

Comparative analysis of methods for early diagnosis of atherosclerosis
as one of the factors reflecting the peculiarities of exchange,
and the indicator of early aging and the possibilities of ART

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Introduction

According to E.I. Guseva (2003), disability after a stroke is 3.2 per 10,000 population. According to the WHO, Russia occupies a leading position in terms of mortality among European countries (2–3 times). The number of risk factors for the development of cardiovascular diseases and their complications exceeds 200. For Russia, factors such as psychoemotional stress, alcohol abuse, smoking, arterial hypertension, dyslipidemia, atherosclerosis, diabetes mellitus are relevant [1, 2, 3, 4, 8, 9, 10].

In this regard, an integrative view of the state of the body's systems is of great importance. The conducted research methods - clinical, neurological examination, laboratory, EEG, USDG, REG, CT, MRI, X-ray - may not give a complete picture of the state of the body systems and the development of the pathological process. In this regard, the diagnosis by the method of autonomic resonance test (ART) is of great importance as a method for assessing and identifying negative factors acting [5, 6, 7, 9, 10] on conditionally "healthy" patients. The aim of this study was to identify the features in conventionally "healthy" patients and the possibility of predicting the development of metabolic disorders leading to cardiovascular diseases.

Materials and research methods

447 patients were examined by random sampling. Before the survey, two groups were identified. The main group consisted of 253 patients with IUI and the control group - 94 patients. The study was carried out in the conditions of the department of rehabilitation treatment of the MLPU GKB No. 1, Novokuznetsk.

Criteria for inclusion in the study of the main group: ischemic stroke in the recovery period; discirculatory encephalopathy (according to the classification of N.N. Yakhno, which corresponds to chronic cerebral ischemia according to ICD 10).

Exclusion criteria: hemorrhagic stroke; subarachnoid hemorrhage; inflammatory and autoimmune vascular diseases.

Exclusion criteria: refusal to be examined.

A total of 253 patients with IUD were examined. The number of men - 120 and women - 133. The average age of men was 56.92 ± 4.52 years, women - 59.24 ± 4.26 years. The proportion of nosological forms in them was: with discirculatory encephalopathy was $23.52 \pm 3.63\%$, cerebral infarction - $76.46 \pm 3.64\%$; by the degree of clinical manifestations: 2.55 ± 0.32 ; in terms of duration after an acute disturbance, the period was 5.61 ± 0.52 months. The average age of men was 56.92 ± 4.52 years, women - 59.24 ± 4.26 years. The vast majority of patients (210 people) were over 50 years old. Criteria for inclusion in the study of the control group: the absence of ischemic stroke in the early, late recovery period, residual period; absence of discirculatory encephalopathy (by classification by N.N. It is clear that it corresponds to chronic cerebral ischemia according to ICD 10). Absence of hemorrhagic stroke; subarachnoid hemorrhage; inflammatory and autoimmune vascular diseases, traumatic brain disease.

Exclusion criteria: Presence of cervical osteochondrosis, vertebral artery syndrome. Exclusion criteria: refusal to be examined.

94 people were examined. The number of men - 40 people, age 38.35 ± 4.62 years and women - 54 people, aged 39.45 ± 5.53 years.

The following instrumental and clinical research methods were used, carried out to all patients according to a single scheme: clinical neurological examination, vertebral neurological examination, neuropsychological examination, computed tomography, Doppler ultrasound indices, psychological testing, autonomic resonance test (ART) [5, 6, 7], statistical research methods. To confirm the diagnoses, data from laboratory and paraclinical research methods (EEG,

USDG, REG, CT, MRI, X-ray examination).

Research results

A combination of several syndromes was detected in all patients with IUD. Table 1 shows the frequency of syndromes detected in the examined patients of the main group. In the control group, there were no focal neurological symptoms.

