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## OPTIMIZATION OF RESEARCH METHODS FOR PNEUMONIA IN CHILDREN WITH MYOCARDITIS

**ABSTRACT:** Pneumonia is one of the leading causes of death in children worldwide. Despite the research, the problem of myocarditis in children remains unresolved, which is associated with a variety of etiological factors, clinical, laboratory and instrumental manifestations of the disease [5]. The search for differential diagnostic criteria and additional methods of pathogenetic therapy of the disease continues. The article presents the results of clinical, radiological, laboratory examination of children with community-acquired pneumonia with myocarditis living in the Samarkand region, its place in the structure of bronchopulmonary pathology in children according to hospitalization data. The etiological structure of community-acquired pneumonia with myocarditis, the sensitivity of pneumotropic microflora to the main groups of antibiotics are shown. The obtained results emphasize the age-related features of the course of community-acquired pneumonia in children.

**Key words:** pneumonia, myocarditis, children, sputum examination, diagnostics.

**Prevalence.** According to the World Health Organization, acute myocarditis is an inflammatory lesion of the myocardium, confirmed histologically, immunologically and immunohistochemically. The issue of diagnosing acute myocarditis in children remains unresolved. [1,3,7]. The difficulties of diagnosing myocarditis in children lie in the variety of clinical manifestations and non-specificity of the symptoms of the disease, as well as the limited use of some research methods, in particular, endomyocardial biopsy and magnetic resonance imaging of the heart. Currently, the search for differential diagnostic algorithms for the disease continues. [2,4,8] According to modern literature, much attention is paid to non-invasive methods of diagnosing acute myocarditis in children, the course of which can be complicated by life-threatening cardiac rhythm and conduction disturbances: ventricular extrasystole, prolongation of the corrected QT interval, atrioventricular block. [6,9]. In turn, the occurrence of the above cardiac rhythm disturbances increases the risk of sudden cardiac death. Recommendations for the treatment of myocarditis in children often undergo changes due to the small number of multicenter and controlled studies in the pediatric population.

**Objective:** To evaluate the effectiveness of L-carnitine in acute obstructive bronchitis in children with myocarditis.

**Materials and methods.** The article describes anamnestic, clinical, laboratory and special examination methods in 56 children with community-acquired pneumonia aged 1 to 12 years who received inpatient treatment in the emergency pediatrics and pediatric intensive care department of the Samarkand branch of the Republican Scientific Center for Emergency Medical Care in 2020-2022. The results of treatment of 40 patients with myocarditis admitted to department II are presented. The patients were divided into 2 groups:

Group I — 28 children with community-acquired pneumonia without myocarditis, who received traditional therapy.

Group II — 28 patients with mild to moderate pneumonia against the background of myocarditis, who received a differentiated corrective treatment regimen in addition to traditional therapy.

All patients underwent clinical, laboratory and instrumental examinations, as well as special research methods.

The control group consisted of 20 practically healthy children.

The classification of myocarditis in children of the working group of the Association of Pediatric Cardiologists of Russia was used [7].

The criteria for exclusion from the study were patients with chronic (hereditary) diseases of the pulmonary-bronchial system and congenital heart defects.

Most patients are hospitalized within 1 to 4 days from the onset of the disease; after admission, all patients were prescribed the same basic etiotropic, pathogenetic and symptomatic therapy for pneumonia and myocarditis according to generally accepted treatment regimens [4].

**Results of the study.** Analysis of patients by gender showed that boys (58.9%) were sick more often than girls (41.1%).

Among the examined patients, the largest proportion was children aged 3-5 years - (54.0%), 1-2 years - (31.2%) and the least in older children - 22 (14.7%), these figures can be compared with the literature data on pneumonia incidence.

A study of 56 children with community-acquired pneumonia and myocarditis showed that the clinical signs in most cases correspond to the main manifestations of the disease, and the clinical picture of the disease is characterized not only by pathological changes in the lungs, but also manifests itself in the frequent involvement of other vital organs in the pathological process. The condition of hospitalized patients was assessed from moderate to severe. Moderate forms of the disease were less common and were mainly observed in patients with pneumonia without myocarditis, the severe course of the disease accounted for the majority of children. Severe cases were mostly hospitalized late with myocarditis and pneumonia.

A comparative analysis of clinical symptoms showed that an increase in body temperature was characteristic of 82.3% of patients, and in most cases the temperature was over 38.5°C. Complaints of fatigue and loss of appetite were noted mainly in children with pneumonia with myocarditis. Cyanosis of the skin and mucous membranes was observed more often in patients with pneumonia, so the frequency of perioral cyanosis was almost the same in the observed groups, while the frequency of acrocyanosis in pneumonia with myocarditis was 4 times higher. Patients are characterized by mild respiratory failure in the body, in connection with this, acute respiratory failure of the 1st degree is observed, while in patients with myocarditis, acute respiratory failure of the 2nd and 3rd degree is observed.

There were practically no differences in percussion and auscultation data during examination of the respiratory organs in the compared groups of patients.

Pneumonia in children manifests itself not only as respiratory, but also as cardiovascular insufficiency, the cause of which is a pathogenetically determined circulatory disorder, an overload of blood circulation in the lungs that occurs when organs are damaged.

Analysis of the frequency of development of clinical signs reflecting the state of the cardiovascular system showed that in the clinical picture of pneumonia in children, muffled heart sounds are heard during auscultation of the heart, in 26.7% of cases - tachycardia, in 3.3% of cases - bradycardia, and in 10.0% of cases, an expansion of the borders of the heart was detected. The data in the group of patients with myocarditis showed that tachycardia increased by 2.7 times, bradycardia by 2.8 times, arrhythmia by 3.4 times, expansion of the heart borders by 4.9 times and systolic murmur by 2 times, heart tones were muffled. The frequency of heart failure was almost the same.

ECG examination of all patients revealed sinus tachycardia, sinus bradyarrhythmia - (6.7%), extrasystole - (7.3%), incomplete block was detected. A decrease in the amplitude of the QRS complex was noted in 12 (8.0%) and 23 (15.3%) patients with right bundle branch block. When analyzing the frequency of the above ECG changes depending on the nosological form of the disease (in patients with community-acquired pneumonia and patients with myocarditis), a significant difference was found in almost all the studied indicators.

**Discussion of results.** The prognosis of myocarditis in children depends not only on clinical manifestations, but also on etiopathogenetic factors. The criteria for recovery from carditis are: normalization of cardiac volume, absence of heart failure, restoration of ExoCG parameters, normalization of laboratory parameters and absence of cardiac-specific signs. On average, treatment of acute myocarditis lasts from 1 to 3 months. Due to the variety of clinical signs, acute myocarditis should be included in the differential diagnostic algorithm for any cardiac pathology in children. Today, ongoing efforts are needed to develop targeted treatment methods to prevent short-term and long-term consequences of this disease.

**Conclusion.** Thus, in patients with myocarditis, the frequency of sinus tachycardia decreased by 3.4 times, sinus arrhythmia by 2 times, extrasystole decreased by 11.7%, which was not observed in the group of patients with CP, respectively. Determination of the significance of electrocardiographic indicators in patients with myocarditis compared to pneumonia revealed a number of indicators with varying degrees of reliability.

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