

Evaluation of cardiac functions in preschool children with bronchopulmonary dysplasia by using 2D strain–strain rate echocardiography

Altun G. (1), Babaoglu K. (1), Kayabey O. (1), Oruc M. (2), Binnetoglu K. (1), Demirbas F. (1), Arisoy AE. (2)

1) Department of Pediatric Cardiology, Medical Faculty, Kocaeli University, Kocaeli, Turkey, 2) Department of Neonatology, Medical Faculty, Kocaeli University, Kocaeli, Turkey

Objective: The objective of this study was to determine the possibility of subclinic or asymptomatic myocardial dysfunction with strain echocardiography in the long-term follow-ups of the children with BPD.

Material and methods: The study population consisted of 32 healthy and 77 prematurely born children. Eighteen of the premature children included in the study had mild BPD, 17 had medium-severe BPD, 42 did not have BPD. The range of age was 3-6 years. Age and sex matched healthy children who were born at term and have no respiratory diseases are defined as the control group. Cardiac functions of all children were evaluated with conventional and strain echocardiographic methods.

Results: There were no differences between groups with conventional methods. The peak systolic strain values in the left ventricular (LV) lateral/mid-anterior obtained from apical 4-chamber view were found significantly lower in the group with BPD according to the control group ($p < 0.001$). The LV lateral apical strain values in the same view were significantly lower in the medium-severe BPD group ($p = 0.01$). However, the strain rate in the LV lateral-mid anterior segment was significantly lower obtained from apical 4-chamber view in the premature children independently from BPD. There was no significant difference between the groups in any segment of the right ventricle. The LV apical 4-chamber global longitudinal strain value was significantly lower in the medium-severe BPD group compared with the control group.

Conclusion: In our study, Although it cannot be detected any alteration in cardiac function with conventional methods, strain echocardiography revealed that cardiac functions affected in the children who were born with very low birth weights with BPD. Myocardial 2D strain echocardiography is important in the assessment of cardiac function of children with BPD.