

Clinical-Neurological and Neurocognitive Indicators Against the Background of Neuroprotective Therapy in Vertebro-Basilar Insufficiency in Patients with Symptoms of Cerebral Venous Discirculation

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Abstract. 60 patients with CCI were examined. VBI with symptoms of cerebral venous circulation disorders. We divided all patients into two groups: The main group - 30 patients with a diagnosis of CCI, VBI and symptoms of cerebral venous circulation disorders, they received Cytoflavin according to the scheme against the background of standard basic therapy (acetylsalicylic acid and antihypertensive drugs), 30 patients in the comparison group - only basic therapy. In the course of the study, a significant decrease in the frequency of complaints, including specific “venous” complaints, the severity of the cephalgic syndrome, asthenic and autonomic disorders was established in the main group; there was an improvement in the quality of life, the state of cerebral hemodynamics at all structural and functional levels improved.

Key words: cytoflavin, chronic cerebral ischemia, vertebrobasilar insufficiency, venous discirculation, cerebral hemodynamics.

Introduction

Currently, cerebrovascular disease is becoming a leading socio-medical problem affecting not only clinical neurology, but also society as a whole. The number of patients with signs of chronic cerebral ischemia (CCI), which is the main cause of disability, is growing steadily in our country, amounting to at least 700 per 100 thousand of the population. [1,2,3,7].

One of the topical issues in medicine is circulatory disorders in the vertebrobasilar system. They are considered severe and the most common variants of cerebrovascular pathology. [2,3,4]. According to the WHO, hemodynamic disorders in VBD account for more than 30% of all vascular diseases of the brain. Among the transient disorders of cerebral circulation, dicirculatory disorders in the VHD are accounted for.

Wide spread, constant growth, high mortality, damage to people of working age, a high percentage of disability among patients put the problem of vascular diseases of the brain stem localization in the group of socially significant ones. It is cerebral stroke and progressive cerebral ischemia that are currently the leading causes of disability [1,5,6].

Among survivors after a stroke, only about 1/3 of patients return to work, and 1/3 steadily lose their ability to work, in varying degrees in need of constant care [2,3,8]. In addition, most patients with spondylogenic circulatory disorders in the vertebrobasilar system are at a young age - from 20 to 50 years

[3,4,8,9,10]. Today, vertebrobasilar insufficiency is considered as a condition that develops as a result of insufficient blood supply to certain parts of the brain and causes the appearance of temporary and permanent symptoms [8,11,12,14].

Features of the structure and functions of the vertebrobasilar arterial system and the peculiarity of clinical symptoms during discirculation in it led to the isolation in the latest version of the International Classification of Diseases (ICD-X) [10,13,14] "syndrome of the vertebrobasilar arterial system" within the framework of "transient transient cerebral ischemic attacks [attacks] and related syndromes" (ICD-X, G 45.0). If earlier chronic cerebral circulatory insufficiency in IHD was considered in discirculatory encephalopathy, then in ICD-X the term "chronic cerebral ischemia" (CCI) was introduced instead of this term. Various forms of pathology of the cerebral vascular system, leading to CCI, in the ICD are categorized in the section "Cerebrovascular diseases" of the ICD as follows: blockage and stenosis of the precerebral (I 65) and cerebral (I 66) arteries that do not lead to cerebral infarction, other cerebrovascular diseases (I 67), cerebral atherosclerosis (I 67.2), hypertensive encephalopathy (I 67.4), cerebral chronic generalized ischemia (I 67.8), consequences of cerebrovascular diseases (I 69).

Purpose of the study:

To assess the effect of Cytoflavin on the severity of clinical, neurological and neurocognitive parameters in patients with CCI of VBI with symptoms of cerebral venous discirculation.

Materials and research methods:

We studied the clinical picture of 60 patients with CCI and signs of VBI and symptoms of cerebral venous circulation disorders. We divided all patients into two groups. The main group consisted of 30 patients diagnosed with CCI VBI and symptoms of impaired cerebral venous circulation, they received Cytoflavin 2 tablets 2 times a day against the background of standard basic therapy (acetylsalicylic acid and antihypertensive drugs), 30 patients in the comparison group received only basic therapy.

The main group consisted of 30 patients (20 females and 10 males) with a diagnosis of CCI VBI against the background of hypertension, who received Cytoflavin on the background of basic therapy according to the scheme. The average age was 61 ± 5.87 years. The comparison group included 30 patients (15 women and 15 men) who received basic therapy. The average age was 59.8 ± 8.7 years.

