Investigation of the pathogenetic role of acupuncture meridians in the development of ischemic stroke based on electropunctural diagnostics according to Nakatani

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SUMMARY

The aim of the study was to study the features of the energy state of classical meridians using electropunctural diagnostics according to the Nakatani method in patients in the acute period of ischemic stroke, depending on the affected pool and clinical symptoms, for individualization of approaches to reflexotherapy. The material for the study was two groups of patients: the first (n = 27) - with a stroke in the basin of the internal carotid artery, the second (n = 23) - in the vertebrobasilar system. As a control group, 20 relatively healthy individuals, representative of gender and age, were examined. The study revealed a number of common features in contrast to the control group: "Emptiness" in the meridians of the Lungs (p <0.05), Heart (p <0.001), Small intestine (p <0.05), Pericardium (p <0, 001) and Triple Heater (p <0.05) and "Fullness" in the channels of the Liver, Spleen (p <0.01), Stomach (p <0.01), Bladder (p <0.005) and Kidneys (p = 0.050). In patients who had a stroke in the vertebrobasilar system, there was a more pronounced deficit in the meridians of the Large and Small intestines (p <0.05), as well as a more significant excess in the channels of the Kidneys (p <0.001) and the Gallbladder (p <0.001).

Key words: electropuncture diagnostics, Nakatani, acute period of ischemic stroke.

RESUME

The aim of the study was to investigate the characteristics of the energy state of classical meridians by the electropuncture diagnostics according to the method of Nakatani among the patients in acute period of ischemic stroke, depending on the affected vascular basin and clinical symptoms for the individualization of approaches to reflexotherapy. The material for the study is based on two groups of patients: the first (n = 27) - with a stroke in the internal carotid artery, the second (n = 23) - in the vertebrobasilar system. As a control group, 20 volunteers without clinically significant diseases, representative by sex and age, were examined. The study revealed a number of common features in contrast to the control group: Deficiency in the meridians of the Lungs (p <0.05), Heart (p <0.001), Small intestine (p <0.05), Pericardium (p <0.001) and Triple warmer (p <0.05) and Excess in the Liver, Spleen (p <0.01), Stomach (p <0.01), Bladder (p <0.005) and Kidney (p = 0,050) channels. Patients who had a stroke in the vertebrobasilar system showed a more pronounced Deficiency in the meridians of Small and Large intestine (p <0.05), as well as a more significant excess in the channels of the Kidney (p <0.001) and the Gall bladder (p <0.001).

Keywords: electropuncture diagnostics, Nakatani, acute period of ischemic stroke.

Cerebral strokes continue to remain a serious socio-economic problem of modern society, being the leading cause of disability in the Russian population and significantly reducing the labor potential of the patient's family members. The problem of improving methods of early rehabilitation of strokes remains relevant, since only 8% of surviving patients are able to return to their previous work, 20% cannot move independently, and 31% of stroke patients require outside help [3]. The clinical picture of ischemic stroke (IS) depends on the pool of which artery is affected.

Unlike foci in the cerebral hemispheres in the area of blood supply to the internal carotid artery (ICA), which are most often manifested by contralateral hemiparesis and (or) hemihypesthesia, homonymous hemianopsia, as well as aphasia with lesions of the dominant hemisphere, for acute cerebrovascular accident system (VBS), imbalance and ipsilateral dysfunctions of the cranial nerves (in the structure of alternating syndromes) with complaints of dizziness, nausea with vomiting and impaired coordination are more typical [3]. Therefore, it is logical to assume that, from the standpoint of traditional Chinese medicine, the features of clinical manifestations may be associated with the defeat of different meridians and Zang Fu organs. However, there is not enough information in the literature,

So, N.A. Drobysheva [2] offers a differentiated treatment, highlighting the syndromes of deficient Fire of the Heart and excessive Moisture (with an insufficient type) and excessive Mucus, Fever and hyperactivity of the Yang of the Liver and Heart (with an excessive type) of a more severe variant of Zhongfeng syndrome, meaning mainly emergency care in the acute period cerebral stroke. The overwhelming majority of authors describe acupuncture schemes based only on the existing neurological deficit [6, 7, 9], while the possibility of influencing the ZangFu channels of organs involved in the pathogenesis of stroke, after a preliminary assessment of their energy state, seems relevant.

The aim of the study was to study the features of the energy state of classicalmeridians using electropunctural diagnostics (EPD) according to the Nakatani method in patients in the acute period of IS, depending on the affected pool and clinical symptoms for individualization of approaches to reflexotherapy.

