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COURSE OF OBSTRUCTIVE BRONCHITIS IN CHILDREN ON THE BACKGROUND OF HYPOXIC-ISCHEMIC ENCEPHALOPATHY DEPENDING ON PREMORBID SOIL AND IMMUNO-BIOLOGICAL INDICATORS

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Abstract: In the development of acute pathology of the respiratory organs, not only the infectious factor is important, but also the initial level of children's health. In turn, the initial level depends on intrauterine development, intranatal period and background pathology, in particular, hypoxic-ischemic encephalopathy. A number of researchers have identified a relationship between CNS damage and the development of bronchopulmonary pathology o'1,4,8g'. The aim of the study was to assess the characteristics of the course of obstructive bronchitis in children with hypoxic-ischemic encephalopathy, depending on premorbid and environmental factors and immuno-biological indicators. 126 children at an early age with obstructive bronchitis were examined, who were randomly divided into 3 groups. It has been established that obstructive bronchitis occurring against the background of hypoxic-ischemic encephalopathy in young children living in a region with environmentally unfavorable conditions differ in a number of significant clinical and immuno-biochemical features, the combination of pathogenic factors of the premorbid soil is of decisive importance in the formation of which. including a complex of negative endo - and exogenous influences.

Key words: obstructive bronchitis, children, hypoxic-ischemic encephalopathy, environmental factors.

Relevance. Acute pathology of the respiratory system occupies a leading place in the structure of morbidity in children. According to the WHO, SARS account for 40% of all infectious diseases in the child population [2,5,9]. Judging by the published data, over the past 10-15 years, with a relative decrease in the proportion of pneumonia among respiratory diseases in children, there is a distinct increase in bronchitis. The leading place among them belongs to obstructive bronchitis, which is characterized by a high prevalence in the early age group, severity of the course, a tendency to relapse and the possibility of transition to severe forms of respiratory allergies [3].

Particular difficulties arise in the diagnosis of obstructive bronchitis in young children with hypoxic-ischemic encephalopathy [12,15].

Not enough attention is paid to such a side of premorbid and pathogenic soil as a family genealogical background that affects the overall incidence, its nature, forms and frequency of pathological processes, including the central nervous system [6,11,17].

Acute obstructive bronchitis is often accompanied by broncho-obstructive syndrome, manifested by a combination of clinical symptoms that reflect impaired bronchial patency and expiratory dyspnea [1, 5,7].

Broncho-obstructive syndrome is a clinical diagnosis that usually does not require laboratory tests, radiography, however, clear criteria for assessing the severity of bronchial obstruction have not been defined [5,10]. Additional research methods should be used in case of a doubtful clinical diagnosis, as well as in the case of a severe course of the disease to determine further treatment tactics.

The aim of the study was to assess the characteristics of the course of obstructive bronchitis in children with hypoxic-ischemic encephalopathy, depending on premorbid and environmental factors and immuno-biological indicators.

Materials and methods. We studied patients, children with obstructive bronchitis against the background of hypoxic-ischemic encephalopathy admitted to the hospital and receiving a course of conventional therapy. This group, represented by 126 children, included the following groups I - II - III.

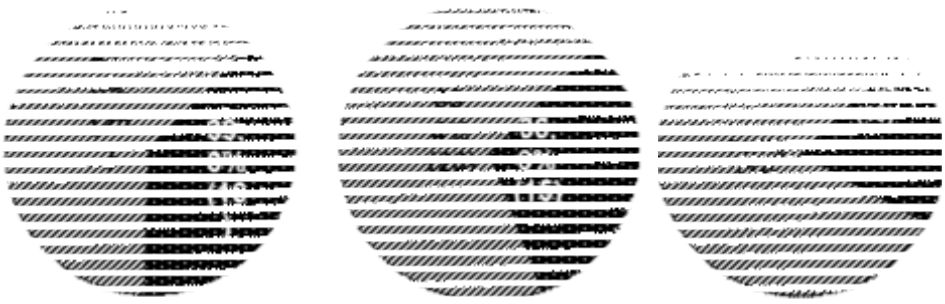
As can be seen from Figure 1, all observed children were distributed as follows:

Group I - 41 children who received the traditional method of therapy, of which c medium-severe form - 16 and severe form - 25;

II group - 41 children who received the traditional method of therapy, of which c moderate form - 15 and severe form - 26;

Group III - 44 children who received the traditional method of therapy, of which c medium-severe form - 13 and severe form - 32.

Consequently, the very quantitative composition of this contingent in terms of the severity of clinical manifestations clearly indicates that with the "movement" from group to group, the frequency of more severe forms of the disease increases. Not an accident, but a regularity of this dependence was confirmed by the above-mentioned method of purposeful selection of groups that excluded the intentional concentration in any of them of certain types and clinical and syndromic characteristics of the course of the disease.



I II III

Designations: I-II-III groups ; - medium-heavy; - severe form

Fig.1. The quantitative composition of the studied contingent of children with obstructive bronchitis against the background of hypoxic-ischemic encephalopathy according to the

severity of clinical manifestations against the background of the traditional method of therapy.

The analysis of the dynamics of the elimination of clinical symptoms of various forms of obstructive bronchitis, presented in Table 1 and in Figure 2, against the background of hypoxic-ischemic encephalopathy in children, clearly indicates that with the aggravation of the degree of premorbid and environmental burden, there is a noticeable "delay" in the reduction of symptoms each of the symptom complex from group to group is approximately 1-2 days in moderate-severe form and 2-3 days in severe form, and the length of stay of patients in the hospital, respectively, is 2-3 days; and 3-4 days.

We found that the observed children have a strict and close linear relationship between the severity of territorial burden by pathogenic factors of the premorbid soil and the severity of intoxication during the development and prediction of the syndromic picture of perinatal lesions of the central nervous system (multiple correlation index (r = + 0.71).

Thus, taking into account the reliability of the differentiation of the three variants of the above-mentioned degree of burden and the combination of pathogenic factors in the premorbidity of the observed children with obstructive bronchitis and bronchiolitis, against the background of hypoxic-ischemic encephalopathy, they were divided into separate groups I and III. At the same time, it should also be noted that for the scientific "purity" and objectivity of the final results of clinical immuno-biochemical studies, this approach was carried out in relation to patients who received a course of conventional treatment. For the modified treatment, which is discussed in the corresponding chapter of the work, could affect the analyzed indicators and in a certain way level the difference of some of them.

It should be emphasized that in clinical and syndromic terms, in the observed children, manifestations of obstructive bronchitis, against the background of hypoxic-ischemic encephalopathy, the main indicators differed significantly from each other. It is quite natural at the same time that this dependence is more related to severe forms of the disease. This refers to the qualitative and quantitative aspects of the issue, because according to the totality of the syndromic picture of the disease and the nature of the leading symptom, reflecting the degree of general intoxication and the depth of endotoxicosis, damage to organs and life support systems involved in the pathological process, according to the speed, progression and progression of symptoms in the clinical in I th and 2nd observation groups could not be compared with the 3rd group.

In this case, we deliberately do not touch upon the factor of adverse climatic influences, since it goes without saying that the pattern noted above provides for all other conditions in children of the studied groups, except for the degree of premorbid burden and the combination of its factors. And, therefore, it was possible to state a close relationship between the first and third variants of pathogenic soil in the premorbidity of the observed children with developed perinatal lesions of the central nervous system, as well as syndromic features, severity of manifestations and course of the disease.

We assume that such a conclusion is not original. However, in terms of his own research, he acquires fundamental importance, because he served as the starting point for complete reliability and objectivity in assessing intergroup differences in terms of the level of violations of the studied complex of immunological and homeostatic parameters.