Results and discussion

On external examination, 12% of patients showed pasty face and eyelids in the morning hours, after a night's sleep. Significant decrease in edema by the evening was characteristic, with sufficient physical activity. When examining patients with a more pronounced degree of CCI, attention was drawn to the pronounced pallor of the skin of the face. Local cyanosis of the lips was noted in 8% of patients. In some cases, the expansion of the venous network in the region of the temples, the bridge, the anterior surface of the chest was noted. In 4% of patients, the external jugular veins were swollen and pulsed.

An important role in the development of cerebral circulation disorders, both arterial and venous genesis, is played by concomitant somatic disorders, in connection with which the analysis of the spectrum of comorbid conditions (Table 1) in the examined patients.

Comorbid conditions (%) Table 1

Pathology	Main group	Comparison group
Atherosclerosis	86,6	83,3
Ischemic heart disease	43,3	40
Obesity	20	23,3
Osteochondrosis of the cervical spine	73,3	76,6
SD	23,3	20
CHF	13,3	10
Rhythm disturbance	6,6	6,6
VBNK	6,6	6,6
COPD	3,3	3,3

As we can see from the table, the leading comorbid conditions were atherosclerotic vascular lesions, ischemic heart disease, obesity and degenerative changes in the cervical spine.

Most often, atherosclerosis of cerebral vessels was detected in the patients of the studied group - 86.6% and 83.3% of patients. Osteochondrosis of the cervical spine occurred in 73.3% and 76.6% of cases. 43.3% and 40% of the examined patients had ischemic heart disease. Obesity was revealed in 20% and 23.3% of patients and 23.2% and 20% of patients suffered from diabetes mellitus. In addition to the above diseases, among the patients, there were also chronic heart failure (13.3% and 10%), heart rhythm disturbances (6.6% each) and varicose veins of the lower extremities (6.6%). One patient in each group (3.3%) suffered from chronic obstructive pulmonary disease (COPD).

The nature of the patients' complaints is important due to the high sensitivity of the subjective state of a person to hypoxia. One of the most common complaints of VBI is headache. It was detected in almost all patients.

For the examined patients, both the main and the comparative group, the occurrence in the night or morning hours of headache with a feeling of heaviness in the occiput, with irradiation to the frontal-orbital region, pressure from the inside on the eyeballs was characteristic. With an increase in intensity, the headache became bursting, acquired a diffuse, constant character.

In the study groups, headache occurred in 83.3% of patients. Headache in patients in the initial stages of hypertension was more often bilateral, mainly localized in the parieto-occipital (52.2%) or frontotemporal (39.3%) areas. In 36% of cases, local headache became diffuse. In more than half of the patients (53.75%), the headache was constant and manifested by a feeling of heaviness in the head. Periodically, against a background of weak and diffuse, paroxysmal intense headache occurred, which patients characterized as compressing (35%), bursting (27%), pressing (20%), pulsating (18%).

Analysis of the daily dynamics of headache showed that most often pain occurred in the first half of the day (43% of patients). In 36% of cases, the headache occurred in the morning after waking up, diminished after getting out of bed and disappeared by the middle of the day.

Analyzing the time of onset of cephalgia, it was found that most often pain occurred in the first half of the day (53% of patients). In 43% of cases, the headache occurred in the morning after waking up, diminished after getting out of bed and disappeared by the middle of the day.

The second most frequent complaint was dizziness. Dizziness in the study groups occurred in 92% of cases. The dizziness was of a non-systemic nature with a feeling of instability, a feeling of failure. It

should be noted that with the progression of the CCI stage, the incidence of dizziness also increased, for example, in stage I CCI, dizziness occurred in 57% of cases, in 78% in stage II, and 100% in stage III. In the comparison group, dizziness occurred in 82.5% of cases. By nature, dizziness in both groups was constant ("somewhere inside the head"), independent of body position or instantaneous and short-term.

Patients of the study groups, more often complained of noise in the ears and head, in 53.3% of patients, describing it as a feeling of hum and whistling in the ears, bursting in the ears, feeling of ear blockage.

In both groups, headache was accompanied by additional characteristic "venous" complaints such as swelling of the face and eyelids in the morning hours (52.5%). A distinctive complaint in patients was changes in vision in the form of a "veil" sensation and the appearance of "flies" in front of the eyes, the appearance of the "sand in the eyes" symptom (33.7%), the "high pillow" symptom (11.25%), which decreased by the evening ...

Other characteristic complaints of venous origin were enlargement of the network of veins in the head, enlargement of the saphenous veins in the neck and face. Also, the patients had injection of sclera, cyanosis of the conjunctiva.

