P-68

Potential Added Value of Bidimensional Myocardial Strain in Prenatal Diagnosis of Aortic Coarctation

Fratta F.,, Di Salvo G., Ricci C.,Grasso A., Pignatiello M., Paolillo C., Sorrentino R., Russo M.G.
Pediatric Cardiology-Second University of naples
Monaldi Hospital
Napoli-Italy

Intoduction:Prenatal diagnosis of coarctation of the aorta (CoA) is difficult. . Strain (S) and strain rate (SR) imaging is a new non-invasive ultrasonic technique able to quantify regional myocardial deformation properties. It has a superior sensivity over that of standard echocardiography and myocardial velocity for non-invasive assessment of ventricular function. Aim of our study was to assess the ability of bidimensional myocardial S and SR analysis in prenatal diagnosis of CoA.
Methods: We studied 35 consecutive foetuses (mean gestation age 28± 4.9weeks) with RV and PA prevalence. In all foetuses we studied, left ventricle (LV) to RV ratio, Aortic (Ao) to PA ratio and average global peak systolic RV S and SR. RV prevalence and PA prevalence were defined as a ratio <5° percentile for gestational age. Normal value for S and SR were obtained comparing with normal value previously established by our group in 100 consecutive normal foetuses.
Results: Among 35 consecutive foetuses with RV and PA prevalence, 8 (22,8%) had CoA at echocardiographic evaluation in the neonatal period, 27 had no cardiac abnormalities at postnatal echocardiographic evaluation.
-LV/RV was not significantly lower in foetuses with CoA (mean value 0.68 vs 0.69; p= 0.13).
-Ao/Pa was significantly lower (mean value 0.60 vs 0.68; $p < 0.05$).
-LV/RV ratio inferior to 0.67 showed a sensitivity of 42% and a specificity of 72.9%.
-Ao/Pa ratio inferior to 0.68 showed a sensitivity of 68% and a specificity of 66.7%.
-Peak systolic RV S showed normal values (-24%±4) in the 27 foetuses with no CoA at post-natal evaluations, whereas it was significantly reduced in CoA group with (-15±3.7, $p<0.0001$), with a cut-off value of -18% (sensivity 85.7%, specificity 86.7% at ROC, Figure 1).
Conclusions: Precise diagnosis of CoA during fetal life remains difficult. Our preliminary data suggest that 2D-strain could be a helpful approach to improve the prenatal diagnose CoA.