

as in the 2nd group, changes in the EEG predominated in the form of light changes in the brain BEA.

Thus, adolescents with hereditary complications in psychosomatic pathology, having a history of WDC, vegetatively stigmatized, having pronounced changes on the EEG on the background of emotional loads are subject to thermoneurosis. It is important to make a differential diagnosis in a timely manner, because over time, when the child and his parents do not see the effect of the treatment (a/b, antiviral, immunomodulators), their behavior becomes alarming (obsessive temperature measurements), which leads to the child's fixation on his defect, it forms psychogenic reactions of a phobic, depressive nature.

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CARDIORESPIRATORY SYSTEM IN CHILDREN

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The abstract. The state of the cardiorespiratory system in school-age children was studied. The most informative characteristics describing the indices of anthropometric, spirometric and hemodynamic studies were used. It was determined that children with macrosomatic type of physique can be referred to a group of persons with reduced functional reserves of the cardiorespiratory system and smaller compensatory capacities of the organism in response to physical stress. Establishment of interrelation between morphofunctional features of children of different types of constitution allows further elaboration of the fundamental basis for fundamentally new approaches to donor diagnosis of cardiorespiratory system disorders and assessment of their general health.

Key words: children, cardiovascular system, somatotype.

Introduction. Adaptability and predisposition to various diseases correlate with belonging to certain constitutional types. Morphological expression of the constitution is the somatotype - it is an integral indicator characterizing the psychological, physical and functional capabilities of the human body [4]. Based on his knowledge, you can accurately predict the rate of maturation and aging of the organism, the characteristics of reactivity to a variety of environmental influences. The use of indicators of the cardiorespiratory system and assessment of the degree of tension of its work make it possible to assess the functional state of this system under specific conditions of existence. The most universal indicator of the functional state of the body and its compensatory-adaptive functions is the cardiorespiratory system involved in adapting children to environmental conditions and in shaping the body's response to the influence of various factors [3,5,7].

To assess the functional state of the child's body uses a wide range of physiological indicators. A special significance is attached to the analysis of the functional interaction of its various systems. The connection of the respiratory system with other vital systems of the body is known in the provision of its energy needs. The respiratory system is a subsystem of a single functional system of transport and oxygen consumption [1]. Changes in the level of functioning of any of its component links lead to a reorganization of the work of these subsystems, ensuring the achievement of a useful result - adequate supply of tissues with oxygen, using its adaptive potential [2]. The aim of the study was to study the features of the respiratory system in children with different somatotypes.

Material and methods. The study was conducted among children of secondary school age (10-14 years). A total of 76 healthy children (I-II health groups) participated in the study. From the whole set of measured and calculated indicators, the most informative characteristics describing the parameters of anthropometric, spirometric and hemodynamic studies were selected. The obtained data array contained the values of mass, body length, chest circumference, heart rate (heart rate, beats / min), blood pressure (BP, mmHg), vital capacity (LIV, ml); calculated - the vital index (GI), the actual GIV (FVC,%), the Ruthier-Dickson index, etc. The division of adolescents into groups of micro, meso and macrosomatics was carried out according to the scheme of RN. Dorokhova and I.I. Bahraka. Statistical processing of data was carried out using Microsoft Excel spreadsheets and STATISTICA 10.0 statistical processing software.

Results of the study and discussion of the findings. An important indicator of physical development is the vital capacity of the lungs. The study of the functions of external respiration showed differences in the functional state of the lungs depending on the level of physical development. There was a statistically significant increase in ZHEL in children with a macro-somatotype - $2,990 \pm 627.88$ ml, compared with children with a mesosomatotype - 2796 ± 672.00 ml and a microsomatotype - 2273 ± 445.77 ml ($p < 0.05$). FVC in the group of children of the mesosomatic constitution was 20.56%, in macrosomatics and microsomaticians - 16.66% and 15.23%, respectively ($p < 0.05$).

