https://www.sworldjournal.com/index.php/swj/article/view/swj35-02-091
DOI: 10.30888/2663-5712.2026-35-02-091

UDC 616.831-005.1-06:616.831.25:616.8-009.1

CLINICAL FEATURES OF NEUROLOGICAL DEFICIT AND DISORDERS OF COGNITIVE FUNCTION IN POST-STROKE PATIENTS

КЛІНІЧНІ ОСОБЛИВОСТІ НЕВРОЛОГІЧНОГО ДЕФІЦИТУ ТА КОГНІТИВНОЇ ДИСФУНКЦІЇ У ПАЦІЄНТІВ, ЯКІ ПЕРЕНЕСЛИ ІШЕМІЧНИЙ ІНСУЛЬТ

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Abstract. *The article deals with the current problem of cerebrovascular diseases - cerebral strokes, which are accompanied by severe consequences that affect the quality of life. The aim of the study was to determine the clinical features of neurological deficit and cognitive disorders in patients who have suffered ischemic stroke. Examination of 45 patients who were in the late recovery period included: clinical and neurological, psychodiagnostic methods using the National Institutes of Health Stroke Scale (NIHSS), the modified Ashworth spasticity scale (MAS), the Montreal Cognitive Assessment Scale (MoCA). All examined patients were diagnosed with neurological disorders, mainly motor with spastic syndrome of varying degrees of severity, sensory disorders, dysfunctions of the cranial nerves and gait problems. 12 months after the stroke, an increase in cognitive dysfunctions was observed.*

Key words. *Ischemic stroke, neurological deficit, cognitive dysfunction.*

Introduction. Cerebral stroke is one of the most urgent medical and social problems due to the severe consequences that affect the quality of life. The presence of motor, sensory and speech disorders, disorders of higher brain functions with disorders in the cognitive and emotional spheres, hinders recovery and negatively affects the quality of life of patients who have suffered a stroke.

Spastic syndrome with a qualitative assessment is diagnosed clinically, using a neurological examination. Spasticity can range from moderate to severe and is accompanied by the appearance of pathological reflexes, synkinesias, leveling the remaining muscle strength, contributing to the development of contractures. [1, 2]. According to the literature, up to 50% of patients suffer from post-stroke pain syndrome (PSPS). PSPS is conventionally divided into central PSPS, regional pain syndromes, joint pain, pain syndrome associated with muscle spasm of paretic limbs, headache and musculoskeletal pain (most often hemiplegic shoulder pain), which negatively affect the daily functional capabilities of people who have suffered a stroke [3].

Cognitive impairment in post-stroke patients is diagnosed in 40-70% of cases, and in about half of patients they reach the level of dementia after 25 years. The risk of developing cognitive impairment is noted in the first 6 months and increases over time [4-6], complicating communication with the patient, his perception of information, which is also one of the causes of disability. Timely diagnosis and, accordingly, correction of these disorders will help to improve the neurorehabilitation program for this category of patients.

The aim of the study was to determine the clinical features of motor deficits and cognitive impairment in post-stroke patients.

Material and methods.

In compliance with the principles of bioethics and deontology, 45 patients (mean age 62.4±5.8 years) who had suffered an ischemic stroke and were in the late recovery period were examined. The examinations were conducted twice: 6 months after the stroke (group I) and 12 months (group II). The exclusion criteria from the study were the presence of severe somatic pathology and hemorrhagic stroke.

All patients underwent a neurological examination with a thorough study of the state of the motor systems, sensitivity, and cranial nerve function. The NIHSS scale and the modified Ashworth spasticity scale (MAS) were used during the examination. The Montreal Cognitive Assessment Scale (MoCA) was used to assess cognitive functions of the brain and determine the level of anxiety and depression.