Also, the patients presented complaints characteristic of VBI of instability and staggering when walking, imbalance when turning. The unsteadiness of walking was found in 43.75% of cases, there were complaints of impaired coordination in everyday life.

Focal neurological symptoms in venous encephalopathy, according to the literature, have a fickle character, and are determined mainly in severe disorders. During the clinical and neurological examination, almost all patients showed small focal symptoms characteristic of diffuse brain damage.

The frequency of occurrence of focal neurological symptoms in patients is described in Table 1.3.

Table. 1.3 The incidence of focal neurological symptoms in patients

Symptom	Main group	
	n	%
Nystagmus	38	63,3
Soreness T. Vallee	12	20
CPU of the VII pair	12	20
CPU XII pairs	46	76,6
Increased muscle tone	34	56,6
Paresis	7	12,5
Anisoreflexia	55	91,6
Pathological foot marks	16	56,25
Oral Automatism Reflexes	25	85
Violation of PUP	21	70
Violation of the PEP	16	26,6
Gait disorder	39	65
Romberg pose	57	95

In the study group, the severity of neurological syndromes depended on the stage of CCI. During neurological examination, in patients with CCI of stage I, small-focal diffuse symptoms were revealed: lethargy of pupillary reactions, mild paresis of gaze, and convergence failure.

In 63.3% of patients, nystagmus was found which was characterized as setting or finely sweeping horizontal. Soreness at the exit points of the V pair of cranial nerves was observed in 20% of patients. Signs of central paresis of the hypoglossal nerve were found in more than 77% of patients and in 20% of the central paresis of the VII pair.

In the patients examined by us, pyramidal symptoms in the form of paresis or changes in muscle tone were rare, in the overwhelming majority of cases in the main group.

Most often, pyramidal symptoms were presented by anisoreflexia (91.6%), pathological foot signs in -56.2%. Reflexes of oral automatism - proboscis, Marinescu - Radovic were detected in 85% of patients.

Considering that one of the criteria for inclusion in the study was the presence of vertebrobasilar insufficiency in the patient, cerebellar discordinator disorders were predominant among the neurological syndromes of our studied patients. Focal pathology during the finger-nose test was manifested most often by a miss and a little less often by intentional tremor and was detected in 70% of patients, knee-calcaneal - in 26.6%. During the Romberg test, instability was detected in 95% of the examined patients. Gait disorders were found in 65% of patients.

The primary assessment of the effectiveness of the drug Cytoflavin in the examined patients was carried out on the basis of the remaining complaints after the application of the course of therapy in both groups. Patients of the main group noted a decrease in headaches, dizziness, tinnitus, signs of fatigue starting from 3-4 days of therapy. Against the background of cytoflavin treatment, the severity of headaches according to the VAS scale significantly decreased (Table 1.1)

The primary assessment of the effectiveness of therapy was carried out subjectively according to the patients' feelings, they noted a decrease in the intensity and frequency of headaches, heaviness in the head, congestion in the ears, dizziness, noise in the head, fatigue disappeared. Patients noted the appearance of a feeling of lightness, increased physical activity, and improved mood.

We conducted a study of the severity of headache according to the VAS scale (Table 1.1)

Tab. 1.1 Scale VAS

	Main group	Comparison group
Headache (VAS) 0-10 pts (before treatment)	5,68 ± 0,62	5,6 ± 0,78
Headache (VAS) 0-10 pts (after treatment)	3,23± 0,56	4,3± 0,68

As we can see, the severity of the cephalgic syndrome according to the VAS scale did not differ in the main group and the comparison group (moderate pain), after treatment the severity of headache decreased in the main group and was regarded as mild pain, while in the comparison group the headache score was higher.

In both groups, the course of the disease was accompanied by the formation of cognitive impairments, the nature and severity of which was determined using neuropsychological testing. Cognitive impairments of varying severity (from mild cognitive impairment to mild dementia) were diagnosed in 70% of the examined patients. The revealed disorders of the higher cerebral functions were of a neurodynamic and dysregulatory nature with a predominance of slowness of mnemonic-intellectual activity, disorders of planning and control processes.

Cognitive impairment manifested itself as memory impairment, especially for names and recent events, worried about 40% of the subjects. Often patients noted that due to a decrease in attentiveness (24%), accordingly, they had to write down what was planned for implementation.

