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DEMENTIA AND ARTERIAL HYPERTENSION

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Abstract: Vascular dementia is a fairly common condition among the elderly and is characterized by severe cognitive dysfunction. Patients with vascular dementia often require constant outside care and supervision, and their quality of life and social functioning are reduced. Despite significant investment in experimental and clinical neuroscience, the search for effective pharmacological agents for the treatment of this condition continues.

Keywords: Dementia, arterial hypertension, vascular dementia, choline alfoscerate.

Introduction. Vascular dementia is a clinical syndrome that includes a wide range of cognitive impairment. DM occurs as a result of necrosis of brain tissue after ischemia caused by vascular disease. This distinguishes this type of dementia from its other types, most of which are caused by the deposition of toxic substances in nerve cells. It is believed that the symptoms observed in DM differ from those characteristic of dementia in Alzheimer's disease (AD), dementia with Lewy bodies and front temporal dementia, although elements of DM can also be observed in these diseases.

It should be noted that the medical treatment of DM has been widely covered in the literature (Broich , 2003; Malouf , Birks 2004; Pantoni , 2004; Schindler , 2005). The main conclusion of the authors is that most of the results of studies in DM were contradictory. It is also important to emphasize that, so far, no drug has been approved by regulatory agencies for the treatment of this disease (Pantoni , 2004). From an epidemiological point of view, DM is considered to be the second most common type of dementia after AD, although this conclusion has been challenged by the growing study of dementia with Lewy bodies (Zesiewicz et al ., 2001; Henriksen et al ., 2006). From a clinical point of view, DM presents significant challenges as its prevalence is increasing and effective treatment options are lacking. The most important section of DM therapy is the impact on existing risk factors for cerebrovascular diseases. Arterial hypertension (AH) is of the greatest importance among correctable factors [4]. In those cases where the leading component of the pathogenesis of DM is hypertension, the most characteristic is the predominance of a step-like development of symptoms against the background of periodically developing hypertensive cerebral crises. In this case, intracerebral arteries with a diameter of 70-500 microns and the microcirculatory bed of the brain are predominantly affected; the segmental nature of vascular lesions is typical. Developing vascular lesions are divided into primary - acute, repeated destructive changes caused by vascular crises (plasmorrhagia , fibrinoid necrosis with swelling of the wall and the development of acute hypertensive stenosis, isolated necrosis of myocytes of the middle lining of the arteries, miliary aneurysms, wall rupture, thrombosis); and secondary - chronic reparative processes (arteriosclerosis, hyalinosis with thickening of the walls and narrowing of the lumen of the arteries up to obliteration), compensatory and adaptive changes (myoelastofibrosis , hyperelastosis , muscular-elastic "pillows" at the points of branching, hypertrophy of the middle membrane, proliferation of vessels of the microvasculature). Thus, multiple diffuse and small-focal changes in the brain tissue, which have different pathogenesis, localization, nature and prevalence, lead to the formation of hypertensive angioencephalopathy [1,4].

Necessary to achieve norm tension in a patient with hypertension to prevent the progression of cerebrovascular disease [1, 6].

This can be achieved by using only non-drug methods or by combining them with drug therapy.

The drugs that largely meet the above requirements include choline alfoscerate, which excites cholinergic receptors, mainly central ones (has a cholinomimetic effect). The body breaks down into choline and glycerophosphate. Substrate provides the synthesis of acetylcholine and phosphatidylcholine neuronal membranes. Stimulates cholinergic neurotransmission, improves neuronal membrane plasticity and receptor function, activates cerebral blood flow, and stimulates CNS metabolism and reticular formation. It improves mood, improves mental activity, concentration, memorization and ability to reproduce the information received, optimizes cognitive and behavioural reactions, and eliminates emotional instability, apathy. In the acute period of traumatic brain injury, it contributes to the normalization of blood flow and bioelectrical activity of the brain on the side of the lesion, and contributes to the regression of neurological symptoms.