Results of the study and their discussion. Among the risk factors that led to the development of stroke, the most common was arterial hypertension – 84.6%; the second place was taken by ischemic heart disease – 69.2%; the third – diabetes mellitus – 25.6%. These data correlate with the literature data [7]. Analysis of the localization of cerebral strokes demonstrated a slight predominance of the frequency of left-hemisphere lesions over right-hemisphere lesions (56.4% and 43.6%, respectively). Among patients, the atherothrombotic subtype of ischemic stroke prevailed (53.8%), 30.8% of patients were diagnosed with cardioembolic stroke, in 10.3% of cases the lacunar subtype was observed and in 5.1% of cases the cause of the stroke was not established.

The results of the NIHSS and MAS scores are presented in Table 1.

Table 1 - Dividing of patients depending on the severity

Indicators	Degree of dysfunction	group I n=45	group II n=45
NIHSS score	mild (1-4 points)	7	11
	moderate (5-15 points)	21	19
	moderate-to-severe (16-20 points)	14	14
	severe (21-42 points)	3	1

In neurological status, 28 (71.8%) patients showed signs of central hemiparesis, resulting in the formation of an asymmetric gait with Wernicke-Mann's posture. Limb motor disorders had varying degrees of severity: from mild paresis with predominant involvement of the distal and/or proximal parts to gross pronator-flexor settings in the hand with a sharp limitation of voluntary movements, the formation of contractures and increased spasticity in the extensors of the lower limb.

The MAS test is used for various diseases of the nervous system, which are accompanied by the appearance of spasticity. In this case, 0 points correspond to the absence of increased muscle tone, and 4 points mean the presence of a rigid flexion or extension position of the limb without any passive mobility. The vast majority of patients in group I had a moderate increase in muscle tone (46.6%), and in group II 42.2%. When studying muscle tone according to the MAS scale among patients in group I, the average indicators in the affected arm were 2.1±0.7 points, in the leg - 1.9±0.4 points; in people in group II - 1.45±0.6 points and 1.34±0.4 points, respectively.

The MoCA test is quick, so it is widely used to detect cognitive problems after a stroke. We assessed attention and concentration, executive functions, memory, language, visual-constructive skills, abstract thinking, arithmetic and orientation. The maximum possible test result is 30 points, but a result of 26 points and above is considered normal. The average test result 6 months after the stroke was 20.7 points,

and 12 months later - 18.4 points.

Conclusions

The results of the study of patients who underwent ischemic stroke and were in the late recovery period showed an increase in the number of patients with mild and moderate motor deficits with a decrease in the number of patients with moderate and severe motor disorders. Severe and moderate functional limitations of upper limb mobility, which were found in 77.8% of patients in group I, remained in 73.3% of patients in group II in a 12 months. According to the results of the MoSA test in patients 12 months after undergoing HPMC, an increase in signs of cognitive impairment was observed in patients with a decrease in the average result from 20.7 points to 18.4 points. The identified cognitive impairments as a result of undergoing HPMC do not have positive dynamics of recovery of impaired higher mental functions.

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Анотація. *В роботі розглядається актуальна проблема судинно-мозкових захворювань, а саме - мозкових інсультів, які супроводжуються тяжкими наслідками, що впливають на якість життя. Метою дослідження було визначити клінічні особливості неврологічного дефіциту та когнітивних порушень у пацієнтів, які перенесли ішемічний інсульт. Обстеження 45 пацієнтів, які знаходилися на етапі пізнього відновного періоду, включало: клініко-неврологічні, психодіагностичні методи із застосуванням шкали інсульту Національного інституту здоров'я (NIHSS), модифікованої шкали спастичності Ashworth (MAS), Монреальської шкали оцінки когнітивних функцій (MoCA). У всіх обстежених пацієнтів діагностовано неврологічні розлади, переважно- рухові із спастичним синдромом різного ступеня виразності, розлади чутливості, функції черепно-мозкових нервів, ходи. Через 12 місяців після перенесеного інсульту спостерігалося наростання когнітивних дисфункцій.*

Ключові слова*: ішемічний інсульт, неврологічний дефіцит, когнітивна дисфункція.*