



Clinical and neurological features of ischemic strokes after coronavirus infection .

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ABSTRACT

Vascular diseases of the brain remain the leading cause of death worldwide and have a significant impact on the quality of life of patients and socio-economic aspects. Numerous reports consistently show that circulatory diseases are one of the main risk factors for increased severity of novel coronavirus infection, including higher risks of hospitalizations and in-hospital deaths. This article considers the clinical and neurological features of ischemic strokes after a coronavirus infection.

Keywords:

Covid-19, ischemic stroke, comorbidity , post-covid synrom

Introduction. Ischemic strokes are the most severe variants of acute cerebrovascular pathology in patients with COVID-19, pose an immediate threat to the patient's life and require the implementation of additional treatment programs, including the possible (in the presence of indications and the absence of contraindications) the use of reperfusion methods of treatment . It is widely known that in-hospital ischemic stroke is characterized by difficulties in timely diagnosis at all stages, leading to delays in the provision of care, and, as a result, to worse immediate and long-term outcomes [1,2,3].

Presented, Voznyuk I.A. et al . (2020) clinical observations are consistent with the results published by a group of researchers who observed ischemic stroke against the background of acute occlusion of the proximal cerebral arteries [1].

The authors also note that stroke cases had a severe neurological deficit with a severe course, and associated the development of thrombosis of large arterial trunks with

coagulopathy and endothelial dysfunction that occurs with COVID-19. Given the existing paradigm, hypercoagulability in COVID-19 can lead to rapid clinical deterioration in patients with COVID-19 and be associated , among other things, with the development of acute cerebrovascular disease. In this connection, the early appointment of anticoagulant therapy is justified in patients with this pathology, and in the event of an in-hospital ischemic stroke, indications for systemic thrombolytic therapy have an additional pathogenetic rationale [1,2,3].

The purpose of the study was to study the clinical and neurological features of ischemic stroke (IS) after a caronavirus infection.

Materials and methods of research: we examined 34 patients with IS who had a history of caronavirus infection, confirmed by the presence of positive tests and antibodies for COVID-19.

Results of the study: an analysis of the spectrum of concomitant diseases in the

somatic status of the examined patients was carried out (Table 1).

Table 1
Comorbidities in patients with ischemic stroke

Diseases	Patients with IS (n=34)	
	abs	%
Hypertonic disease	34	100
Atherosclerosis	20	59
Cardiac ischemia	eleven	32
Diabetes	9	26
Rhythm disturbance	4	12
Acquired heart disease	2	6
Chronic heart failure	1	3

As can be seen from Table 1, the most common concomitant comorbid conditions in IS in our observations were hypertension, which was present in absolutely all patients. Atherosclerosis was observed in more than half of the patients (59 %). About a third of patients with IS had coronary heart disease and diabetes mellitus (32% and 26%, respectively).

When studying the anamnestic features of IS after suffering COVID-19, we drew attention to the following. The severity of the

clinical picture of COVID-19 determines the likelihood and severity of ischemic stroke. An analysis of the history data regarding the incidence of ischemic strokes after suffering COVID-19 revealed differences in terms of the timing of the development of an acute cerebrovascular accident. The duration of AI development ranged from 1 to 6 months. The distribution of the frequency of ischemic stroke from the duration of COVID-19 is shown in Table 2

Table 2
The frequency of IS in CB developed after suffering COVID-19.

Time of COVID-19 (n=34)	1 month	2 months	3 months	4 months	6 months
abs	4	9	eleven	5	5
%	12	26	32	15	15

The obtained anamnestic data suggest that strokes more often developed in the second or third month after suffering COVID-19.

The low frequency of strokes in the first month after COVID-19 may be due to ongoing therapeutic measures that have had a certain preventive effect. According to the anamnesis, up to 88% of patients after COVID-19 took antihypertensive , antiplatelet , and lipid-lowering drugs that affect the rheological

properties of blood, etc. for a month. However, by the end of the second month, the number of patients receiving medical therapy was reduced to 20%, which may be the reason for their stroke. An important factor in the development of stroke after COVID-19 are concomitant comorbid conditions.

In order to clarify the features of the clinical picture of IS after suffering COVID-19, we studied the clinical picture of IS. It consisted

of subjective symptoms and objective clinical symptoms presented in Table 3.

Analysis of the subjective symptoms of patients who underwent IS after COVID-19

showed the prevalence of complaints of general weakness and weakness in the limbs (94% and 91%, respectively).

Table 3
Subjective symptoms in patients with IS after COVID-19.

Complaints	AI n=34	
	Abs.	%
General weakness	32	94
Weakness in the limbs	31	91
Dizziness	28	82
Increase in blood pressure	28	82
Headache	27	79
Speech disorder	24	70
Numbness of the limbs	19	56
Cognitive impairment	3	9
visual impairment	2	6
Does not present due to the severity of the condition	2	6

About 82% of patients complained of dizziness (non-systemic), increased blood pressure and headaches. Sensory and cognitive impairments were next in frequency (56% and 9%, respectively). The median time between COVID-19 and subsequent stroke in our follow-up was 2.4 months. The latter is of no small importance in the prevention of stroke, i. it is during this time period that patients who have undergone COVID-19 should be under the close attention of neurologists, which will reduce the risk of developing IS.

Next, we analyzed focal clinical symptoms in patients with IS after COVID-19. All cases of IS noted in our observations occurred in the carotid basin. Of the 20 cases of IS occurred in the left carotid pool, and 14 cases in the right.

The table shows that the most common focal symptoms were hemiparesis and speech impairment (91% and 88% of cases, respectively).

Table 5
Focal neurological symptoms in patients with IS after COVID-19 (n =34).

Complaints	AI n=34	
	Abs.	%
Hemiparesis	31	91
Central paresis of VII and XII pairs of cranial insufficiency	thirty	88
Cognitive impairment	28	82
Aphasia	26	76
Pathological foot signs	23	68
Change in muscle tone	22	65
Hemihyesthesia	18	53
bulbar syndrome	7	20

In the structure of speech disorders, we noted motor aphasia (27%), sensory aphasia (15%), but the most common cases were mixed or total aphasia (58%). Muscle strength in the paretic limbs averaged 2.4 ± 0.7 points and corresponded to paresis. Muscle tone on the side of paresis, as a rule, was increased (62%), and only in 26% of cases we noted muscle hypotension in the most acute period of IS. Pathology of the cranial nerves in the form of central paresis of the facial and hypoglossal nerves was observed in 80%. In 68%, pyramidal insufficiency was expressed not only in the form of hemiparesis, but was also accompanied by pathological foot signs.

Conclusions: thus, our studies have shown that most often (59%) IS develops 2-3 months after suffering COVID-19. The smallest percentage (1 2%) of the incidence occurs 1 month after COVID-19, which indicates the need for primary stroke prevention measures aimed at changing blood rheological parameters, which also undergo certain changes in patients who have undergone COVID-19.

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