

Assessment of Risk Factors for the Development of Broncho-Obstructive Syndrome in Children

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Annotation: A retrospective analysis of 912 cases of children with histories of BOS in age from 1 to 3 years for the period from 2012 to 2015. BOS has developed against the background of an acute obstructive bronchitis was diagnosed in 494 (54.2%) children group 1. In the comparison group, the diagnosis of acute bronchitis without the phenomena of bronchial obstruction was diagnosed in 418 (45.8%) group 2. There were an evaluated factors of the risk in development of BOS of the children.

Key words: risk factors, retrospective analysis, bronchial obstruction, pneumonia, acute obstructive bronchitis.

RELEVANCE

Respiratory diseases today remain one of the pressing problems of pediatrics and in the Republic of Uzbekistan they occupy first place in the structure of child morbidity and mortality [1,4,8,15,17,20]. In young children, acute pneumonia and bronchitis are widespread, which occur with broncho-obstructive syndrome (BOS) and often cause an unfavorable outcome of the underlying disease. The occurrence and development of biofeedback is influenced by various factors and, above all, respiratory infection, causing obstruction from 5% to 40% of cases [2,3,5,9,13,14,16,19]. Risk factors for the development of bronchial obstruction in children were: toxicosis of pregnant women, complicated childbirth, hypoxia during childbirth, prematurity, a burdened allergic history, rickets, protein-energy malnutrition, perinatal encephalopathy, early artificial feeding, previous respiratory diseases at an early age, hereditary and congenital pathology of the bronchopulmonary system and unfavorable state of the external environment [6,7,10,11,12,18].

PURPOSE OF THE STUDY

Assessment of risk factors for the development of broncho-obstructive syndrome in children.

MATERIALS AND METHODS OF RESEARCH

The assessment of risk factors for the development of biofeedback was carried out using statistical methods in epidemiological analysis. We conducted a retrospective analysis of 912 cases of medical histories of children with BOS aged 1 to 3 years who were hospitalized in the intensive pediatric department of the Samarkand Branch of the Republican Scientific Center for Emergency Medical Care for the period from 2012 to 2015.

To assess risk factors for the development of the disease, we conducted studies that included a thorough analysis of complaints, anamnestic data of patients, general examination data, results of physical examination methods, general clinical laboratory, immunological, microbiological and instrumental research methods using standard methods, taking into account anthropometric data and weight and growth indicators. All the data we received from archival materials was entered into cards specially developed at the Department of Pediatrics No.4.

To diagnose the syndromic features of the disease, data from paraclinical research methods were used: general analysis of blood, urine, feces, X-ray examinations of the chest organs, pulse oximetry data and expert opinions.

BOS developed against the background of acute obstructive bronchitis (AOB) was diagnosed in 494 (54.2%) children of group 1. In the comparison group, the diagnosis of acute bronchitis (AB) without symptoms of bronchial obstruction was stated in 418 (45.8%) patients in group 2 (Table 1).

Table 1 Distribution of examined patients by nosology

№	Nosological forms of diseases	Total	
			%
Group 1	Acute obstructive bronchitis with biofeedback	494	54,2
Group 2	Acute bronchitis without biofeedback	418	45,8
Total		912	100

Among the examined children under 1 year old were 499 (54.7%), children from 1 to 3 years old were 277 (30.4%) and children from 3 to 5 years old were 136 (14.9%). Among all the examined boys, there were only 540 (59.2%) and girls – 372 (40.8%) (Table 2).

Table 2 Distribution of examined patients by age and gender

Gender	Groups	Age structure						Total	
		2 мес - 1 г		1 - 3 года		3 г - 5 лет			
		n	%	n	%	n	%	n	%
Boys total 540 (59.2%)	1	165	50,8	103	31,7	57	17,5	325	65,8
	2	124	57,7	59	27,4	32	14,9	215	51,4
Girls total 372 (40.8%)	1	94	55,6	54	31,9	21	12,5	169	34,2
	2	116	57,1	61	30,0	26	12,9	203	48,6
Total		499	54,7	277	30,4	136	14,9	912	100

In the group of children with BOS against the background of AOB, the number of boys was 325, where a clear predominance was noted over girls (65.8% and 34.2%, respectively). In the second group, among children with OB there were 215 (51.4%) boys and 203 (48.6%) girls, i.e., there was no significant difference in the gender of the patients.

As presented in Table 2, among all examined patients, children under 1 year of age suffered from AOB and OB more often (54.7%) than older children (1-3 years - 30.4%; 3-5 years - 14,9%).

Among all children who were hospitalized in the period from 2012 to 2015, the following seasonality of this disease was noted. Thus, most often children with AOB were admitted in winter (201 patients) and spring (175 patients). In the fall, 102 patients were admitted and in the summer, only 56 patients. And if in relatively cold and humid periods of the year the increase in the incidence of AOB can be compared with an increase in the activity of the corresponding viral infections, then in the summer period the role of pollen and food allergies is possible as a risk factor for the development of AOB.

Studying the seasonality of acute illnesses, we discovered the following: 161 patients were admitted in the winter months of the year, 132 in the spring, 86 in the fall and 39 in the summer. Similarly, the increase in the incidence of OB in the winter is also associated with an increase in the viral activity of the pathogens.

Repeated cases of ARI (6 times or more) during the year were noted in 212 (42.9%) patients with AOB. The majority of children with AOB (358 patients - 72.5%) had deficient conditions and a

burdened premorbid background: 313 (63.4%) children were early transferred to artificial feeding, 278 (56.3%) had a history of perinatal damage to the central nervous system, 222 (45%) had rickets and 481 (97.3%) had anemia.

The majority of children were born full-term (851 (90.6%)) and had a body weight of more than 2500 g. There were only 61 (9.4%) premature infants, with 46 children with OB, and 15 children with AOB. Half of the examined children with AOB had impaired physical development. At the same time, high and disharmonious physical development was more common (in 223 children, 36.4%).

RESEARCH RESULTS

A retrospective analysis of archival material showed that the development of acute respiratory failure of the type of bronchial obstruction in patients with AOB depends on a combination of many factors, age differences, the presence of concomitant diseases, their combination, risk factors, etc.

The work carried out showed that constitutional anomalies are also risk factors, in particular cases of exudative forms of atopic dermatitis (39.1%), lymphatic-hypoplastic diathesis (19.5%).

According to our data, physical symptoms of bronchial obstruction in AOB were observed in all children. Frequent and productive cough occurred in 1/3 of the children (36.4%), and rare cough, more often in the morning, in the remaining 2/3 (63.5%) of patients, which is associated with insufficient mucociliary clearance in this age period.

Organ-specific symptoms and data from radiological research methods turned out to be more informative in diagnostic and differential diagnostic terms. Thus, a dry cough at the beginning of the disease, with a further transition to a wet one, was noted in all patients with AOB and OB. A wet cough with the discharge of viscous, mucopurulent sputum or vomiting was noted in the medical histories of 303 (61.3%) patients with AOB and in 264 (63.2%) patients with OB. Noisy wheezing and expiratory shortness of breath, as clear signs of bronchial obstruction of the lower respiratory tract (460 - 93.1% and 448 - 90.6%, respectively), were detected only in patients with AOB, in contrast to patients in the control group with AOB, in whom this symptomatology was not recorded in the medical history.

Thus, such risk factors for the development of broncho-obstructive syndrome in children were assessed as perinatal encephalopathy, early artificial feeding, frequent acute respiratory infections, a burdened allergic history, protein-energy malnutrition, rickets anemia, etc. All this dictates the need for preventive work in families, rural medical centers and family clinics for the prevention of bronchial asthma.

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