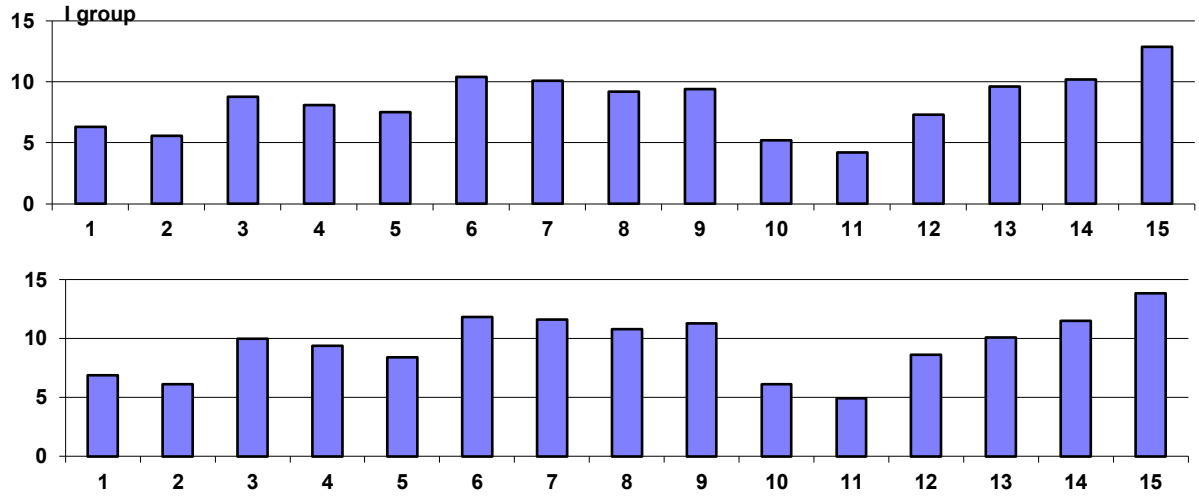


Fig.2. Dynamics of the main clinical symptoms in children with obstructive bronchitis, against the background of group I-II-III HIE against the background of the traditional method of therapy (moderate-severe form).

As can be seen from the above factual and illustrative material, in general, perinatal damage to the central nervous system and respiratory organs is characterized (to a greater or lesser degree, according to the severity of the course of the pathological process) by a decrease in the indicators of the enzyme-dependent and enzyme-independent links of the antioxidant.

Table 1

Dynamics of the main clinical symptoms in children with obstructive bronchitis against the background of hypoxic-ischemic encephalopathy of the I-II-III group against the background of the traditional method of therapy (moderate-severe form).

	I group	II group	P1	III group	P2
General Condition Improvements	6,3 ± 0,3	6,9 ± 0,4	<0,05	7,8 ± 0,5	<0,01
Reducing intoxication	5,6 ± 0,3	6,1 ± 0,5	>0,5	6,7 ± 0,6	>0,1
Normalization of skin color	8,8 ± 0,5	10,0 ± 0,6	>0,1	10,6 ± 0,7	<0,05
Normalization of the rhythm of breathing	8,1 ± 0,4	9,4 ± 0,5	<0,05	10,1 ± 0,6	<0,01
Normalization of cardiac activity	7,5 ± 0,5	8,4 ± 0,4	>0,1	8,6 ± 0,4	<0,05
Restoring sucking activity	10,4 ± 0,7	11,8 ± 0,5	>0,1	12,3 ± 0,6	<0,05
Posture recovery	10,1 ± 0,6	11,6 ± 0,7	>0,1	12,0 ± 0,7	<0,05
Restoration of muscle tone	9,2 ± 0,7	10,8 ± 0,8	>0,1	11,2 ± 0,6	<0,05
Recovery of motor activity	9,4 ± 0,6	11,3 ± 0,9	>0,1	11,8 ± 0,7	<0,01
Disappearance of fontanel tension	5,2 ± 0,3	6,1 ± 0,4	>0,1	6,7 ± 0,6	<0,05
Disappearance of seizures	4,2 ± 0,2	4,9 ± 0,3	<0,05	5,6 ± 0,5	<0,01
The disappearance of nystagmus	7,3 ± 0,5	8,6 ± 0,4	<0,05	9,2 ± 0,5	<0,01
The disappearance of the tremor of the limbs	9,6 ± 0,6	10,1 ± 0,5	>0,5	11,2 ± 0,7	>0,1