When calculating the vital index, as one of the most important components of physical health, it was determined that the children of the microsomatic type had the highest value of this index: GI 63.65 ± 9.50 , which was estimated to be above the average and had a significant difference, children with mesosomatism - 62.72 ± 19.02 with a macro-somatotype - GI - 51.30 ± 12.36 ($p < 0.05$). The average group GI values in mesosomatics corresponded to the average level, and y - to macrosomatics - to low. Consequently, adolescents with a microsomatic type are functionally better than their peers with higher anthropometric indices. In carrying out Rosenthal's test for determining the endurance of the respiratory muscles, the ZHEL increased, i.e. good endurance of the respiratory muscles was found in 63% of microsomes and 52% of mesosomates, while 55% of children of macrosomatic constitution had unsatisfactory endurance of the respiratory muscles.

When analyzing hemodynamic data, it was established that the heart rate in the group of children with average physical development was 83.31 ± 10.66 , high - 80.84 ± 11.11 and low - 76.05 ± 9.31 ($p < 0.05$). This means that in this case the heart muscle works in the least economical mode and the range of compensatory possibilities of the organism is limited. In turn, mean values of blood pressure in groups of children with a micro- and mesosomatic physique did not differ ($106/65 \pm 10.29 / 12.87$), when macrosomatics had higher indices - $117/72 \pm 13.67 / 10.71$ ($p < 0.05$). Higher values of pulse pressure, found in groups 1 and 2, not exceeding the limits of physiological norm, contribute to better blood supply to the organs of the body, increasing the compensatory capabilities of the body. Smaller values in the macrosomatotype group indicate lower compensatory possibilities of the organism.

According to the data obtained in calculating the Ruffe-Dickson index, significantly better results were noted in microsomatic patients - 8.48 ± 6.11 and mesosomatics - 8.55 ± 4.62 ($p < 0.05$). The most valuable criterion of the energy potential of the body is the state of the reserves of the cardiovascular system. One of the most important indicators of this reserve is the Robinson index, which characterizes the systolic work of the heart. The lower the Robinson index at rest, the higher the maximum aerobic capacity and, consequently, the level of somatic human health. The data obtained by us show that in the mesosomatic group the Robinson index of 75.31 ± 1.40 is reliably lower in comparison with the schoolchildren of another somatotype, in microsomatic patients - the IR - 83.23 ± 1.21 , in the macrosomatics - the IR - 92.86 ± 0.75 ($p < 0.05$). Consequently, children with macrosomatic physique, which have high values of the Robinson index, can be attributed to a group of individuals with reduced functional reserves of the cardiovascular system.

The Martine test is used to assess the functional state of the cardiovascular system for small loads. The ratios of different quantitative parameters of heart rate and blood pressure reveal qualitative features, allowing to determine the type of reaction of the cardiovascular system, the degree of strain of the organism to the load and the quality of the reaction. According to the results of the Martine test, 64% of children have a good cardiovascular status among the microsomatotype, and 36% have a satisfactory state. Among the mesosomatotype, 50% of children with a good and satisfactory state of the cardiovascular system, respectively. Macrosomatotype: good condition-68%, satisfactory-22%. Thus, the majority of the examined children showed a good and satisfactory adaptation of the cardiovascular system to the load. The Ruthier index reflects the adaptive capabilities of the cardiovascular system in response to the measured physical load. In children of the mesosomatic physique, IRUf showed good performance, the microsomatic physique - medium, - macrosomatic build - satisfactory. Reliably better results were noted in children with mesosomatic physique ($p < 0.05$).

The value of the Kerdo index is not statistically different in the patients under study - in microsomaticians 13.12 ± 1.14 , in mesosomatics - 23.91 ± 0.6 , in macrosomatics - 16.68 ± 0.84 , high values of the Curdo index indicate a predominance of sympathetic tonus, so children at this age are more sensitive to the effects of the environment ($p > 0.05$). The highest index of the Hildebrandt index is observed in children with a mesosomatotype (5.78 ± 0.86), it reflects a higher degree of consistency in the activity of the cardiovascular and respiratory systems. It increases with sympathicotonia. A smaller indicator in macrosomatics 3.91 ± 1.51 , indicates a possible predominance of parasympathicotonia in that group of children ($p < 0.05$).

Normal vegetative maintenance of the body based on the results of CPC and changes in blood pressure associated with the transition to a vertical position was detected in 100% of children with a microsomatotype and in 92% of children with a mesosomatotype and macrosomatotype. This testifies to the good compensatory reactions of the organism that arise when the blood is redistributed, the pulse is increased and the vessels are spasmodic. Due to this, blood pressure remains at the same level in all children.

