

Assessment of left ventricular functions with strain and strain rate echocardiography in children after acute period of Kawasaki disease

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Introduction: Kawasaki disease is a vasculitis of childhood that is characterized by fever, cervical lymphadenopathy, rash, erythema of the lips and oral mucosa, changes in extremities and bilateral nonexudative conjunctivitis. Coronary aneurysms or ectasia develop in 15% to 25% of untreated children. Patients with coronary artery abnormalities may lead to cardiovascular morbidity and mortality after the disease. The aim of this study is to assess myocardial deformation leading to subclinical or asymptomatic myocardial dysfunction, by 2D strain echocardiography after acute phase of Kawasaki disease.

Methods: Our study included 30 patients after acute phase of Kawasaki disease and 30 age and sex matched healthy controls. In addition to conventional echocardiographic methods, tissue Doppler, 2D strain and strain rate imagings were performed to assess left ventricular functions. Statistical analysis was evaluated by using the T-Student's test, Chi-square test and and Pearson correlation.

Results: The mean follow-up time was $3.55\pm 2.20(1-8.15)$ years. The mean age was 5.86 ± 2.46 years in patients with Kawasaki disease and 6.11 ± 2.57 years in the control group. There were no significant differences between two groups according to conventional echocardiography, tissue Doppler imaging and 2D strain-strain rate echocardiographic methods. The follow-up time had a positive correlation between global four, three chamber and global longitudinal left ventricular strain values. We found a significant positive correlation between global four chamber longitudinal strain values and erythrocyte sedimentation rate, but a negative correlation between global four chamber longitudinal strain values and hemoglobin values. Also, ejection fraction had a significant positive correlation between serum albumin values but had a negative correlation between erythrocyte sedimentation rate.

Conclusion: Strain values showed variability with the follow-up times which indicate that Kawasaki disease might cause left ventricular dysfunction after acute period of disease, either with coronary artery abnormalities or not. 2D strain echocardiography is a useful tool to define later phase cardiac evaluation of Kawasaki disease, especially in which that conventional methods can not present a more detailed analysis on global and regional myocardial function.