All of the above positive polyfunctional properties of choline alfoscerate were the basis for the inclusion of the drug in the complex treatment of patients with diabetes, which developed against the background of hypertension.
The aim of the study was: to study the effect of choline alfoscerate on headache severity, quantitative and qualitative indicators of autonomic dystonia syndrome, as well as the level of anxiety in patients with vascular dementia against the background of hypertension.

Material and methods of research: 60 patients with diabetes participated in the study , with an average age of 68.5±0.7 years.

The diagnosis of hypertension was established according to the classification of hypertension by degrees, adopted by cardiologists around the world at the symposium on hypertension, at the congress in 2003 [7]. According to this classification, 32 patients were diagnosed with a mild degree of hypertension, the levels of arterial pressure of which were in the range of 140-159/90-99 mm Hg ; in 28 patients - the second degree, or moderate, their blood pressure level varied in the range of 160-179 / 100-109 mm Hg. Art. There were no patients with severe, third-degree AH in our studies.

Exclusion criteria from the study were: age less than 40 and more than 80 years, Alzheimer's disease, encephalopathy of other etiologies, stroke, diabetes mellitus, epilepsy, organic diseases of the brain and spinal cord (hereditary, demyelinating , degenerative, tumors), blood diseases and autoimmune diseases.

All patients were divided into 2 groups.

The 1st group (main) included 30 patients who, against the background of basic therapy, received choline alfoscerate 1000 mg-4.0 ml intravenously for 10 days, then 1 capsule 400 mg 2 times a day for 28 days .

The basic therapy established by the standards for the treatment of hypertension (in combination) included: 1) acetylsalicylic acid (aspirin); 2) beta-blockers or ACE inhibitors; 3) statins (atorvastatin); 4) diuretics.

Group 2 (comparison group) consisted of 30 patients who received only basic therapy.

All patients underwent a thorough clinical and neurological examination. Headache severity indicators were assessed using the VAS scale, a questionnaire (questionnaire) and a scheme were used to identify autonomic disorders and determine the syndrome of vegetative dystonia (VDS), and indicators of the severity of autonomic reactivity according to Dagnini -Ashner , to assess anxiety, the Hamilton test was used .

Analysis of the results of the study was carried out twice: before treatment and on the 40th day of treatment.

Results and discussion

Cephalgic syndrome occurred in 12 (40.0%) patients of the 1st group and in 13 (43.3%) patients of the 2nd group. In the vestibular-atactic - respectively in 4 (13.4%) and 3 (10%) patients. Pyramidal syndrome was detected in 2 (6.6%) patients of the 1st group and in 1 (3.4%) patient of the 2nd group. Astheno-neurotic - respectively in 7 (23.4%) and 6 (20.0%) patients, pseudobulbar syndrome with pathological laughter and crying , namely, it occurred in 5 (16.6%) patients of the 1st group, in patients of the 2nd group, this syndrome was detected in 7 (23.3%) patients.

Patients complained of headaches, often localized in the occipital region, the appearance of a feeling of squeezing, aching or dull pain, lightheadedness or nausea, non-systemic dizziness, darkening of the eyes, "black flies" before the eyes, blanching of the skin. All this occurs with spasm of the arteries, that is, such an increase in the tone of the walls of the arteries, in which local ischemia and tissue hypoxia occur. In the development of such a headache, not only the spasm of the walls of the arteries plays a role, but also the accompanying edema of the vascular tissue and ischemic tissue hypoxia (secondary vascular headache).

Given that the clinical picture of DM was dominated by headache, we analyzed it on the VAS scale in the course of treatment.

As can be seen from Table 1, the severity of pain syndrome according to VAS in patients of the main group before treatment was 6.9 ± 0.2 points, after treatment - 5.0 ± 0.1 points (P <0.001), in the comparison group, respectively - 6 .9 ±0.1 and 5.8±0.3 points (P < 0.01) .

Table 1. Headache scores on a visual analog scale

Indicator	Treatment	Main group (n =30)	Comparison group (n =30)
Headache according to VAS	Before	6.9±0.2	6.9±0.1
	After	5.0±0.1*** (27.5%)	5.8±0.3** (15.9%)

Note. * - significant relative to data before treatment (** - P <0.01; *** - P <0.001). Here and further in the rest of the tables. Percentage of dynamics is indicated in parentheses.

