DIFFERENTIAL DIAGNOSTICS OF CHRONIC BRONCHITIS IN CHILDREN

Abstract. Currently, the diagnosis of chronic bronchitis as an independent nosological form in children is being improved. This direction provides for the differentiation of chronic bronchitis from other bronchopulmonary diseases occurring with bronchitis syndrome. It is known that chronic bronchitis is a constant companion of bronchiectasis, primary ciliary dyskinesia and its main form - Kartagener's syndrome, and is also one of the manifestations of cystic fibrosis. The viciousness of the development of the bronchopulmonary system (aplasia, hypoplasia of the lungs, Mounier-Kuhn syndrome, Williams-Campbell syndrome, polycystic lung disease, bronchial branching anomalies), as a rule, predisposes to the formation of chronic bronchitis.

Keywords: chronic bronchitis; bronchitis in children; differential diagnosis; diagnostic criteria.

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occurring with bronchitis syndrome. It is known that chronic bronchitis is a constant companion of bronchiectasis, primary ciliary dyskinesia and its main form - Kartagener's syndrome, and is also one of the manifestations of cystic fibrosis. The viciousness of the development of the bronchopulmonary system (aplasia, hypoplasia of the lungs, Mounier-Kuhn syndrome, Williams-Campbell syndrome, polycystic lung disease, bronchial branching anomalies), as a rule, predisposes to the formation of chronic bronchitis.

The aim of this study was to study the clinical and paraclinical manifestations of chronic bronchitis as an independent nosological form and as a syndrome of bronchopulmonary diseases and, on this basis, to develop their differential diagnostic criteria.

Materials and research methods. To achieve this goal, 65 children aged from 3 months to 18 years were included in the study. Of these, there were 37 boys (56.9 ± 3.6%) and 28 girls (43.1 ± 3.6%). All examined were inpatient treatment in the department of pulmonology of the Republican Specialized Scientific and Practical Medical Center of Pediatrics during 2020-2021. Diagnosis of bronchopulmonary diseases was carried out on the basis of the results of complex studies, including clinical, radiological, bronchological, functional, cytological and some special methods. The data obtained were statistically processed by biometric analysis.

Research results. Diagnosed bronchopulmonary diseases were represented by chronic bronchitis in 37 (56.9%), bronchiectasis in 18 (27.7%), cystic fibrosis in 5 (7.7%), Kartagener's syndrome in 1 (1.5%), lung hypoplasia in 1 (1.5%) and polycystic lung in 3 (4.6%) patients. Two forms of chronic bronchitis were distinguished: chronic obstructive bronchitis and chronic non-obstructive bronchitis. The main differential diagnostic criteria for chronic bronchitis were as follows: clinical (productive cough with the separation of a small amount of various types of sputum, symptoms of intoxication and respiratory failure, physical changes in the lungs - hard breathing, diffuse dry rales of various sizes on both sides, broncho-obstructive syndrome with chronic obstructive bronchitis, etc.); radiological (strengthening of the bronchovascular pattern with persistent local or diffuse
deformation); bronchoscopic (the presence of diffuse endobronchitis of a catarrhal or catarrhal-purulent nature); bronchographic (deformation of the bronchi without their expansion); functional (ventilation insufficiency of the I-II degree, the predominance of obstructive type of disturbances in the function of external respiration in chronic obstructive bronchitis); cytological (in sputum and bronchoalveolar lavage fluid - signs of de-epithelialization, local leukocytosis, imbalance, destruction and vacuolization of cells, mucociliary insufficiency, microbial colonization of the epithelium, impaired phagocytic activity of neutrophils and alveolar macrophages).

The diagnostic criteria for bronchiectasis were the following groups of signs: clinical (productive cough with the separation of a significant amount of mucopurulent or purulent sputum, symptoms of purulent intoxication and chronic hypoxia, physical changes in the lungs - local shortening of percussion sound, weakening of breathing, persistent local dry varicoloured and persistent wheezing); radiological (strengthening of the bronchovascular pattern with persistent local deformation); bronchoscopic (presence of catarrhal-purulent or purulent endobronchitis); bronchographic (dilatation of the distal sections of the bronchi, the presence of cylindrical, saccular or mixed bronchiectasis); functional (ventilation insufficiency of the I-III degree, the predominance of restrictive disturbances in the function of external respiration); cytological (in sputum and bronchoalveolar lavage fluid signs of epithelial exfoliation, local leukocytosis and macrophage deficiency, destruction and vacuolization of cells, mucociliary insufficiency and microbial colonization of the epithelium, impaired phagocytic activity of neutrophils and alveolar macrophages, etc.).

Differential diagnostic criteria for cystic fibrosis were: anamnestic (family history of lung and intestinal diseases, preceding stillbirth and spontaneous abortions, continuously recurring process in the bronchopulmonary system from the first months of life, recurrent upper respiratory tract diseases), clinical (physical development below average and low, deformation of the chest, frequent wet paroxysmal (whooping cough) cough with difficult to separate viscous mucopurulent sputum, mixed respiratory failure, physical changes in the lungs - local shortening of the percussion sound, dry variegated and moist rales of different
sizes; with a mixed form, the syndrome was determined); radiological (common deformities of the bronchopulmonary pattern and atelectasis); bronchoscopic (purulent and catarrhal-purulent endobronchitis, obturation of the bronchi with viscous mucopurulent secretion); bronchographic (bronchial deformities and cylindrical bronchiectasis); functional (persistent obstructive and restrictive disorders). The pathognomonic laboratory sign in all patients was an increase in sweat chloride content exceeding 60 mmol / L.

Kartagener's syndrome was characterized by the following features: anamnestic (chronic bronchopulmonary pathology in the genealogical history, recurrent respiratory diseases from the first weeks and months of life); clinical (frequent wet cough with mucopurulent sputum, mixed respiratory failure, aggravated by physical exertion, physical development below average and low, physical data - shortening of the percussion sound over pathologically altered areas of the lungs and widespread moist rales of various sizes); radiological (deformities of the pulmonary pattern and focal compaction of the lung tissue, situs viscerus inversus); bronchoscopic (purulent and catarrhal-purulent diffuse endobronchitis); bronchographic (bronchial deformities and small bronchiectasis); functional (more often obstructive disorders). Other anomalies and malformations (heart, kidney, etc.) were also detected in patients. Studies of the motor function of the ciliated epithelium showed its decrease by 3.6-5.2 times (compared with the norm).

Lung hypoplasia was characterized by clinical (lower than average physical development, shortening of percussion sound and weakening of breathing over the affected lung, unilateral local wheezing, displacement of the mediastinum towards the underdeveloped lung), radiological (decrease in the volume of the lung, absence of small bronchial branches), bronchoscopic (catarrhal or catarrhal-purulent unilateral bronchitis), functional (mainly restrictive disturbances in the function of external respiration) signs.

In polycystic lungs, the following clinical signs were revealed: continuously recurrent course, low physical development, cough with purulent sputum, signs of respiratory failure, presence of wet rales), radiographic (cavity formations),
bronchoscopic (purulent diffuse bilateral endobronchitis) and functional (pronounced obstructive and restrictive disorders) criteria.

**Conclusions.** Thus, the presented clinical and paraclinical groups of signs of these bronchopulmonary diseases allow a differentiated approach to the diagnosis of chronic bronchitis as an independent nosological form, and in hereditary and congenital diseases.

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