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CLINICAL AND INSTRUMENTAL CHARACTERISTICS OF MYOCARDITIS IN CHILDREN

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Relevance. Myocarditis is characterized as an inflammation of the cardiac muscle, identified through specific histological and immunological criteria. Pediatric myocarditis represents a critical and complex inflammatory challenge within pediatric cardiology, characterized by a global incidence rate that fluctuates between 0.8 and 2.13 cases for every 100,000 children. Clinical manifestations often include dyspnea, tachycardia, and chest pain, frequently requiring hospital stays of about a week; however, nearly 23% of cases escalate to acute fulminant myocarditis, necessitating life-sustaining interventions like ECMO or mechanical ventilation.

Aim: to evaluate clinical, laboratory and instrumental findings in children with myocarditis and to assess their association with the prognosis.

Materials and methods. A total of 38 patients followed for myocarditis at the cardiological department of 2nd Minsk Children's hospital at the period of 2016-2024 years were enrolled. Boys and girls were equally affected. Age at onset varied significantly: from 1 month to 17 years with the median 48 months. Age at latest follow up visit also varied from 4 months to 17 years depending on age at onset, median age at most recent follow up was 65 months.

Results and their discussion. Clinical forms at presentation were infectious/postinfectious (34/38 - 90% of cases) acute (29/38) or subacute (5/38) myocarditis or congenital carditis in 4/38 (10%). Infectious agent was found only in 3 patients with acute myocarditis; in all the cases it was enteroviral infection (ELISA IgM+). Among 4 patients with congenital carditis congenital CMV infection was identified in one.

In majority of patients the disease manifested as arrhythmia on ECG. Ventricular extrasystoles (VES) were the most frequent finding, detected in 13/38; supraventricular extrasystoles were observed in 6/38 children (SVES); AV blocks (1st–3rd degree) – 9/38; sinus tachycardia; atrial flutter/fibrillation were least common. 2 out of 4 patients with congenital carditis had significant decline in EF, compared to only one patient out of 34 with acquired carditis. In 12 out of 38 children anti-inflammatory treatment with corticosteroids was given, mostly with high arrhythmia burden or inflammatory activity. There were responders (decreased number of VES significantly or recovered fully). But there were also children who progressed despite steroids use. Therefore, steroids may reduce arrhythmias in some patients with acute inflammation but do not prevent chronic myocardial dystrophy or abnormal conduction.

When analysing results of follow up we found that age and severity of manifestations influenced on prognosis. Infants (<1 year) with severe arrhythmias (VES >20%, complete AV block, atrial flutter) had higher risk of persistent arrhythmia despite steroids. Complete recovery (no symptoms, no arrhythmia) was found in nearly 30% of patients, which characterized by the age >5 years, mild to moderate course at onset, normal LVEF, no steroids, often no or low-grade ectopy initially. Persistent arrhythmia, compensated was stated in 50% of followed children not depending on age, who clinically had arrhythmic variant (especially SVES or VES >5%) and normal LVEF. Steroids didn't prevent persistence of arrhythmia.

Conclusions. Pediatric myocarditis is a heterogenous disease with variable age of onset and prognosis. Most frequent manifestations among patients of cardiological department were arrhythmias (VES, SVES) or abnormal conductivity (SA, AV block 1-3 grades). Marked decline in EF was noted in congenital carditis and was associated with high risk of dilated cardiomyopathy. Children older than 5 years of age with mild to moderate carditis had higher incidence of significant improvement or complete recovery. In contrast, in early onset (infants < 1 year old) with severe arrhythmias incidence of persisting arrhythmia was found even if treated with steroids.