

22nd WORLD CARDIOLOGY CONFERENCE

December 11-12, 2017 | Rome, Italy

Prediction and prevention of silent cardiac insult in systemic diseases in pediatrics

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Background: New echocardiography imaging modalities like tissue doppler echocardiography, speckling tracking imaging, and real-time 3-dimensional echocardiography offer new methods to predict early asymptomatic myocardial insult in extracardiac systemic diseases. Oxidative stress plays a critical role in the development of cardiomyopathy secondary to systemic diseases. Antioxidant drugs as carvedilol and alpha lipoic acid may have a role as cardioprotective agents.

Objective: This presentation aimed to delineate the feasibility of recent echo technique in the detection of asymptomatic myocardial dysfunction in systemic diseases and explore the role of some antioxidant drugs in the prevention of these insult.

Subjects & Methods: Group of systemic diseases: (Type 1DM, Bronchial asthma, acute lymphoblastic leukemia, thalassemia, sickle cell anemia, iron deficiency anemia, chronic liver diseases, protein energy malnutrition, critically ill children, severe motor and intellectual disabilities, neonatal sepsis, and infant of diabetic mother). All studied patients were subjected to a full medical history, thorough clinical examination, conventional doppler echocardiography as well as tissue doppler imaging, Speckling tracking and real time 3-dimensional echocardiography (3D Strain). Alpha lipoic acid was used for prevention of diabetic cardiomyopathy and carvedilol has used for prevention of Adriamycin induced cardiomyopathy in children with acute lymphoblastic leukemia.

Conclusion: The use of newer echocardiographic techniques, including tissue Doppler, speckling tracking, and RT3DE, showed great potential benefits in the detection of silent cardiac disorders and antioxidant drugs (alpha lipoic acid and carvedilol) had a significant role in the prevention of this cardiac dysfunction.

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