SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 10 | Issue: 1 | January 2025 - Peer Reviewed Journal

UDK: 615.843:616.8-005

ENDONASAL ELECTROPHORESIS WITH CERULOPLASMINE, CEREBROLISATE AND TANAKAN IN CEREBROVASCULAR DISEASES

[1]A.S. Rakhimkulov, [2]Z.F. Mavlyanova
[1]Bashkir State Medical University, Ufa, RB
[2]Samarkand State Medical University, Samarkand, RU

Article DOI: https://doi.org/10.36713/epra19910
DOI No: 10.36713/epra19910

Cerebrovascular diseases occupy one of the leading places in the structure of morbidity, disability and mortality [1,2,12,15]. Early clinical forms of cerebral circulatory disorders are a frequently occurring neurological condition affecting creativity, work capacity and quality of life. Today there are a lot of good, effective medications capable of correcting the changes in the body, but they are not always available or the method of their use is not comfortable. Using physiotherapeutic methods of drug administration, it is possible to eliminate these difficulties to some extent. Thus, under the action of electric current, drugs in endonasal administration penetrate through the nasal mucosa, travelling pereneurally and along the lymphatic pathways, enter the liquor of the subarachnoid space and have an effect primarily on the hypothalamus [3,16].

The main purpose of the study was to investigate the efficacy of treatment of early clinical forms of stroke by endonasal electrophoresis with ceruloplasmin, cerebrolysate and tanacan.

Dynamic study of the effect of the drugs was carried out in 200 patients with initial manifestations of cerebral circulation disorder (85) and dyscirculatory encephalopathy of I-II degree (115), the average age of patients - 46 years with fluctuations from 35-60 years. The control group consisted of 30 practically healthy volunteers and 30 comparison group with initial manifestation of cerebral circulation disorder and dyscirculatory encephalopathy, who received endonasal electrophoresis with distilled water.

We performed endonasal electrophoresis treatment with 2% solution of ceruloplasmin diluted with distilled water in 80 patients with initial manifestations of cerebral circulation disorder (36) and dyscirculatory encephalopathy of I-II degree (44). Ceruloplasmin was applied to a nasal electrode connected to the cathode (-).

Ceruloplasmin (EC 1.16.3.1) is a preparation of copper-containing enzyme of alpha-globulin fraction of blood serum. Ceruloplasmin is the main blood antioxidant; the drug stimulates haemopoiesis (red blood formation), reduces intoxication and immunosuppression, binds superoxide radicals and prevents lipid peroxidation of cell membranes [4].

We performed endonasal electrophoresis treatment with 5% solution of cerebrolysate diluted with distilled water in 84 patients with initial manifestations of cerebral circulatory disorders (49) and dyscirculatory encephalopathy of I-II degree (35). Cerebrolysate was administered alternately from anode and cathode, taking into account the different charges of the drug components.

Cerebrolysate is a preparation of brain tissue, contains 22 amino acids and biologically active neuropeptides, which cross the blood-brain barrier and directly reach nerve cells. Cerebrolysate improves metabolic processes in brain cells, activates protein synthesis in neurons. It increases the resistance of brain tissue to intoxication, hypoxia, hypoglycaemia [5,14].

Patients with I-II degree dyscirculatory encephalopathy (36) were treated with endonasal electrophoresis with 5% solution of tanacan syrup diluted with distilled water. Tanakan has a complex chemical composition, with a predominance of positive charge, so the nasal electrode is connected to the anode.

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 10 | Issue: 1 | January 2025 - Peer Reviewed Journal

Tanakan is an extract of Ginkgo biloba leaves, a drug with a multifaceted therapeutic effect: it has vasoregulatory, antihypoxic and anti-edema effect, prevents erythrocyte aggregation, normalises metabolic processes, affects the reverse capture and catabolism of neurotransmitters [6,11,13]. We obtained a good therapeutic effect when using tanacan when taken internally in many diseases, especially in cerebrovascular pathology at any stage. However, the delayed cumulative effect with systematic administration from 3 to 9 months, prevented its widespread use due to its high cost.