MATERIALS AND METHODS

The material for the study was 50 patients in the acute period of IS, who underwent a course of early rehabilitation in the neurological department for patients with cerebrovascular accidents at the Primary Vascular Department of GAUZ JSC "Blagoveshchensk City Clinical Hospital", aged 40 to 85 years (mean age 62.6 ± 1, 56 years old). Among the surveyed men predominated (60%). As a control group, we examined 20 relatively healthy individuals, representative by sex and age (60% of men, average age 61.4 ± 1.7 years), without clinically significant diseases, with no history of diseases of the cardiovascular system.

The features of the energy state of the meridians, depending on the affected vascular basin, were studied in two groups that did not differ significantly in terms of age and gender. The first comparison group consisted of 27 patients (mean age 64.4 ± 2.45 years, 59% of men), who were diagnosed with a stroke in the basin of the right or left middle cerebral artery, the second comparison group consisted of 23 patients (mean age 60.6 ± 1 , 8 years old, 61% of men) with confirmed AI in VBS.

Diagnostics according to Nakatani was carried out on the medical diagnostic complex ARM "PERESVET" by measuring the electrical conductivity at 24 representative points located symmetrically in the area of the wrist and ankle joints. The channels that are in hyper or hypofunction are located, respectively, above or below the corridor of the patient's individual norm, calculated by the program of the complex. To determine the functional state of the meridians, not the absolute values of the transcutaneous electrical conductivity of the representative points are used, but their location relative to the individual norm corridor on the Rmap [1]. EPD was performed in the first 3-5 days of hospital stay.

Statistical analysis was performed using the Microsoft Office 2013 software package (Excel and Statistica 10.0). For data with normal distribution, the sample mean (M), standard deviation and standard error of the sample mean (m) were calculated. When comparing the sample means for two groups of data with a normal distribution, the Student's t test was used. Differences were considered significant at $p < 0.05$.

RESULTS

When performing EPD in both comparison groups, a void was revealed in the Lungs meridian ($p < 0.05$) (Table 1, Fig. 1), somewhat more pronounced in patients who had a stroke in the IHD ($p > 0.05$) (Table 1 , fig. 2). Compared with the control group, a significant deficit was also found in the Small intestine meridian ($p < 0.05$), more significant ($p < 0.05$) in patients of the 2nd comparison group, combined in the latter with the Hollow of the Large intestine ($p < 0.05$) ... In the canals of the Stomach and Spleen, an excessive condition was diagnosed, significantly exceeding the analogous indicators of the control group ($p < 0.01$) and somewhat more pronounced in patients with stroke in the VPS ($p > 0.05$). In both groups of patients, there was a general tendency towards a pronounced deficit in the channels of the Heart ($p < 0.001$), Pericardium ($p < 0.001$) and the Triple Heater ($p < 0$,

Table 1

Energy state of meridians based on the study of electrical conductivity indicators