Recovery of physiological reflexes	10,2 ± 0,6	11,5 ± 0,5	>0,1	12,0 ± 0,6	<0,01
Bed-days spent	12,9 ± 0,9	13,8 ± 0,9	>0,5	15,9 ± 1,1	<0,05

Note: P1 - identification of differences between I and II, P2 - between I and III loads.

Table 2

Dynamics of the studied immuno-metabolic parameters in children with obstructive bronchitis against the background of hypoxic-ischemic encephalopathy of the first group against the background of the traditional method of therapy (moderate-severe form)

Indicators	Control on	Admission		Dynamic on		*Discharge*	
		M ± m	P	M ± m	P	M ± m	P
SMM,	0,25±0,03	0,41±0,05	<0,01	0,36±0,05	>01	0,26±0,06	> 0,5
AOA,	0,69±0,08	0,42±0,05	<0,01	0,50±0,06	<0,05	0,54±0,08	> 0,1
MDA,	11,06±047	13,20±0,59	<0,01	12,69±0,6	<0,05	12,6±0,71	<0,05
ДК,	11,62±0,49	13,78±0,94	<0,01	12,59±0,6	<0,05	12,48±0,54	<0,05
K, unit	12,31±0,75	10,27±0,62	<0,05	10,50	<0,05	10,82±0,55	<0,1
T-lymphocyt	55,9±3,2	42,4±2,3	<0,001	47,6±2,3	<0,05	47,9±2,4	<0,05
T-helpers,%	45,8±2,4	29,3±3,3	<0,001	38,4±1,9	>0,01	38,1±2,6	<0,05
T – suppressor	10,9±0,6	13,6±0,66	<0,001	8,8±0,9	>0,05	9,8±0,8	> 0,1
B-lymphocyte	15,2±0,8	12,6±0,6	<0,001	13,2±0,9	>01	14,2±1,1	>0,5

Note: P is the significance of differences relative to the control group.

