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PATHOLOGY OF THE PARANASAL SINUSES IN CHILDREN WITH CYSTIC FIBROSIS: THE STRUCTURE OF MORBIDITY IN THE REPUBLIC OF BELARUS

Cystic fibrosis (MB, E84 according to ICD-10) is the most common hereditary autosomal recessive monogenic disease among people of the white race (3%). This pathology is associated with mutations in the CFTR (transmembrane conduction regulator) gene, which regulates the transport of chlorides, sodium and bicarbonates through epithelial membranes. The manifestation of the disease is damage to the glands of external secretion, which leads to dysfunction of the respiratory and digestive organs.

According to the genetic laboratory of the Academy of Sciences of the Republic of Belarus, the incidence of cystic fibrosis in our country is 1 in 8000 newborns. According to the World Health Organization, the cystic fibrosis gene has been detected in 2% - 5% of the world's population; in the Republic of Belarus, every 50th resident is a carrier of the disease gene. The proportion of patients with cystic fibrosis in the population is increasing, as is their average life expectancy, which today also varies from 10 years (Latin American countries) to 40 years (USA, Europe), and forecasts of the life expectancy of cystic fibrosis patients born after 2000 look quite realistic – 50 years or more [2, 296-306; 3, 462-475].

As of 2025, 156 children and 76 adult patients with cystic fibrosis have been registered in the Republic of Belarus.

Due to a genetic factor, disruption of the glandular cells of the mucous membrane of the respiratory tract, increased secretion viscosity in cystic fibrosis leads to conditions such as: ciliary dyskinesia, chronic inflammatory processes in the lungs, exocrine pancreatic insufficiency, hepatobiliary pathology and abnormally high electrolyte levels in sweat, as well as difficulty draining the nasal cavity and paranasal sinuses, colonization in they have pathogenic microflora [3, 462-475].

According to the literature and the results of clinical observations, most patients with cystic fibrosis experience chronic changes in their paranasal sinuses.

There is very little information on the epidemiology of chronic sinusitis with nasal polyps among pediatric patients. According to a number of authors, it is noted that polyposis in children occurs only in 0.1% of cases among all episodes of diagnosis of this disease. Scientific sources also indicate that children and adolescents make up no more than 2% of all patients with chronic

polypous sinusitis [1]. Most often, such patients develop polyps in the paranasal sinuses, which in most cases recur after polypotomy.

The pathogenesis of cystic fibrosis is closely related to the colonization of the respiratory tract by pathogenic microflora (Staphylococcus Aureus, Pseudomonas Aeruginosa, etc.). Given the frequent administration of systemic antibacterial therapy to patients with CF, an increase in drug resistance of infectious agents naturally occurs over time, as well as the addition of fungal infections. Therefore, the issue of choosing a combined treatment for chronic rhinosinitis in patients with cystic fibrosis remains relevant, taking into account the microbiological and biochemical composition of respiratory tract secretions in order to increase patients' life expectancy and improve its quality [4, 97-99].

The aim of the research was to assess the incidence of chronic rhinosinusitis in children with cystic fibrosis in the Republic of Belarus.

We conducted an analysis of up-to-date medical documentation and examinations of patients who were observed and treated at the Republican Center for Pediatric Pulmonology and Cystic Fibrosis on the basis of the 3rd City Children's Clinical Hospital in Minsk in 2021-2025.

The examination included a detailed collection of patient complaints (including from the words of the child's legal representative), anamnesis of life, anamnesis of the disease, an objective examination with a detailed assessment of the condition of the ENT organs, evaluation of computed tomography of the paranasal sinuses (ONP) or ONP radiography data, tympanometry, audiometry, smear on flora and antibacterial sensitivity from nasal cavities.

According to the registry of the Republic Center for Pediatric Pulmonology and Cystic Fibrosis, as of January 2025, 156 patients under the age of 18 are registered for cystic fibrosis. The regional distribution was as follows: 24 patients (15.4%) from Brest region, 28 (17.9%) from Vitebsk region, 20 (12.8%) from Gomel region, 15 (9.6%) from Grodno region, 16 (10.3%) from Mogilev region, 18 (11.5%) from Minsk region, 35 children (22.4%) he is registered in the city of Minsk.

Among all pediatric patients registered at the Republic Center for Pediatric Pulmonology and Cystic Fibrosis, 81 boys (51.9%) and 75 girls (48%).

The average age of the patients in the study group was 9.4 years. The patient registry includes 4 patients (2.6%) of infant age (under 1 year), 22 patients (14.1%) of early childhood (from 1 to 3 years), 26 patients (16.7%) of preschool age (from 3 to 6 years), 23 patients (14.7%) of primary school age age group (from 7 to 10 years), 51 patients (32.7%) of adolescent age (from 11 to 15 years), 30 patients (19.2%) of adolescent age (from 15 to 17 years).

According to the data obtained, 31 patients were under the age of 5 years, 125 patients were in the group from 5 to 17 years. The average age of the first X-ray examination of the paranasal sinuses was 5.5 years. This is due to the fact that in this age group of patients with cystic fibrosis, the first clinical manifestations of the chronic hyperplastic process in the paranasal sinuses are

most often diagnosed, as well as the peculiarities of the development of these anatomical structures in children. The absolute majority of patients with cystic fibrosis showed signs of sinusitis during the first X-ray examination.

During the study, it was found out that all children in Minsk (35 patients) underwent an X-Ray examination of the paranasal sinuses. 11 patients (30%) showed signs of sinus polypous degeneration (which corresponds to the ICD-10 coding J33.1). The remaining patients were diagnosed with chronic hyperplastic rhinosinusitis.

In the course of the study, we came to the following conclusions:

1. Given the prevalence of pathology of the paranasal sinuses in patients with cystic fibrosis, it is relevant to study the clinical, biochemical, histological and genetic features of the course of the pathological process in the paranasal sinuses in this group of patients.

2. Taking into account the fact that the life expectancy of patients with cystic fibrosis has increased, the improvement of treatment methods and secondary medical prevention of chronic rhinosinusitis in patients with cystic fibrosis remains relevant.

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