

reflecting a good fetal clinical status. In apnea, the pressure of intrathoracic organs on the fetal heart, mainly the non-expanded lungs, limits ventricular distensibility. Impedance to pulmonary venous flow to the left atrium is represented by the pulsatility index. To test the hypothesis that fetal pulmonary venous flow pulsatility index is lower during fetal respiratory movements than in apnea were our purpose.

Methods: Twenty-two normal fetuses of mothers without systemic disease were examined in apnea (controls) and in the presence of fetal respiratory movements (cases). Fetuses were examined by prenatal Doppler echocardiography with color flow mapping. The pulsatility index of the pulmonary vein was obtained placing the pulsed Doppler sample volume over the right upper or left lower pulmonary vein, and applying the formula [maximum velocity (systolic or diastolic)-pre-systolic velocity]/mean velocity.

Results: Mean gestational age was 28.9 ± 2.9 weeks. During fetal apnea, mean systolic, diastolic and pre-systolic velocities were, respectively, 0.35 ± 0.08 m/s, 0.26 ± 0.07 m/s and 0.09 ± 0.03 m/s. In the presence of fetal respiratory movements, mean systolic, diastolic and pre-systolic velocities were, respectively, 0.33 ± 0.1 m/s, 0.28 ± 0.08 m/s and 0.11 ± 0.04 m/s. Pulsatility index pulmonary vein in apnea was 1.25 ± 0.23 (1.69 to 0.82), and during fetal respiratory movements it was 0.97 ± 0.2 (1.53 to 0.61).

Conclusions: We showed a significant reduction in impedance of pulmonary venous flow, represented by pulmonary vein pulsatility index, during fetal respiratory movements, reflecting modifications of the left atrial dynamics and enhancement of left ventricular compliance.

OP02.04

Cardiac biometry and function in fetuses with intracardiac echogenic foci

J. L. Bartha, M. C. Facio, J. F. Avila, B. Hervias

Maternal and Fetal Medicine, University Hospital Puerta del Mar, Cadiz, Spain

Objectives: To evaluate cardiac biometry and function in fetuses with intracardiac echogenic foci (ICEF).

Methods: Sixty-one euploid fetuses having an ICEF were compared to 51 similarly aged normal fetuses which were recruited after having a normal 20 weeks scan. Two-dimensional fetal echocardiography was used to exclude a structural cardiac anomaly and to perform cardiac measurements: diastolic ventricular dimensions and aorta and pulmonary valves dimensions. Doppler fetal echocardiography measurements included: pulmonary arterial and aortic maximum systolic velocities and the ratio between E-wave (early ventricular filling) and A-wave (active atrial filling) peak velocities at the level of the mitral and tricuspid valves.

Results: The mean gestational age was 23.8 ± 2.2 weeks and 23.3 ± 4.1 for the ICEF and the control group respectively. ICEF was multiple in 5 cases (8.2%). There were no significant differences between the two groups in any of the analyzed variables.

Conclusions: There is no evidence suggesting either cardiac abnormality or impaired cardiac function in fetuses with ICEF.

OP02.05

The Necessity of fetal echocardiography with isolated 2-Vessel Cord as determined by a Targeted Ultrasound With Extended Cardiac Views

F. J. Martinez¹, C. Muller², T. B. Tressler¹, J. Forrester³

¹Maternal Fetal Medicine, Harrisburg Hospital-Pinnacle Health, Harrisburg, United States, ²Harrisburg Hospital-Pinnacle Health, Harrisburg, United States,

³Mathematics and Computer Science, Dickinson College, Carlisle, United States

Objectives: To determine whether fetal echocardiography is necessary when a targeted ultrasound evaluation including extended cardiac views (4-chamber view with outflow tracts and aortic arch views) (L2) reveals an isolated two-vessel cord (2VC) (no other physical/cardiac abnormalities).

Methods: Patients receiving an L2 were identified in our database for the finding of a 2VC. Inclusive criteria were: fetal echocardiogram (FE) performed, 2VC verified by physical exam or pathology of placenta, and determination of neonatal outcome for the presence of congenital structural cardiac defect by echocardiogram or normal physical exam.

Results: In this prospective cohort study there were 68 verified cases of 2VC from our database of 11,409 patients, giving an incidence of 0.6%. Criteria outlined in the methods section applied to 65 of these cases. The FE was evaluated for its ability to identify cardiac abnormalities in the presence of 2VC and estimates for its sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) were calculated. The FE estimates were: sensitivity = 0.875, specificity = 0.842, PPV = 0.438 and NPV = 0.980. In addition, an analysis was performed assuming only those cases in which an L2 showing additional physical/cardiac abnormalities would have been followed by an FE. The estimates based on this analysis were: sensitivity = 0.625, specificity = 0.965, PPV = 0.714 and NPV = 0.948. Confidence intervals of the NPV were determined for FE (0.8915, 0.9995) and L2 followed by FE (if L2 was abnormal) (0.8562, 0.9892).

Conclusions: Based on our findings, the negative predictive value of a targeted ultrasound with extended cardiac views performed for 2VC that did not reveal additional fetal abnormalities is comparable to fetal echocardiography for the detection of a congenital heart defect. This may negate the need to perform a fetal echocardiogram in those fetuses that have an apparent isolated 2VC prenatally.

OP02.06

Satisfactory visualization rates of standard cardiac views at 18–22 weeks gestation: A comparison of static 2-D and spatial temporal image correlation (STIC 4-D)

L. Cohen¹, S. Julien¹, N. Gotteiner², L. Fonseca¹, J. Dungan¹, W. Grobman¹, K. Mangers¹, L. D. Platt³

¹Ob-Gyn, Northwestern Medical Faculty Foundation, Chicago, United States, ²Pediatric Cardiology, Children's Memorial Hospital, Chicago, United States, ³Ob-Gyn, David Geffen School of Medicine, University of California, Los Angeles, United States

Objectives: To compare the percentage of time that all three standard cardiac views can be obtained satisfactorily with the two imaging techniques (2-D and STIC).

Methods: A prospective IRB approved study of 50 patients undergoing anatomic surveys at 18–22 weeks was performed. The study was performed using the Philips IU-22 and GE E-8 with fetal cardiac settings. The best images were chosen by the principal investigator and stored as jpegs and cine clips for outside review. The reviewers included one pediatric cardiologist and three MFM specialists. The reviewers were provided with static images of the 4-chamber, RVOT, and LVOT from the 2-D studies. They also received cines of these views extracted from the STIC volumes as well as a cine multi-slice taken at 3–4 mm cuts displaying all three views. The views were scored: 1) optimal; 2) normal-satisfactory for screening; 3) suboptimal-satisfactory for screening; 4) poor visualization; 5) not visualized. A score of three or better was required for all three views for an exam to be graded satisfactory for screening.

Findings- See Table 1. The four reviewers graded the all three 2-D exams outflow views satisfactory for screening 90 to 98% of the time. The 4-D orthogonal exams were scored satisfactory 54–80% of the time. The 4-D multi-slice scored satisfactorily 40–72% of the time. Using chi-square analysis the decrease in satisfactory screening