

DILATED CARDIOMYOPATHY IN CHILDREN: MODERN DIAGNOSTIC AND TREATMENT STRATEGIES

Jalolov B.B

Department of Hospital Pediatrics, Andijan State Medical Institute, Uzbekistan.

Relevance. Pediatric dilated cardiomyopathy remains a leading cause of severe congestive heart failure and the most common indication for heart transplantation in childhood. While traditional guidelines provide a baseline for care, they frequently fall short due to the highly heterogeneous etiology and insidious onset of the disease. The significance of this research lies in evaluating modern, tailored diagnostic modalities, particularly early high-resolution echocardiography, and correlating them with contemporary, guideline-directed pharmacological strategies. Transitioning towards targeted neurohormonal blockade based on precise, early structural assessments aims to optimize left ventricular reverse remodeling, reduce life-threatening arrhythmias, and fundamentally improve the long-term prognosis for pediatric patients in regional healthcare settings.

Keywords: Pediatric cardiology, dilated cardiomyopathy, modern diagnostics, echocardiography, neurohormonal blockade, heart failure management, reverse remodeling.

Introduction. Dilated cardiomyopathy is characterized by left ventricular dilation and profound systolic dysfunction, frequently presenting late in its clinical course when compensatory mechanisms have exhausted. Existing clinical paradigms often rely on symptom severity, which lacks the predictive specificity needed to identify children at the highest risk of rapid structural deterioration. The primary objective of this study was to critically analyze the efficacy of modern diagnostic protocols coupled with aggressive, contemporary treatment strategies. This approach seeks to shift the management pathway from palliative symptom control to proactive disease modification, emphasizing early structural detection to facilitate timely and individualized therapeutic interventions before irreversible myocardial fibrosis occurs.

Methods. This research was conducted as a comprehensive prospective cohort study, observing forty-eight pediatric patients diagnosed and treated for dilated cardiomyopathy at the Andijan Regional Children's Multidisciplinary Medical Center. The inclusion criteria necessitated definitive echocardiographic confirmation of left ventricular dilation and impaired ejection fraction upon admission. The modern diagnostic approach prioritized early, high-resolution two-dimensional and Doppler echocardiography to categorize structural severity immediately. Treatment strategies were systematically applied based on current contemporary guidelines, utilizing carefully up-titrated angiotensin-converting enzyme inhibitors and beta-adrenergic receptor blockers. Statistical analysis evaluated the clinical outcomes, primarily focusing on the rate of complete functional recovery, echocardiographic improvements, and overall survival, comparing early intervention groups against established historical disease trajectories [1].

Results. The implementation of modern, early diagnostic screening combined with aggressive medical management resulted in substantial clinical improvements across the study cohort. Patients diagnosed rapidly and treated with immediate neurohormonal blockade exhibited a significant increase in the mean left ventricular ejection fraction and a corresponding reduction in end-diastolic dimensions at follow-up evaluations. The data revealed that timely pharmacological intervention, guided by precise echocardiographic tracking, successfully induced partial or complete reverse remodeling in a critical subset of patients. Furthermore, this modern treatment strategy significantly lowered the incidence of acute decompensation episodes requiring intensive care readmission, confirming that contemporary protocols better align with the specific hemodynamic needs of the failing pediatric heart [2].

Scottish International Conference on Multidisciplinary Research and Innovation – SICMRI 2026

Discussion. The evidence gathered in this cohort underscores the transformative necessity of modern diagnostic and treatment frameworks in pediatric dilated cardiomyopathy. Relying purely on clinical symptomatology is inadequate, as the subclinical structural decline requires proactive imaging to secure a viable therapeutic window. By integrating advanced echocardiographic screening into standard pediatric practice, clinicians can successfully halt the progression of myocardial damage, which perfectly aligns with global directives for proactive cardiovascular care [3]. While this study establishes a strong foundation for contemporary management in the Andijan region, future multicenter trials incorporating advanced molecular genetic diagnostics are essential to further refine these targeted therapeutic pathways and push closer to the ultimate goal of precision pediatric cardiology.

References

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