Table 1
Syndromes identified in the examined patients,% + m

Syndromes	Total n = 253	Men n = 120	Women n = 133	R
Vestibulo-atactic	93.68 ± 1.52	90.00 ± 2.73	96.99 ± 1.48	> 0.05
Asthenoneurotic	83.79 ± 2.31	88.33 ± 2.93	79.70 ± 3.48	<0.05
Dyssomnic	81.54 ± 2.43	71.67 ± 4.11	90.23 ± 2.57	> 0.05
Hemiparesis pyramidal	72.73 ± 2.79	84.17 ± 3.33	62.41 ± 4.19	> 0.05
Psychoorganic	20.55 ± 2.54	15.83 ± 3.33	24.81 ± 3.74	<0.05
Cerebellar hemisyn- drome	4.35 ± 1.28	4.17 ± 1.82	4.51 ± 1.79	<0.05
Epileptiform	1.45 ± 0.75	0.00 ± 0.00	1.50 ± 1.05	

The performed Doppler studies of extracranial vessels revealed changes in blood flow in 87 ± 4.66% of patients in the main group. Doppler ultrasonography of extracranial vessels revealed a change in blood flow in 87 ± 4.66% of the examined patients according to the type of decrease and increase in the linear blood flow velocity. The blood flow velocity was significantly reduced in a greater number of patients in the common carotid and vertebral arteries. In the external carotid and internal carotid arteries, there was no significant difference between the number of patients with decreased and increased blood flow velocity. one.

The linear blood flow velocity was reduced in the common carotid arteries to 34.56 ± 4.09 m / s and 8.62 ± 1.33 m / s, in the internal carotid arteries up to 34.44 ± 5.81 m / s and 8.72 ± 1.83 m / s; in the external carotid arteries up to 40.27 ± 6.08 m / s and 7.09 ± 1.68 m / s; in the vertebral arteries up to 23.08 ± 3.03 m / s and 5.85 ± 0.80 m / s. With a reduced blood flow velocity, the systolic and diastolic components significantly decreased in all extracranial vessels. With an increased blood flow velocity in the extracranial vessels, there was a statistically significant increase in the diastolic component of the blood flow velocity in the vertebral arteries up to 69.07 ± 10.16 m / s, in the external carotid artery - up to 88.28 ± 7.42 m / s.



Rice. one. Percentage of patients with increased and decreased linear blood flow velocity in extracranial vessels

According to Doppler sonography, all 60 patients of the main group showed changes: thickening of the intima of the left common carotid artery, the intima was thickened to 1.0 mm, the contour was uneven; thickening of the intima of the common carotid artery on both sides.

The following anomalies in the development of extracranial vessels were noted in 60 examined patients of the main group: stenosis of the left vertebral artery at the entrance to the V2 segment; stenosis or hypoplasia of the right vertebral artery; hypoplasia of the right vertebral artery; the right vertebral artery is smaller in diameter than the left; hypoplasia of the left vertebral artery; the vertebral artery on the left is somewhat narrowed in comparison with the right,

blood flow in the left vertebral artery is not detected, the orifice of the vertebral artery is not visualized; on the right, the internal carotid artery in the initial segment is dilated, and here an altered type of blood flow is determined.

Signs of atherosclerotic vascular lesions were determined in $63.33 \pm 6.22\%$ of patients in the main group. Vertebrogenic effects on extracranial vessels were manifested in $46.66 \pm 6.44\%$ of patients in the main group.

In patients of the control group, according to Doppler sonography, vertebrogenic effects on extracranial vessels were revealed in $82.97 \pm 4.25\%$. No atherosclerotic changes were revealed according to Doppler ultrasonography.

In the main group, according to lipid profile data, the cholesterol level was normal at $41.1 \pm 3.37\%$ of cases. In the control group, according to the lipid profile, the cholesterol level was normal in all the subjects.

According to ART data, in the main group, all patients were tested for excess cholesterol and the presence of a violation of fat metabolism, in the control group in $75.53 \pm 2.34\%$ of cases.

Summary

Thus, it was found that in patients with ILI in the recovery period there were changes in the vessels of an atherosclerotic nature, with an effect on hemodynamics. In the control group, there were no focal neurological symptoms and changes in extracranial vessels of an atherosclerotic nature.

According to the lipidogram, in the presence of lipid metabolism disorders that significantly affect the hemodynamics of the brain, two-fifths of the patients did not have high cholesterol levels. In the initial stages of lipid metabolism disorders in all patients, according to the lipid profile, the cholesterol level does not increase.

According to ART data, an excess of cholesterol and signs of lipid metabolism disorders were also detected in patients with severe lipid metabolism disorders and initial disorders.

Thus, the results of ART make it possible to detect the initial changes in lipid metabolism, to more reliably reveal already significant disorders of lipid metabolism, which allows correcting early and existing disorders. This allows ART to be included in the comprehensive program of the primary examination of "conventionally healthy" patients, in the acute period of IUD, in the process of rehabilitation measures, as one of the reliable diagnostic examinations to detect early lipid metabolism disorders.

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