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Evaluation of the aortic leaflet morphology, aortic dimentions, elastic properties of the ascending aorta and left ventricular diastolic functions in children with well-functioning bicuspid aortic valve

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Objective;To determine the relationship between aortic leaflet morphology and elastic properties and diastolic function in children with well functioning bicuspid aortic valve (BAV)
Methos; Aortic leaflet morphology, aortic dimension, elastic properties and diastolic functions were evaluated in 55 children with well-functioning BAV (mean ages; 9,06 years).Patients had a history of prior intervention, associated syndrome, congenital heart defects, moderate /severe aortic regurgitation or stenosis were excluded.
Patient were classified as two groups according to the aortic leaflet morphology; Group 1 consisted of patients had fusion between the right and noncoronary cusps (R-N), Group 2 consisted of patients had fusion between the right and left coronary cusp(R-L). Diastolic functions of the left ventricle were evaluated by conventional pulse wave Doppler and Tissue Doppler echocardiography. Aortic root (AR) and proxymal ascending aorta (AA) dimensions were expressed by z scores.
Dispensibility Index (DI) Strain and Strain Index(SI) of the ascending aorta were calculated according to previously reported formules.
Results; There was 25 patients in Grup 1 and 30 patients in Group 2. AA dilatation(z score > 2 or = 2) was common and occured in 26 of 55 cases (48%). 21 patient had a mild AA dilatation (z score > 2 and < 4) and 5 cases had a moderate AA dilatation (z score > 4). AR dilatation (z score > or =2) was seen only 3 cases and more common in group 2 than patient in group 1 (p< 0,05).
Patient in group 1 had more distensible and less stiff AA than patient in group 2 .(DI: 11+ 4,4 versus 8,0+ 3,4, p= 0,007, SI: 2,6+ 1,6 versus 3,6+ 1,9, p= 0,01)
Patient with dilated AA had lower DI and strain values than patients with normal sized AA. (Strain; 15,8+ 8 versus 20,9 + 7,7) (p<0,05 and p< 0,05))
There were no differences in the myocardial velocities with regard to aortic leaflet morphologies.
Elastic properties of AA were not related to myocardial diastolic functions in children with BAV
CONCLUSION; The aortic leaflet morphologies affect the elastic properties of AA, but not related to myocardial diastolic function in children with BAV.