according to the Nakatani method

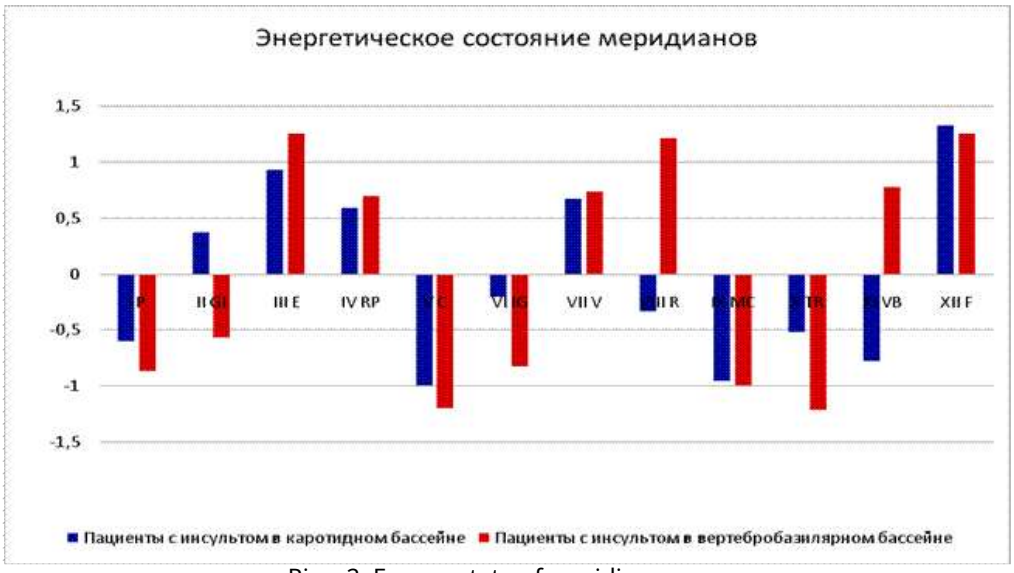
Channel	Energy state of channels				p1	p2
	Control group n = 20	The main group n = 50	Group comparisons 1 n = 27	Group comparisons 2 n = 23		
I lungs	0.18 ± 0.16	0.7 ± 0.16	0.6 ± 0.22	0.87 ± 0.24	p = 0.027	p = 0.333
II thick intestines	0.05 ± 0.15	0.04 ± 0.19	0.37 ± 0.3	0.57 ± 0.25	p = 0.977	p = 0.021
III stomach	0.34 ± 0.21	1.08 ± 0.16	0.93 ± 0.18	1.26 ± 0.28	p = 0.007	p = 0.317
IV spleen	0.11 ± 0.12	0.64 ± 0.19	0.59 ± 0.25	0.7 ± 0.28	p = 0.008	p = 0.789
V heart	0.03 ± 0.10	1.1 ± 0.15	1.0 ± 0.21	1.2 ± 0.22	p <0.001	p = 0.576
VI thin intestines	0.11 ± 0.10	0.52 ± 0.21	0.20 ± 0.29	0.83 ± 0.29	p = 0.013	p = 0.025
VII urinary bubble	0.24 ± 0.10	0.7 ± 0.23	0.67 ± 0.33	0.74 ± 0.33	p = 0.003	p = 0.878
VIII kidney	0.20 ± 0.13	0.38 ± 0.22	0.33 ± 0.25	1.22 ± 0.3	p = 0.050	p <0.001
IX pericardium	0.03 ± 0.02	1.0 ± 0.15	0.96 ± 0.18	1.0 ± 0.24	p <0.001	p = 0.796
X triple heater	0.29 ± 0.11	0.84 ± 0.22	0.52 ± 0.28	1.22 ± 0.33	p = 0.040	p = 0.164
XI bilious bubble	0.68 ± 0.13	0.1 ± 0.23	0.78 ± 0.26	0.78 ± 0.34	p = 0.256	p <0.001
XII liver	1.13 ± 0.18	1.3 ± 0.17	1.33 ± 0.26	1.26 ± 0.23	p = 0.505	p = 0.836

Note:
The control group is healthy volunteers.
The main group consists of patients with ischemic stroke. Comparison group 1 - patients with a stroke in the carotid system. Comparison group 2 - patients who had a stroke in the vertebrobasilar basin.
p1 - reliability of the difference between indicators of stroke patients and indicators of healthy volunteers (control and main group).
p2 is the reliability of the difference between the indicators of stroke patients in the carotid and vertebrobasilar regions (between comparison groups 1 and 2).

The general trend towards renal hyperfunction in patients with IS (p = 0.050) was mainly due to an excessive state in this meridian in patients with stroke in the VHD (p <0.001). In patients who had a stroke in the ICA basin, a tendency towards a deficit state of this channel was noted (Table 1, Fig. 2).

A distinctive feature of patients with stroke in VHD was also an excessive state in the Gallbladder meridian (p <0.001) and a slightly more pronounced bladder hyperfunction (p> 0.05).

Rice. 1. Energy state of meridians.



Rice. 2. Energy state of meridians.

DISCUSSION AND CONCLUSIONS

All patients who underwent IS suffered from arterial hypertension (AH), which, along with atherosclerosis, is considered one of the main causes of stroke. Therefore, pronounced hyperfunction in the Liver meridian, revealed in both groups of patients in the form of the Liver Fire and an extremely increased hepatic Wind, in most cases leads to the development of AH and Zhongfeng syndrome [7].

The control group was also diagnosed with Fatality in the Liver canal, which may be explained by pronounced psycho-emotional stress, which does not have an organic basis, which was indicated by the majority of the surveyed.

