5	37,12±0,54	36,32±0,33	P<(*,**)0,01
2	5-10	37,6±0,38	36,16±0,15	
3	11-16	36,8±0,32	36,44±0,24	
4.	...30 day	36,2±0,31	36,4±0,19	

The deficit of neurological status in MS patients with COVID-19 before and after the manifestation of COVID-19 was assessed using the assessment of functional systems (FS) according to Kurtzke. The neurological status of the patients was monitored for 30 days. Significant impairments were manifested in the lesion of the cranial nerve: the optic nerve (in 1 patient there was an asymmetric lesion in both eyes in the form of a decrease in vision to 0.8 and 0.6, which subsequently recovered to 0.9 -1.0 within 28 days after the manifestation of COVID-19), the olfactory nerve (hyp- or anosmia was observed in 1 patient, with recovery within 14 days after the manifestation of COVID-19). Disorders of coordinating activity were observed in 3 patients in the form of static and dynamic ataxia, which improved slightly within 30 days after the onset of COVID-19. There was a dysfunction of the pelvic organs in 2 patients, in the form of urinary incontinence, with regression into urgency and until complete

recovery, which also recovered to its original state, more precisely, before the manifestation of COVID-19. All assessments of FS are described in more detail in Table 2.

Table 2

Kurtzke functional systems assessment scale (FS)

№	Symptoms group	* Pre-COVID-19 scores of neurological symptoms in MS patients (n = 5)	** Neurological symptom scores after COVID-19 manifestation in MS patients (n = 5)	P < (in comparison with MS patients with COVID-19 and MS without COVID-19)
1.	Optic Nerve Disorders	2±0,26	3±0,26	P<(*,**)0,05
2.	Cranial nerve disorders (except pair II)	2,5±0,41	2,25±0,3	P<(*,**)0,05
3.	Symptoms of the defeat of the pyramidal path	1,75±0,3	2±0,45	P<(*,**)0,05
4.	Coordination disorders	1,5±0,41	2,25±0,3	P<(*,**)0,05
5.	Sensitivity disorders	2,45±0,41	1,25±0,3	P<(*,**)0,005
6.	Dysfunction of the pelvic organs	2±0,26	2,25±0,16	P<(*,**)0,05
7.	Intelligence changes	1,75±0,3	2±0,26	P<(*,**)0,05

The general condition and neurological deficit of MS patients with COVID-19 did not affect disability in terms of points during the period of illness. The disability score was assessed using the DS and EDSS tables. Before the manifestation of COVID-19 it was 2.1 ± 2.23 , after 2.5 ± 0.19 ($P < 0.05$). Summarizing the above data, one can think that COVID-19 affection in the observed MS patients slightly affected the quality of life and may significantly aggravate the disease.

Conclusions.

In patients with MS, COVID-19 in observation and in dynamics, although not deeply, can lead to an aggravation of neurological deficit, and as a result, to an unfavorable outcome. In this regard, patients need timely diagnosis and medical assistance. To obtain reliable results, it is necessary to continue research.

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