

JCK Oral

JCK Oral 2 (II-JCKO2)

Fetal and Neonatal Cardiology

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Sat. Jul 8, 2017 9:20 AM - 10:10 AM ROOM 3 (Exhibition and Event Hall Room 3)

9:20 AM - 10:10 AM

[II-JCKO2-01] Sensitivity and positive predictive value of the fetal echocardiographic parameters to predict simple or complex coarctation of the aorta

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Objective: To assess the usefulness of the known echocardiographic parameters to identify fetal simple (S) or complex (C) coarctation of the aorta (CoA).

Methods: All fetuses without semilunar valve atresia or interrupted aortic arch were enrolled. The echocardiograms were retrospectively analyzed to assess the previously reported predictors: pulmonary valve / aortic valve diameter ratio (PV/AV) ≥ 1.6 , Z-score of the ascending aorta diameter (AA-Z) ≤ -1.5 (Gomez-Montes, 2013); Z-score of the isthmus diameter (IS-Z) < -2 , the isthmus to ductal ratio (IS/DA) < 0.74 , isthmus flow disturbance, visualization of the posterior shelf (shelf) (Matsui, 2008). If the fetuses had one or more predictors, they were considered as suspected CoA. The sensitivity, the specificity, and the positive predictive value (PPV) of the each parameter were calculated to predict the postnatal CoA.

Results: Among 513 fetus with normal heart structure (group S), 16 had suspected CoA, and 5 had the postnatally confirmed CoA. Among 153 fetuses with a major heart defect (group C), 22 had suspected CoA, and 17 had the postnatally confirmed CoA. All of the confirmed CoA had one or more predictors. No baby without the suspected CoA had postnatal CoA. In total, “suspected CoA” had 100%-sensitivity and 98%-specificity and PPV of 58% in this study. All parameters had high specificities (98-99%), but sensitivities of individual parameters were various (45.5-90.9%). In group S, while “suspected CoA” had high sensitivity/specificity (100%/97.8%), its PPV was low (31.3%). IS-Z had high sensitivity of 100% but low PPV of 41.7%. The shelf had 100%-PPV, but its sensitivity remained low at 60%. In contrast, “suspected CoA” in group C had high sensitivity (100%) and high PPV (77.3%). Individually, IS-Z and IS/DA had high sensitivities (88.2% and 94.1%) and high PPVs (83.3% and 84.2%), respectively.

Conclusion: Specificities/sensitivities of these parameters could be high by using them combined. They also can prenatally detect simple CoA while the improvement of the PPV needs to be pursued. In contrast, these predictors provided an accurate prenatal diagnosis of the complex CoA.