

Assessment of left ventricular functions with Tissue Doppler, Strain and Strain Rate Echocardiography in children with Juvenile Idiopathic Arthritis: An Observational Study

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Objective: In Juvenile idiopathic arthritis (JIA) cardiac involvement is usually silent without typical symptoms. The purpose of this study was to assess left ventricular functions with tissue Doppler echocardiography (TDE), strain and strain rate in children with JIA.

Methods: Our study was designed as cross-sectional study. Thirty pediatric patients with JRA and 30 age- and sex-matched healthy controls were studied. In addition to standard echocardiographic methods, tissue Doppler, strain and strain rate were performed to assess left ventricular functions in all participants. The means of variables that did not distributed normally were compared with "Mann-Whitney U" test.

Results: In patients with JIA, E' values of mid and apical regions of left ventricular lateral wall were significantly lower than those of the controls (15.76±3.24 cm/s vs 17.91±3.29 cm/s, 11.10±2.96 cm/s vs 12.64±2.42 cm/s, p<0,05). In longitudinal strain reflecting left ventricular regional systolic functions, apical-lateral, basal and mid-septum peak S values, lateral peak S values in circumferential strain (-17.30±6.22 vs -21.97±4,32, -18.23±4.62 vs -21.53±2.69, -20.35±3.75 vs -22.75±3.50, -9.68±7.12 vs -13.70±6.81, p<0.05, r:0.42, 0.41, 0.42), in longitudinal strain reflecting diastolic functions, apical-lateral, mid-lateral, apical-septum, mid-septum peak E values (2.22±1.00 vs 3.17±0.87, 1.62±0.84 vs 2.15±0.72, 2.51±0.76 vs 3.31±0.87, 1.99±0.64 vs 2.47±0.57, p<0.05, r:-0.39,-0.55,-0.43) and in circumferential strain lateral and posterior peak E values (1.32±0.83 vs 1.88±0.94, 1.31±0.71 vs 1.85±0.91, p<0.05, r:-0.33, -0.22) were significantly lower than those of the controls.

Conclusion: Although marked myocardial involvement was not detected with TDE in JIA patients with subclinical cardiac disease, regional impairments in left ventricular strain and strain rates were found.

Key words: Juvenile idiopathic arthritis, tissue Doppler echocardiography, strain, strain rate