Table 1.4 Assessment of cognitive function in the examined patients

	Main group	Comparison group
MMSE	26,32 ± 0,86	26,42 ± 0,79
MoCA	25,35 ± 0,96	25,41 ± 1,03
after treatment		
MMSE	28,05 ± 1,36	27,27 ± 1,15
MoCA	27,88 ± 1,13	26,62 ± 1,07

The results of the MMSE test (Table 1.4) in the main group were within 26.32 ± 0.82 , and in the comparative group - 26.42 ± 0.79 . In both groups, mild cognitive impairment was most common (80%), moderate cognitive impairment was observed in 13.75%. As for the Montreal test, in the studied groups the result was below 26 points, while after treatment in the main group it was 27.88 ± 1.13 points, and in the comparison group it was 26.62 ± 1.07 points, which is noticeably lower than in the group receiving Cytoflavin according to the scheme. The conducted neuropsychological testing showed a positive effect of the course of therapy with Cytoflavin according to the scheme of receiving intravenous infusions with the transition to the tablet form of the drug on the cognitive sphere of patients with CCI VBI.

Asthenic syndrome is one of the most common EE syndromes.

In the studied groups, 40% of patients noted irritability, 28% - anxiety, vegetative lability (12.5%), tearfulness (8.75%), emotional lability (23.75%), sleep became disturbed, with frequent awakenings in 33,75%.

Against the background of a significant deterioration in general health, increased fatigue and decreased performance appeared, mainly in the second half of the day, which was noted by 35% of patients in the main group.

The results of assessing the asthenia of patients using the Hospital Anxiety and Depression Scale (HADS) and the Asthenic State Scale (by L.D. Malkova, adaptation by T.G. Chertova) are presented in Table 1.5. As you know, one of the most common syndromes in EE is asthenic syndrome, which occurred in almost all patients of our study (Table 1.5.). To study anxiety-depressive syndrome, in addition to assessing complaints, the Hospital Anxiety and Depression Scale (HADS) and Asthenic State Scale (ASA) were used. When evaluating the results of HADS, we identified the following features. In both groups, it was found that the symptoms of anxiety prevailed over the symptoms of depression ($p < 0.01$).

Table. 1.5 Assessment of asthenization of the examined patients.

	Main group	Comparison group
HADS Questionnaire (Anxiety Assessment)	8,82 ± 1,31	8,81 ± 1,31
HADS Questionnaire (Depression Assessment)	8,31 ± 1,85	8,28 ± 2,09
Asthenic state scale (30-120 b)	86,71 ± 6,91	87,74 ± 11,15
after treatment	5,2 ± 2,82	6,72 ± 2,5
HADS Questionnaire (Anxiety Assessment)	4,6 ± 3,15	5,87 ± 2,46
HADS Questionnaire (Depression Assessment)	44,25 ± 3,02	65,55 ± 3,19

As we can see from the table, in both groups of patients examined by us there were significant changes in the psycho-emotional state, compared with the control group ($p \leq 0.01$). When assessing asthenization using the HADS scale, we noticed that, in the group of examined patients, depressive disorders prevailed, while in the comparison group, on the contrary, anxiety disorders prevailed. After receiving the course of therapy, the indicators of signs of asthenization of the nervous system were noticeably better in the group that received the course treatment with the drug Cytoflavin according to the scheme. If before treatment the level of anxiety was 8.82 ± 1.31 in patients of the main group, then after treatment it was 5.2 ± 2.82 points, while in the comparison group receiving basic therapy it was 6.72 ± 2.5 , which is significant. differs from the main group. When assessing according to SHAS, the indicators after treatment were also better in the main group - 44.25 ± 3.02 , while in the comparison group it was 65.55 ± 3.19 points. This confirms the effectiveness of Cytoflavin in the therapy of asthenization of the nervous system in CCI VBI.

Conclusions: 1. In patients of the study groups with VBI, headache and dizziness were detected in almost all patients (83.3%; 92%) and were one of the most common complaints, which tend to increase due to the progression of the CCI stage.

2. In the observation groups, the leading comorbid conditions were atherosclerotic vascular lesions, ischemic heart disease, obesity, and degenerative changes in the cervical spine.

3. As a result of clinical and neurological examination, almost all patients were found to have small focal symptoms characteristic of disseminated brain damage. Mild cognitive impairments were found in both groups (80% in the main and 17.5% in the comparison group).

4. The use of Cytoflavin against the background of standard basic therapy in the study group showed a significant decrease in the frequency of complaints, including specific "venous" complaints, the severity of cephalgic syndrome, asthenic and autonomic disorders; there was an improvement in the quality of life, the state of cerebral hemodynamics at all structural and functional levels.

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