Some Aspects Of The Study Of Microcirculatory Disorders In Adolescents With Neurocirculatory Asthenia

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ABSTRACT

We examined 500 young men of military age (average age 18.8±2.1) using television capillaroscopy of the nail beds of the upper extremities. of them – 280 people with neurocirculatory asthenia of the cardiac type and 170 young men with neurocirculatory asthenia of the hypertensive type. The control group consisted of 50 practically healthy young men. Conducted studies of the state and structure of the microcirculatory bed using telecapillaroscopy of the nail bed of the upper extremities in patients with neurocirculatory asthenia allowed us to come to the conclusion that there are no specific changes in microvessels and microdynamics in these patients.

Keywords: microcirculation, method, ulatory asthenia, autonomic regulation.

Introduction

It is known that according to the international classification of diseases (10th revision), neurocirculatory asthenia (NCa) refers to somatoform autonomic dysfunction, occurring with a violation of the nervous regulation of the circulatory system. In the structure of cardiovascular diseases in adolescents, autonomic disorders of cardiac activity occupy the first place and are often accompanied by disorders of peripheral circulation, which are accompanied by a disorder of vascular tone and microcirculation disorders [1; 2].

Materials And Methods

Although these disorders are functional in nature, they reduce physical activity and quality of life of adolescents [3]. These microcirculation disorders are accompanied by complaints of coldness and hyperhidrosis of the extremities, pain during physical activity, and paresthesia. An objective examination reveals marbling of the skin. All these phenomena intensify under the influence of low temperatures, mainly in the cold season.

The relevance of microcirculation studies in NCA in adolescents is justified by a number of circumstances. NCA, which occurs according to the hypertensive type, in 20-25% of cases at an older age is transformed into hypertension, coronary heart disease. It is these diseases that occupy one of the first places in terms of disability and mortality among the population both in our country and throughout the world. Therefore, prevention, early diagnosis and timely treatment of vascular pathology in childhood and adolescence are becoming one of the priority areas of modern medicine.

Mcrocirculation is of great physiological importance in ensuring the vital activity of all tissues and organs. It is the microvascular bed that carries out the transport function of the cardiovascular system, ensures transcapillary exchange and the constancy of the body's homeostasis.

At the same time, microcirculation disorders in adolescents with NCA have not been studied enough in comparison with central and peripheral hemodynamics, while microcirculation suffers in many diseases of the cardiovascular system. microcirculatory disorders may be the earliest and only in the initial stages of disease development. Acording to A.I. Strukov [11], "the microcirculation

system is very reactogenic and very quickly responds to various influences from the external and internal environment of the body." Numerous studies of various aspects of the state of central and peripheral hemodynamics in various diseases of the cardiovascular system do not reveal any specific mechanisms of their pathogenesis, as well as early signs of the pathological process, and the methods of preventive therapy and rehabilitation being developed in general, do not reduce high rates of labor losses. Hnce the great interest of researchers in the intravital study of the microcirculatory level of blood circulation using the capillaroscopy method.

Intravital studies of the functional state and pathological changes of the microcirculatory bed in clinical conditions are carried out mainly by biomicroscopy of the bulboconjunctiva and nail bed. Hwever, in this case only a subjective, qualitative assessment of the nature of functional and morphological changes in microvessels is possible (the number and tone of functioning capillaries, the clarity of their boundaries, shape, as well as the nature of blood flow). During pathological processes, the capillaroscopic picture changes significantly. Bckground turbidity is detected due to edema of the vascular wall, the number of functioning capillaries and their caliber decreases or increases, "shadows" of capillaries appear, areas of desolation, tortuosity, pathological forms, aneurysmal dilatations, changes in capillary tone are determined, arterio-reduced -venular coefficient due to spasm of arterioles and expansion of the diameter of venules. Bood flow in the capillaries becomes slow, intermittent, retrograde blood flow, aggregation of its formed elements or extravasation of red blood cells is possible.

Results And Discussion

In those examined in the control group, the capillaries had a regular structure, which was characterized by: a narrow arterial part, passing evenly into the knee, behind which a wider venous branch began. In some healthy individuals the branches occasionally intersected. No pathological protrusions were noted in the walls of the capillaries, and no areas of stasis were observed. The blood flow in the capillaries was uniform, fast, and only in rare cases was it slow and intermittent.

In adolescents with neurocirculatory dystonia, we classified the results as follows. If tortuosity of capillary loops, expansion of their connections, double intersections, breakage of capillaries, slow blood flow, uneven or chaotic location in the tissue were observed - these changes were regarded as moderately severe disorders. Such violations were detected in 61.8% of cases. Capillary dysfunction was manifested by paresis or spasm. Open loops with a very narrowed arterial end and a poorly filled venous end presented a picture of spasm. Capillary paresis was characterized by dilation of all loops; in some places there were aneurysmal dilations. Such violations were regarded as pronounced and were detected in 38.2% of cases. No specific microcirculation disorders were identified in adolescents depending on the type of neurocirculatory asthenia.

Conducted studies of the state and structure of the microvasculature using telecapillaroscopy of the nail bed of the upper extremities in patients with neurocirculatory asthenia allowed us to come to the conclusion that there are no specific changes in microvessels and microdynamics in these patients. The results of our research are also consistent with data obtained by other authors [4].

The identified disorders do not indicate the specificity of the detected microcirculation disorders in neurocirculatory asthenia, but the variability and varying degrees of severity of nonspecific changes due to the individual characteristics of the body, the severity of the disease, as well as the state of protective-adaptive and compensatory mechanisms, and adaptive ability of the microcirculatory system.

The information content of studying microcirculation can increase significantly with precisely set tasks and correct functional tests. These include loads with the local use of various drugs, the study of microcirculation during standard tests with physical activity.

Conclusion

To assess the state of microcirculation, identify the level and nature of its disorders in diseases of the cardiovascular system, it is necessary to use a set of studies (capillaroscopic, polarographic, rheoplethysmographic, thermal imaging). The results of complex studies of hemodynamics and microcirculation will make it possible to recognize the initial stages of cardiovascular pathology, assess the prognosis of the disease and the effectiveness of treatment.

References

1. 1 Volosok N.I., Aleksandrov O.V., Tikhomirov A.N., Semenova T.I. morphometry of the microvasculature of the conjunctiva and dynamics of microcirculation in healthy people. in the book: on the problems of microcirculation. m., 2017; 197–198.
2. 2 Zemtsovsky E.V., Tikhonenko V.M., Reeva S.V., Demidova M.M. Functional diagnostics of the state of the autonomic nervous system. Toolkit. St. Petersburg, 2014.
3. 3 Ivanov S.N. autonomic regulation and vascular tone in adolescents with neurocirculatory dystopia. in the collection: pediatrics at the turn of the century. problems, ways of development, collection of conference materials. 2010. p. 161-162.
4. www.natlib.uz