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Features Of The Course Of Infective Endocarditis In Children

Rasulov Rasul Akromjon ogli
Zarmed University, Institute of Medicine and Bioengineering, Samarkand, Uzbekistan
Rakhmonov Farkhod Kholbayevich
Zarmed University, Institute of Medicine and Bioengineering, Samarkand, Uzbekistan
Bakhriyev Ilyos Salohiddinovich
Zarmed University, Institute of Medicine and Bioengineering, Samarkand, Uzbekistan

Abstract. Infective endocarditis (IE) is a relatively rare but severe cardiovascular disease in children, characterized by a complicated clinical course and a high risk of systemic complications. This scientific study analyzes the etiological factors, clinical manifestations, diagnostic features, and specific characteristics of primary and secondary forms of infective endocarditis in pediatric patients. The research was conducted on the basis of clinical data obtained from 40 children and adolescents diagnosed with primary and secondary infective endocarditis who were treated at the clinics of the Tashkent Pediatric Medical Institute during 2021–2022. Based on clinical, laboratory, and paraclinical examinations, the acute and subacute forms of infective endocarditis, functional changes in the cardiovascular system, and immunological complications were evaluated. The results demonstrated that infective endocarditis in children most frequently develops against the background of congenital and acquired heart defects, and the disease course is predominantly subacute in the majority of cases.

Keywords: infective endocarditis, children, ECG, echocardiography, heart defects, clinical course.

Introduction. In modern pediatrics and pediatric cardiology, infective endocarditis remains a significant clinical problem. This disease is characterized by infectious inflammation of the endocardium and heart valves and is associated with a severe clinical course, numerous systemic complications, and a high mortality rate [1]. Over recent years, notable changes have been observed in the epidemiological structure of infective endocarditis, including an increase in the number of invasive medical procedures, widespread implementation of cardiac surgical interventions, and a growing proportion of microorganisms resistant to antibacterial therapy, all of which contribute to an increased risk of the disease [2].

According to data from researchers in the Commonwealth of Independent States (CIS) and other countries, infective endocarditis in children most often develops in association with congenital heart defects, acquired valvular pathology, immunodeficiency states, and prolonged catheterization [3,4]. At the same time, the clinical presentation of infective endocarditis in pediatric patients is frequently nonspecific and polymorphic, which significantly complicates early diagnosis and timely initiation of appropriate therapy.

Aim of the Study. The aim of this study was to investigate the modern clinical course of infective endocarditis in children, to identify the main risk factors influencing its development, and to analyze the features of primary and secondary forms of the disease and their associated complications.

Materials and Methods. The study was conducted during 2021–2022 at the cardioreumatology department of the Tashkent Pediatric Medical Institute clinics. A total of

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40 children and adolescents diagnosed with primary and secondary infective endocarditis were included in the study. The age of the patients ranged from 3 to 17 years.

The research methods included clinical and anamnestic assessment, general and biochemical blood tests, urinalysis, electrocardiography, echocardiography, and chest radiography. Statistical analysis was performed using the Statistica 6.0 software package. The significance of differences between compared parameters was assessed using Student's t-test, and differences were considered statistically significant at $p<0.05$.

Results and Discussion. According to the obtained data, 28% of cases of primary infective endocarditis developed against the background of sepsis and were predominantly characterized by an acute course. In 21% of cases, infective endocarditis in children was associated with suppurative skin diseases, particularly furunculosis. In 14% of cases, the disease developed after the placement of an intravenous catheter, while in 7% of cases it occurred following dental procedures.

Secondary infective endocarditis was observed in 34% of cases in children with congenital heart defects and in 20% of cases as a complication of acquired heart defects. In 31% of patients, a history of primary infective endocarditis was documented. In 15% of cases included in the study, infective endocarditis developed after cardiac surgical interventions.

Based on clinical course, primary infective endocarditis presented as an acute form in 71% of cases and as a subacute form in 29% of cases. In contrast, secondary infective endocarditis predominantly demonstrated a subacute course, which was recorded in 64% of cases. Subacute forms were more frequently accompanied by renal involvement, joint lesions, and skin manifestations.

Electrocardiographic examination revealed disturbances in heart rhythm and conduction in children with primary infective endocarditis, including extrasystole and atrioventricular blocks. Echocardiographic findings confirmed the presence of vegetations on heart valves and various degrees of hemodynamic impairment.

Results. The findings of the study indicate that infective endocarditis in children most commonly develops in association with congenital and acquired heart defects, as well as invasive medical procedures. Primary infective endocarditis is more frequently characterized by an acute course, whereas secondary infective endocarditis predominantly follows a subacute course. Immunological complications play a significant role in aggravating the severity of the disease and negatively affecting prognosis.

Conclusion. Although infective endocarditis is relatively rare in the pediatric population, it remains a complex and potentially life-threatening condition. Congenital and acquired heart defects, invasive medical interventions, and immune status play a crucial role in the development of the disease. Secondary infective endocarditis often exhibits a subacute course and is associated with a relatively more favorable prognosis; however, the risk of complications remains high. Therefore, early diagnosis, enhanced preventive measures, and systematic follow-up are essential for improving outcomes in children with infective endocarditis.

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