As another cause of hypertension and stroke, stagnation in the body of Moisture and Mucus is considered as a result of the defeat of Qi of the Spleen due to insufficient nutrition from the Kidneys, impaired control over Moisture, blockage of Mucus, which clogs the Local Channels and causes disruption of the energy flow along the meridians [7]. A significantly more pronounced deficit in the meridians of the Small and Large intestines can also explain the violation of the excretion of pathogenic Humidity, and, accordingly, the aggravation of its stagnation, manifested by an excess in the channels of the Stomach and Spleen, which is more pronounced in patients with stroke in VHD. This fact can explain the prevailing (in 65%) complaints of nausea, vomiting, unsteadiness, dizziness and severe coordination disorders (symptoms of static and dynamic ataxia) in this group of patients.

The lungs control the Qi of the whole organism, help the Heart in its function of ensuring blood circulation [8], therefore it is quite logical to expect an energy deficit in this meridian, which is reliably aggravated in patients in the acute period of AI. When Lung Qi cannot flow downward, it damages the Liver and causes the Liver Yang to rise [4], which is manifested by hyperfunction in this meridian in most patients with IS. Lung Qi deficiency also gradually affects the Heart, leading to Heart Qi deficiency [4], which was observed in both comparison groups.

The main in the pathogenesis of diseases of the Spleen, Liver and Heart are also mental overload. [8], identified in the anamnesis of almost all patients and causing cardiovascular problems, and circulatory disturbances cause emptiness of Yang and Yin of the Heart, Shen deficiency, which can also explain the deficiency identified in the Heart canal and the associated Pericardium, which is significantly more pronounced in stroke patients compared with the control group. Mental overload can also cause emptiness of Qi and weakness of the Yang of the Spleen. And due to the excessive strengthening of the Yang of the Liver, Mucus and Moisture in the body rise up and, in their excess state, can cause the development of a stroke [7]. A possible confirmation of this fact is the revealed pronounced excess in the meridians of the Stomach and Spleen, significantly exceeding similar indicators in the control group.

A distinctive feature of patients with stroke in the VHD was an excessive state in the Gallbladder meridian ($p < 0.001$) and a slightly more pronounced hyperfunction of the Bladder ($p > 0.05$), which possibly explains the prevailing complaints of headaches in the parieto-occipital region (in 65 %), visual impairment (in 26%) in the group of patients who have suffered a stroke in the basin of the vertebral arteries, as well as the most common (in 85%) complaints associated with neurological manifestations of osteochondrosis, which are more often associated with the clinic of lesions of the urinary and gall bladder meridians ... The excess in the Bladder canal may be explained not only by the complaints of pain in the back (along the Bladder meridian) in the vast majority of patients, but also by the inclusion of sanogenetic mechanisms in the acute period of stroke,

Lack of energy in the Gallbladder in patients with stroke in the ICA basin can cause the development of depressive disorders and other disorders in the mental sphere, at the same time exacerbating the symptoms of excess in the Liver canal [5].

The triple heater is responsible for the correct circulation of all types of Qi in all parts of the body, and if this function is impaired, Qi, Blood and Body Fluids will not move normally [4]. Hypofunction in the meridian of the Three parts of the body is possibly associated with a disturbance of the Yang Yin balance in the direction of the systemic predominance of Yin over Yang, which is revealed in most patients with deficiency in the San Jiao meridian. Lack of energy in the meridian of the Three body cavities can also be caused by the consequences of a stroke and is associated with systemic dizziness [5].

The general trend towards renal hyperfunction in patients with stroke is mainly due to an excessive state in this meridian in patients with vertebrobasilar stroke and, possibly, is the cause of tinnitus and systemic dizziness, which often occur in such patients [5]. Perhaps these changes are of a compensatory nature and are aimed at enhancing the excretion of pathogenic moisture, the stagnation of which is manifested by a more pronounced excess in the channels of the Stomach and Spleen in this group of patients. In patients with stroke in the ICA basin, a tendency towards a deficient state of the Renal canal was noted.

Thus, the study of the conductivity indices of the meridian points in patients in the acute period of IS revealed a number of common features in contrast to the control group of relatively healthy individuals, namely: Emptiness in the meridians of the Lungs, Heart, Small intestine, Pericardium and Triple Heater and Fullness in the Spleen canals, Stomach, Bladder and Kidney. EPD according to Nakatani, carried out in two comparison groups, showed significant differences in the energy state of the meridian system, depending on the localization of cerebral infarction. In patients who had a stroke in the IHD, there was a more pronounced deficit in the meridians of the Large and Small intestines, as well as a more significant excess in the channels of the Kidneys and Gallbladder, while in stroke in the ICA basin, there was a tendency towards a deficit state of these meridians.

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