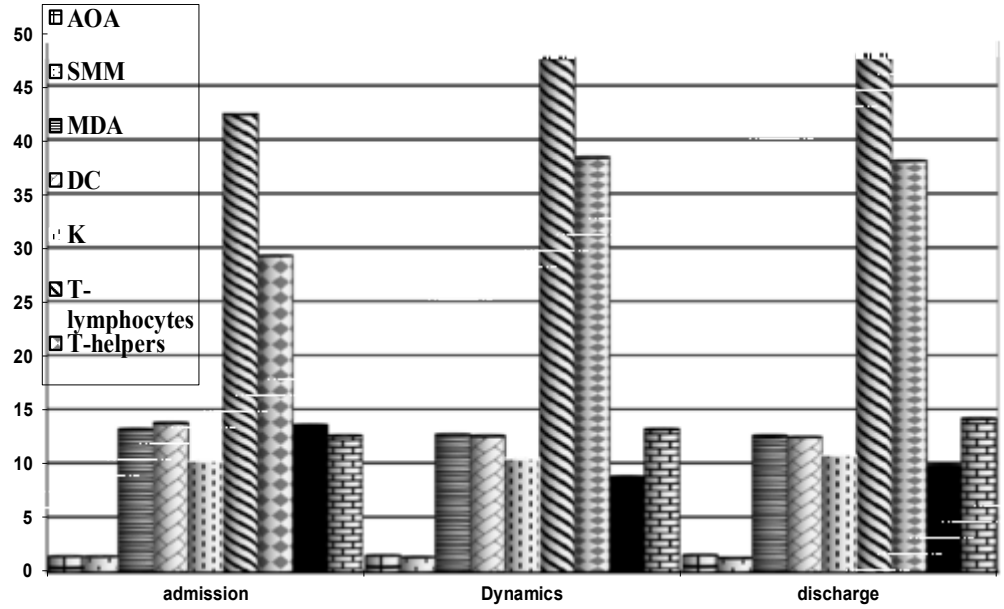


Fig. 3. Dynamics of the studied immuno-metabolic parameters in children with obstructive bronchitis, against the background of hypoxic-ischemic encephalopathy of the first group against the background of the traditional method of therapy (moderate form)

Table 3

Dynamics of the studied immuno-metabolic parameters in children with obstructive bronchitis, against the background of hypoxic-ischemic encephalopathy of the first group against the background of the traditional method of therapy (severe form)

Indicators	Control on	*Admission*		*Dynamic on*		Discharge	
		M ± m	P1	M ± m	P2	M ± m	P3
SMM, con.unit	0,25±0,03	0,48 ± 0,08	<0,001	0,38 ± 0,06	<0,05	0,28 ± 0,09	> 0,5
AOA, 1/ml	0,69±0,08	0,34± 0,05	<0,001	0,47± 0,07	<0,05	0,52 ± 0,08	> 0,1
MDA, нмоль/мг	11,06±0,47	19,34 ± 0,72	<0,001	15,07 ±0,53	<0,001	12,64± 0,46	<0,01
ДК, nmol/mg	11,62±0,49	16,37 ± 1,10	<0,001	15,23 ± 1,16	<0,001	14,18 ± 1,02	<0,01
K, unit	12,31±0,75	7,73 ± 0,61	<0,001	9,35 ± 0,94	<0,01	9,58 ± 1,12	<0,05
T-lymphocytes,%	55,9±3,2	36,8 ± 2,8	<0,001	45,1 ± 2,7	<0,01	47,7 ± 2,91	<0,05
T-helpers,%	45,8±2,4	28,4 ± 1,8	<0,001	37,9 ± 1,7	<0,01	37,7 ± 1,5	<0,01
T – suppressors,%	10,9±0,6	7,9 ± 0,6	<0,001	8,5 ± 0,7	<0,01	9,3 ± 0,8	> 0,1
B-lymphocytes, %	15,2±0,8	8,4 ± 0,6	<0,001	13,0 ± 0,8	<0,05	13,5 ± 0,9	>0,1