Each patient before and after treatment was thoroughly examined clinically with assessment of the general condition, neurological status, with scoring of the state of the autonomic nervous system according to A.M. Vein. [7]. Neuropsychological examination with standardised assessment of cognitive impairment; hemodynamic parameters (blood pressure, rheovasography and rheoencephalography on the computer rheograph "Rheo-Spectrum" by "NeuroSoft": doppler ultrasonography and transcranial doppler (TCD) of the main arteries of the head (MAG) were performed on ultrasound doppler systems "Sonicaid Vasonflo 4" (Oxford Sonicaid, England) and "Companion" (EME-Nicolet, Germany-USA); ultrasound doppler - on ultrasound scanner "Sonoline SI 450" (firm "Siemens", Germany). A 16-channel encelograph (Hungarian production) was used to record brain bioelectrical potentials. The classification of Zhirmunskaya E.A. was used to evaluate the obtained results. [8] with characterisation of alpha-, betta-, slow- and fast-wave activity.

Quantitative determination of free amino acids (FAA) in serum was performed on an automatic amino acid analyser HITACHI kla-3B (Japan). The content of total protein in serum was determined by biuret method [9] and protein fractions were determined by cellulose electrophoresis [10,17].

The data of the studies were subjected to rating scoring with subsequent statistical processing.
The initial data before treatment for the majority of investigated parameters in early clinical forms of stroke patients significantly ($p=0.05$) differed from the results obtained in the control group: impaired blood filling of cerebral vessels and venous outflow according to rheoencephalography, disorganisation of alpha rhythm and presence of slow waves on electroencephalograms; impaired orthostatic stability of cerebral blood flow; metabolic reactivity of cerebral vessels, cerebral autoregulation according to ultrasound doppler; in blood serum, decrease in the total content of free amino acids, increase of essential amino acids and decrease of substituted amino acids, decreased level of serine, valine and increased level of histidine, alanine, methionine, glutamic acid, asparagine, decreased total protein content and dysproteinaemia, increased excretion of amino acids with urine.

The degree of deviations was more pronounced depending on the clinical manifestations.
During treatment with endonasal electrophoresis there were no negative side effects in the subjects. Significant fluctuations in volunteers (control group) during endonasal electrophoresis on the examined parameters were not obtained.

In the comparison group (patients with early clinical forms of stroke who received endonasal electrophoresis with distilled water) after treatment there was a tendency to normalisation of parameters.

Endonasal electrophoresis with drugs (ceruloplasmin, cerebrolysate and tanakan) gave positive reliable effect: in 83%-75% stabilization of the process, 16,7%-8,3% slowing down of progression, no effect 8,3%-5,4%, but ambiguous depending on the drug used.

When treating patients with early clinical forms of stroke with endonasal electrophoresis ceruloplasmin reduced the severity of general weakness, headache, dizziness, noise in the head, autonomic dysfunction, improved memory, performance, rheographic parameters - improved blood flow and venous outflow from the brain; increased expression of alpha rhythm and decreased expression of slow waves electroencephalographically ($p=0.01$). Significant positive dynamics was noted in ultrasound Doppler study indicators: the functional reserve of the liver increased, the range of metabolic reactivity of cerebral vessels expanded, the state of myogenic circuit of cerebral autoregulation improved ($p=0,05$).

Endonasal electrophoresis with cerebrolysate in patients with early clinical forms of stroke showed: reduction of severity of headaches, dizziness, sleep disturbance, increased efficiency ($p=0,05$); improvement of alpha rhythm severity, reduction of delta and beta rhythms severity; normalised blood flow and tone of cerebral vessels, improved venous outflow according to rheoencephalography ($p=0,05$); according to Doppler indices the increase of liver functional reserve, expansion of the range of metabolic reactivity of cerebral vessels, improvement of myogenic circuit of cerebral autoregulation, increase of orthostatic stability of cerebral blood flow were significantly marked ($p=0,01$). Also, positive shifts of protein metabolism parameters in blood serum

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 10 | Issue: 1 | January 2025 - Peer Reviewed Journal

in these patients were obtained, the concentration of total protein and albumin increased, the level of gamma-globulins decreased (p=0,05). Total FAA content increased, amino acid imbalance became less pronounced (p=0,01). Corrective effect of cerebrolysate on protein metabolism indicators is consistent with the positive dynamics of clinical picture in these patients. Cerebrolysate treatment decreased the severity of paresis in patients with dyscirculatory encephalopathy.

At endonasal electrophoresis with tanacan the therapeutic effect was noted by patients after the first procedures in the form of reduction, and sometimes from the first days disappearance of headache, dizziness, improvement of sleep, mood, efficiency. A persistent improvement of cognitive functions (p=0,01), expansion of the range of metabolic reactivity of cerebral vessels, improvement of myogenic circuit of cerebral autoregulation, increase of orthostatic stability of cerebral blood flow according to doppler ultrasound (p=0,05); disturbances of alpha-activity (p=0,05), decrease of delta- and beta-activity (p=0,01) were significantly revealed. Significant reduction of Parkinsonism severity in patients with atherosclerosis.