Conclusions. Children with macrosomatic type have a greater volume of actual LEL, almost 20% less than adequate HD, low GI and unsatisfactory endurance of the respiratory muscles, while in microsomatic and mesosomatic patients, good endurance of the respiratory muscles and GI and GI parameters are normal. In children with macrosomatic physiology, moderate bradycardia and a satisfactory degree of adaptation of the cardiovascular system to the load as a result of the Martine, Ruffe test were revealed. Schoolboys of macrosomatic physique had a higher level of blood pressure, values of the Robinson index and lower values of pulse pressure, which indicates a lower compensatory capacity of the organism. The smaller index of the Hildebrandt index in macrosomatics, indicates a possible lack of coherence in the activity of the cardiovascular and respiratory systems.

Thus, children with macrosomatic type of constitution can be referred to a group of persons with reduced functional reserves of the cardiorespiratory system and less compensatory capabilities of the organism in response to physical stress. Establishment of interrelation between morphofunctional features of children of different types of constitution gives an opportunity to further develop the fundamental basis for a more complete substantiation of the physiological individuality of a person and proposals for developing fundamentally new approaches to donor diagnosis of cardiorespiratory system disorders and assessing their general health.

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CYTOKINE PROFILE IS THE BIOMARKER OF THE SEVERITY OF BRONCHIAL ASTHMA

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Abstracts: It is well known that bronchial asthma (BA) is in the leading place in the structure of morbidity of respiratory organs is the most important problem of modern pulmonology.

As you know, the nature of the clinical course and severity of BA largely depends on the ac-tivity of the inflammatory process that begins with damage to the bronchial epithelium, disorders of microcirculation and the subsequent interaction of key effector cells and their mediators.

BA is accompanied by a systemic response of the organism to inflammation in the lung tis-sue and involved in this type of mediators, including Pro - and anti-inflammatory cytokines, chemo-kines, leukotrienes, prostaglandins and others, determine the mechanisms of disease develop-ment.

In the literature available to us there is a lot of information, details and evidence character-izing the role of cytokines in the development and course of BA. However, these studies presented a lot of data, but they are, in our opinion, do not allow to present a clear picture of the changes of the cytokine profile in asthma, depending on the shape and severity of the disease. In addition, there are difficulties in the interpretation of cytokine regulation in asthma because the pathogene-sis of this disease are «working» complex allergic and non-allergic mechanisms.

In this regard, exploring the use of a set of biomarkers of inflammatory activity, in particular of Pro - and anti-inflammatory cytokines for evaluation of the prognosis of BA is of great practical importance.

Bronchial asthma (BA) is accompanied by a systemic response of the organism to the in-flammation in lung tissue and involved in this type of mediators, including pro - and anti-inflammatory cytokines, chemokines, leukotrienes, prostaglandins and others, determine the mechanisms of disease development.

Key words: bronchial asthma, cytokines, chemokines, leukotrienes

Goal: investigation of the spectrum of pro - and anti-inflammatory cytokines in serum and bronchoalveolar lavage (BAL) fluid of patients with BA according to spectrum sensitization, severity and form of the disease to development criteria for the evaluation and prediction of the nature of the disease

Materials and methods: The study included 115 patients with asthma aged 19 to 67 years, pre-divshih the course of examination and treatment in the pulmonology Department of the Amur regional clinical hospital of the health Ministry of the Russian Federation. Among them was 68 (59,1%) women and 47 (40,9%) men.

Upon admission to the hospital patients to BA conducted a comprehensive survey with ap-plication of clinical, radiological, functional and laboratory methods of research.

The diagnosis of BA were staged according to the International classification of diseases, X revision (ICD – 10) and Global initiative for asthma...(GINA), given the typical clinical picture of the disease, the data allergological anamnesis, hereditary predisposition, the results of clinical, func-tional and allergological methods.

Among the patients examined 41 patients were diagnosed BA of moderate severity (SST), 42 – severe severity (TST) and 32 – steroids-dependent BA TST (TST+Sz).