Thus, in patients of the main group, the dynamics of improvement was 27.5%. In patients of the comparison group, the dynamics was 15.9%.

In patients with DM, vegetative disorders are dominant, both in terms of qualitative and quantitative indicators of SVD. In the dynamics of treatment, there was a decrease in the severity of SVD in the examined patients. The dynamics of indicators in patients of the main group, according to the questionnaire, was 55.2%, according to the scheme - 45.6%, in patients of the comparison group, the dynamics of indicators was 23.3 % and 20.8 % , respectively .

Thus, the patients examined by us initially had a high score of SVD according to the questionnaire and scheme. In the dynamics of treatment with the inclusion of choline alfoscerate , this indicator changes more clearly than in patients who received only basic therapy. From this it follows that choline alfoscerate has a vegetative-stabilizing and antioxidant effect.

Table 2. Indicators of the presence and severity of SVD according to the questionnaire and scheme

Indicator	Treatment	Main group (n=30)	Comparison group (n= 3 0)
SVD according to the questionnaire	Before	33.0±0.9	31.7±1.2
	After	14.8±0.4*** (55.2%)	24.3±1.1*** (23.3%)
SVD according to the	Before		41.8±1.7

scheme		40.1±1.0	
	After	21.8±0.4*** (45.6%)	33.1±1.7 *** (20.8%)

Note. * - significant relative to data before treatment (*** - P <0.001); percentage of dynamics is indicated in parentheses.

As for the indicators of autonomic reactivity (VR) according to Dagnini-Ashner , during treatment in patients of the main group they approached the norm, equaling - 6. In patients of the comparison group, VR before treatment was - 2.2, after treatment - 4.2, those. no improvement was noted (Table 3) .

Table 3. Indicators of the severity of autonomic reactivity according to Dagnini-Ashner

Group	Expression of vegetative reactivity			
	before treatment		after treatment	
	peace	react.	peace	react
Main group (n =30)	81.1±1.0	-4.7	80.6±0.7	-6.0
Comparison group (n= 30)	84.7±1.7	-2.2	83.6±1.1	-4.2

Next, we analyzed the assessment of the psycho-emotional state in the dynamics of treatment.

The severity of anxiety in patients of the main group before treatment was 20.5±0.5 points, after treatment - 7.3±0.2 points (P <0.001). The improvement in anxiety in patients of this group was 64.4%. In the comparison group, anxiety scores before treatment were 21.2 ± 0.8 points, after treatment - 17.2 ± 0.9 points (P < 0.01), the dynamics of treatment was 18.9% (Table 4).

Table 4. Anxiety scores according to the Hamilton test

Indicator	Main group (n =30)		Comparison group (n= 30)	
	before treatment	after treatment	before treatment	after treatment
Anxiety	20.5±0.5	7.3±0.2 *** (64.4%)	21.2±0.8	17.2±0.9** (18.9%)

Note. * - significant relative to data before treatment (** - P <0.01; *** - P <0.001); percentage of dynamics is indicated in parentheses.

Thus, in patients of the main group, there was a regression of the anxiety syndrome with an improvement in anxiety indicators according to the Hamilton test.

Conclusions:

1. The mechanisms of action of choline alfoscerate against the background of basic therapy, positively realizing their influence, complementing the intensity of each other, have one goal and are aimed at restoring impaired functions, normalizing hemodynamic, improving microcirculation and rheological properties of blood, and of course optimizing metabolism in brain tissue in DM. This was confirmed by an improvement in the severity of headache according to scale VAS, SVD, n indicators of autonomic reactivity according to Dagnini-Ashner, as well as indicators of anxiety according to the Hamilton test.
2. Complex therapy of DM in patients with hypertension with the inclusion of choline alfoscerate is path genetically substantiated and can be used in clinical practice as a means of choice for improving brain microcirculation and subsequent facilitation of neuroprotective therapy.

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