Catamnestic study with a depth of 1-3 years showed the persistence of the therapeutic effect. The proposed methods of treatment of endonasal electrophoresis with ceruloplasmin, cerebrolysate and tanakan in patients with cerebrovascular pathology have a positive effect on hemodynamics, bioelectrical activity of the brain, favourably affect the biochemical parameters of blood and functional state of the central nervous system, reduce the severity of neurological deficit, which allows us to recommend their wider use in treatment. Treatment methods are comfortable, economical with good positive effects and can be used in outpatient and inpatient settings.

LITERATURE

1. *Vereshchagin N. V., Varakin Y., Y. Stroke Registry in Russia; Results and Methodological Aspects of the Problem. // "Stroke" - Supplement to the Journal "Neurology and Psychiatry named after S. S. Korsakov" // 2001, iss. 1, pp. 34-40.*
2. *Gusev E. I. Stroke registry. Methodological recommendations for conducting the study. Moscow, 2001.*
3. *Naidin V.L., Krotkov O.A. "Electrophoresis of cerebrolysin in the correction of mental defects of neurosurgical patients" // Issues of Neurosurgery-1993.-No4. p. 28-30.*
4. *Sanina O.L., Berlinskikh N.K. Biological role of ceruloplasmin and the possibility of its clinical application (review). honey. Chemistry. -1986.-No5.p.7-14.*
5. *Borisova N.A., Badretdinov R.M., Nigmatullin R.Kh., Valeev R.R., Shcheglov A.N., Avertsev G.N., Gromov Yu.N., Treatment of diseases of the nervous system with cerebrolysate (noolysate). Methodical recommendations. - Ufa: RIO GPO NPO "Immunopreparat", 1996, p.10*
6. *Zakharov V.V. Application of tanakan in neurogeriatric practice. // Neurological Journal-1997.-No5. p. 42-49.*
7. *Vein A.M. Diseases of the autonomic nervous system. // M. Medicine-1991., pp.39-40.*
8. *Zhirmunskaya E.A., Koltover A.N. Atlas on electroencephalography and morphology of brain stroke. Moscow, Meditsina Publ., 1967, pp. 5-10*
9. *Borodin E.A. Biochemical Analysis (Physiological Role and Diagnostic Significance of Components of Blood and Urine).: Textbook in 2 Parts. - Blagoveshchensk, 1991.-Part II. – p.67.*
10. *Kolb V.G., Kamyshnikov V.S., Handbook of Clinical Biochemistry. - Minsk: Belarus, 1982.- pp. 29-47.*
11. *Mavlyanova Z. F., Kim O. A. On the issue of non-drug treatment of cerebrovascular insufficiency in the elderly // Bulletin of medical Internet conferences. - Limited Liability Company "Science and Innovation", 2015. - V. 5. - No. 3. - P. 161-164.*
12. *Kim O. A., Baratova S. S. Computed tomographic comparisons of cerebrovascular insufficiency and transient ischemic attack of various etiologies // Youth and Medical Science in the 21st Century. - 2019. - P. 195-195.*
13. *Mavlyanova Z. F. Reflexotherapy and aromatherapy in the treatment of patients with cerebrovascular insufficiency // Modern pharmacy: problems and development prospects. – 2015. – P. 428-431.*
14. *Yuldasheva D. Sh. K. et al. Therapeutic effect on cognitive functions of patients in the early period of ischemic stroke // Achievements of science and education. - 2020. - No. 3 (57). - P. 71-76.*
15. *Kim O. (2024). Factors Initiating the Development of Acute Ischemic Cerebrovascular Accident in Young People. Miasto Przyszłości, 54, 369–372*
16. *Kim O. Comparative assessment of pre-stroke forms of cerebrovascular pathology in young people // Journal of Problems of Biology and Medicine. - 2019. - No. 1 (107). - P. 42-44.*
17. *Farxadovna M. Z. et al. Teleknologiyalardan foydalanib insultdan keyingi davrni individual reabilitatsiya qilish va klinik va neyroradiologik tadqiqotlar asosida natijalarni bashorat qilish imkoniyatlari //Journal of biomedicine and practice. – 2023. – T. 8. – №. 4.*