

Central Vascular Function and Relaxibility in Beta-thalassemia Major Patients vs. Sickle Cell Anemia Patients by Abdominal Aorta and Aortic Root Speckle Tracking Echocardiography

Authors : Gehan Hussein, Hala Agha, Rasha Abdelraof, Marina George, Antoine Fakhri

Abstract : Background: β -Thalassemia major (TM) and sickle cell disease (SCD) are inherited hemoglobin disorders resulting in chronic hemolytic anemia. Cardiovascular involvement is an important cause of morbidity and mortality in these groups of patients. The narrow border is between overt myocardial dysfunction and clinically silent left ventricular (LV) and / or right ventricular (RV) dysfunction in those patients. 3 D Speckle tracking echocardiography (3D STE) is a novel method for the detection of subclinical myocardial involvement. We aimed to study myocardial affection in SCD and TM using 3D STE, comparing it with conventional echocardiography, correlate it with serum ferritin level and lactate dehydrogenase (LDH). Methodology: Thirty SCD and thirty β TM patients, age range 4-18 years, were compared to 30 healthy age and sex matched control group. Cases were subjected to clinical examination, laboratory measurement of hemoglobin level, serum ferritin, and LDH. Transthoracic color Doppler echocardiography, 3D STE, tissue Doppler echocardiography, and aortic speckle tracking were performed. Results: significant reduction in global longitudinal strain (GLS), global circumferential strain (GCS), and global area strain (GAS) in SCD and TM than control (P value <0.001) there was significantly lower aortic speckle tracking in patients with TM and SCD than control (P value < 0.001). LDH was significantly higher in SCD than both TM and control and it correlated significantly positive mitral inflow E, (p value:0.022 and 0.072. r: 0.416 and -0.333 respectively) lateral E/E' (p value.<0.001and 0.818. r. 0.618 and -0. 044.respectively) and septal E/E' (p value 0.007 and 0.753& r value 0.485 and -0.060 respectively) in SCD but not TM and significant negative correlation between LDH and aortic root speckle tracking (value 0.681& r. -0.078.). The potential diagnostic accuracy of LDH in predicting vascular dysfunction as represented by aortic root GCS with a sensitivity 74% and aortic root GCS was predictive of LV dysfunction in SCD patients with sensitivity 100% Conclusion: 3D STE LV and RV systolic dysfunction in spite of their normal values by conventional echocardiography. SCD showed significantly lower right ventricular dysfunction and aortic root GCS than TM and control. LDH can be used to screen patients for cardiac dysfunction in SCD, not in TM

Keywords : thalassemia major, sickle cell disease, 3d speckle tracking echocardiography, LDH

Conference Title : ICGPPHD 2022 : International Conference on General Pediatrics and Pediatric Heart Disorders

Conference Location : Madrid, Spain

Conference Dates : March 21-22, 2022