CHARACTERISTICS OF SPUTUM IN CHILDREN WITH ACUTE AND RECURRENT BRONCHITIS

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Abstract. Relevance. To date, for the diagnosis and prognosis of the course of acute and recurrent obstructive bronchitis in children, in the available literature there are many works in which various studies are given that require blood sampling, reagents and expensive equipment or mathematical programs that require different parameters. Objective of the study: optimization of the results of diagnosis and prediction of the course of acute and recurrent bronchitis in children based on the study of the characteristics of sputum. Materials and research methods. In the period from 2018 to 2020, 80 children with acute and recurrent obstructive bronchitis were examined who were hospitalized in the departments of children's intensive care, I and II emergency pediatrics of the Samarkand branch of the Republican Scientific Center for Emergency Medical Aid. Research results. Microbiological examination of the sputum of patients with recurrent obstructive bronchitis revealed Klebsiella and Proteus, which are known to be one of the risk factors for the development of recurrent obstructive bronchitis in children. Also, microscopic examination of the cellular composition of sputum revealed an increased concentration of eosinophils> 5 * 104 / ml and neutrophils> 3 * 106 / ml, which made it possible to identify and diagnose the recurrent course of obstructive bronchitis in the early stages and carry out appropriate preventive measures. Conclusions. The detection of Klebsiella and Proteus during sputum culture of patients with acute obstructive bronchitis is considered one of the risk factors for the development of recurrent obstructive bronchitis in children. Also, a significant role belongs to the microscopic assessment of the cellular composition of sputum, the detection of an increased concentration of eosinophils makes it possible to identify and diagnose the recurrent course of obstructive bronchitis in the early stages.

Key words: bronchitis, obstruction, sputum, eosinophils, saturation.

Broncho-obstructive syndrome is most often found in children with acute obstructive bronchitis and bronchiolitis, but in recent years the proportion of patients with recurrent obstructive bronchitis has increased [1,3,10]. Recurrent obstructive bronchitis occupies one of the leading places among respiratory diseases. Its frequency in the structure of bronchopulmonary diseases, according to different authors, ranges from 5 to 40% [1,5,6]. One of the key mediators of inflammation are leukotrienes, which contain cysteine, which can cause mucus production, edema, eosinophilia and broncho-obstruction [2,4,7,12]. Recently, cytological examination of sputum has

become increasingly interesting, being easy to perform and safe for the patient [1,7,8,11]. To date, the characteristics of sputum in acute and recurrent bronchitis have been poorly studied, which determined the objectives of this study.

The purpose of the study. Improving the results of diagnosis and prediction of the course of acute and recurrent bronchitis in children based on the study of sputum characteristics. Materials and methods of research. We examined 80 children with acute and recurrent obstructive bronchitis who were hospitalized in the departments of pediatric intensive care, I and II emergency pediatrics of the Samarkand branch of the Republican Scientific Center for Emergency Medical Care. 40 patients with acute and 40 patients with recurrent obstructive bronchitis. In addition to the generally accepted methods of examination, the following were carried out: microscopic examination of sputum.

The results and their discussion. All patients had typical clinical symptoms of bronchoobstructive syndrome, and data from standard laboratory and instrumental examinations were taken into account in the diagnosis. The distribution of all observed children by age and gender is shown in table 1.

As can be seen from table 1, young boys made up a slightly larger amount. Bronchoobstructive syndrome of varying severity was observed in all 80 (100.0%) patients. The high frequency of bronchoobstructive syndrome accompanying obstructive bronchitis highlights the high incidence of the condition, which showed the relevance of the study.

We conducted a study of sputum indicators in patients of the studied groups. The cellular composition of sputum in patients with acute and recurrent obstructive bronchitis is presented in Table 3. The analysis showed that in both groups of patients studied, neutrophils were the predominant cells, while the total number of cells was significantly higher in patients with recurrent obstructive bronchitis compared with the acute course, the absolute neutrophil content prevailed in ROB, however The level of lymphocytes was higher in group I patients. There were significant differences in sputum both in the number of macrophages and in the groups of patients with OOB and ROB. The number of eosinophils prevailed at WORK.

A comparative analysis of the sputum cytogram of patients in both groups showed that the number of the sum of all cells and the proportion of neutrophils and macrophages were significantly higher in patients with ROB than in the OOB group. As for eosinophils and lymphocytes, their absolute number is higher in the General case of ROB. Analysis of the frequency of changes in the cellular composition of sputum also showed that lymphocytes and macrophages were more common in OOB (6.5±0.3 and 2.4±0.1) than in ROB (2.9±0.1 and 1.5±0.1), whereas eosinophils and macrophages were significantly greater in the group of patients with ROB (5.1±0.2 and 3.1±0.2) in comparison with the OOB (2.7± 0.1 and 1.4± 0.1).The total number of cells

in the recurrent course of obstructive bronchitis was eventually almost 2 times higher in comparison with the acute course of the disease (P<0.001).

Microbiological examination of sputum in patients with acute obstructive bronchitis (Table.4) pneumococci (14-35.0%), hemophilic bacillus (11 – 27.5%) and streptococci (9-22.5%) were in the lead, and pneumococcal infection was detected in most cases in young children, streptococci more often in children 5-7 years of age. In patients with recurrent obstructive bronchitis, mainly klebsiella (16 – 40.0%), proteus (15 – 37.5%) and hemophilic bacillus (9 – 22.5%) were isolated.

Table 1. Distribution of observed patients by age and gender

Age	Paul				Total	
	Boys		Girls		number	%
	number	%	number	%		
up to 2 years old	12	15,0	8	10,0	20	25,0
2-5 years old	22	27,5	20	25,0	42	52,5
Over 5 years	14	17,5	4	5,0	18	22,5
old All	48	60,0	32	40,0	80	100

Table 2. Comparative analysis of the cellular composition of sputum in patients.

Indicators	I group	II group	P
Total number of cells in 1 ml (10 b/ml)	2.9±0,1	4,7±0,2	<0,001
Neutrophils (106/ml)	1,4±0,1	3,1±0,2	<0,001
Eosinophils (104/ml)	2,7±0,1	5,1±0,2	<0,001
Lymphocytes (104/ml)	6,5±0,3	2,9±0,1	<0,001
Macrophages (104 /ml)	2,4±0,1	1,5±0,1	<0,001

Isolation of microorganisms from sputum at a concentration of > 106 μg/ml was considered diagnostically significant.

Conclusions. Thus, in case of recurrent obstructive bronchitis, microbiological examination of sputum is indicated, which must be taken into account when diagnosing the disease and a differentiated approach to therapy. Detection of Klebsiella and Proteus in the sputum of patients during microbiological examination is considered one of the risk factors for the development of recurrent obstructive bronchitis in children. Microscopic assessment of the cellular composition of sputum also plays a significant role; detection of an increased concentration of eosinophils> 5*104/ml and

neutrophils> 3*106/ml allows identifying and diagnosing recurrent obstructive bronchitis at early stages.

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