Note: P is the significance of differences relative to the control group

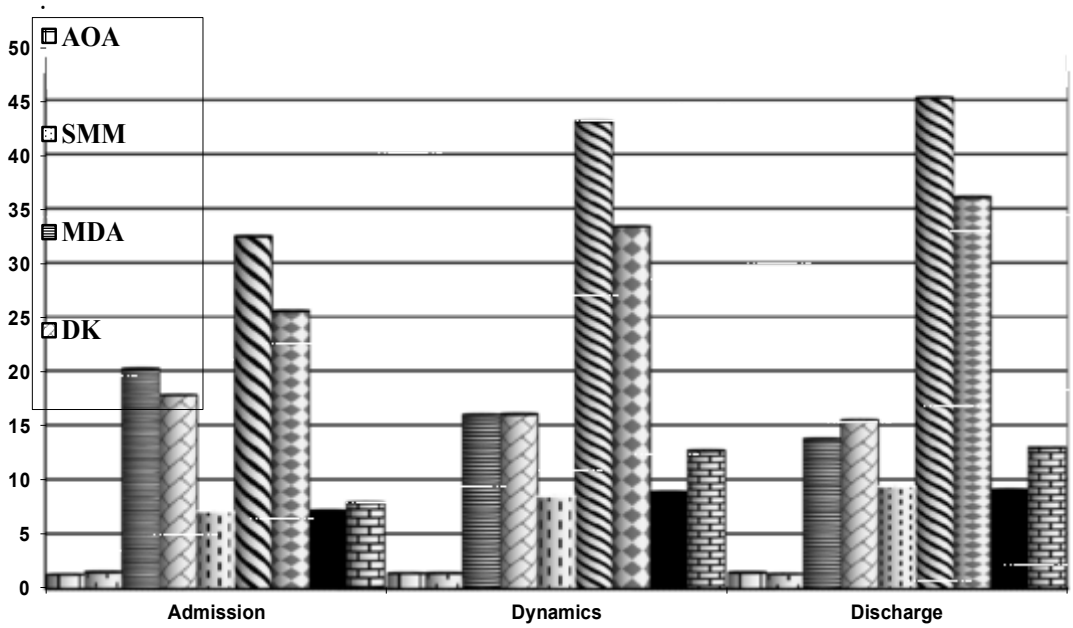


Fig.4. Dynamics of the studied immuno-metabolic parameters in children with obstructive bronchitis, against the background of hypoxic-ischemic encephalopathy of the first group against the background of the traditional method of therapy (severe form)

The discussion of the results. To date, prognostic criteria for the development and outcomes of obstructive bronchitis in children with hypoxic-ischemic encephalopathy have not been developed [4,13].

The pathogenetic role takes place in the totality of environmental hazards in the development of obstructive bronchitis against the background of hypoxic-ischemic encephalopathy in these children and other negative premorbid factors. In particular, a complex of ecopathobiological influences pathogenetically significant for these diseases, place of residence, negative technological working conditions with their adverse effects on immunity, metabolism for parents and their children [5,16].

Every year, severe cases of broncho-obstructive syndrome in children against the background of hypoxic-ischemic encephalopathy, resistant to conventional pharmacotherapy, with subsequent complications of the disease, become more frequent.

The occurrence of obstructive bronchitis with hypoxic-ischemic encephalopathy in young children and the "risk" group, the pathogenetic role of hereditary factors and a regionally significant complex of ecobiological influences has not yet been practically studied. The significance of the formation of premorbid pathogenic soil in children and their susceptibility to damage to the central nervous system of environmental hazards, mediated through metabolic disorders in the body of parents and directly manifested in the newborn itself, remains open [8,18].

Conclusions. It has been established that obstructive bronchitis occurring against the background of hypoxic-ischemic encephalopathy in young children living in a region with environmentally unfavorable conditions differ in a number of significant clinical and immuno-biochemical features, the combination of pathogenic factors of premorbid soils, including a complex of negative endo - and exogenous influences.

The results obtained were the scientific basis for the creation of a unified management system for young children with obstructive bronchitis against the background of hypoxic-ischemic encephalopathy and groups of "risk" in conditions of environmental hazards,

as well as a group of high susceptibility to the disease, children who have undergone encephalopathy (with subgroups of "attention" , "risk" and "increased risk") in a polyclinic setting.

When monitoring children with obstructive bronchitis against the background of hypoxic-ischemic encephalopathy, special attention should be paid to the presence of these diseases in first-degree relatives, as well as a combination of more than three interrelated somatogenic factors as factors of increased "risk" in the prognosis of the development of the disease. or ecopathological burden in the premorbid of the child himself.

Based on the results of changes in the above somatic, ecopathological, premorbid, clinical and immune-metabolic parameters, it is possible to predict the course of obstructive bronchitis against the background of hypoxic-ischemic encephalopathy, to conduct timely registration of complications and differentiated methods of treatment, as well as to determine their preventive significance.

The combination of complex drug treatment and laser exposure reduces the length of stay of patients in the hospital (on average 3,4 days) and prevents complications.

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