ISP-18-1 Changes of time-interval in the ventricular inflow patterns in fetal growth restriction

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[Objective] The aim of this study is to investigate, in growth-restricted fetuses (FGR), whether prenatal Doppler parameters are correlated with neonatal circulatory change. [Methods] This cross-sectional study included 310 normal fetuses aged 16 to 38 gestational weeks and 15 FGR fetuses aged 25 to 32 gestational weeks. FGR was defined as an estimated fetal weight below –2SD with an elevated umbilical artery pulsatility index above the 95th percentile. The time-interval between the peak of early ventricular filling wave and the peak of atrial contraction wave (EA-interval) in the ventricular inflow pattern was measured by Doppler methods. The EA-intervals were measured through tricuspid valve (TV-EA) and mitral valve (MV-EA). The data were obtained within one week before delivery in FGR group. Statistical analysis was performed using Z-score. [Results] In normal fetuses, positive correlation with gestational age was shown in MV-EA whereas there was no correlation in TV-EA (TV-EA: r=0.139, MV-EA: r=0.365). Compared with the normal controls, significant increases were observed in both EA intervals in FGR fetuses (TV-EA: p=0.007, MV-EA: p=0.003). [Conclusion] Physiological changes of EA-interval with advance of gestational age were shown in normal fetuses. Moreover, striking differences were shown in EA-intervals in FGR complicated with placental dysfunction.

ISP-18-2 Myocardial diastolic function with early diastolic intraventricular pressure difference in fetuses

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[Objective] Early diastolic intraventricular pressure difference (IVPD), which is a diastolic suction, has been known to be a useful marker to evaluate myocardial function in adult and children. There have been no studies on fetal IVPD. The purpose of this study was to determine the existence of IVPD during fetal stage and to validate the usefulness of the fetal IVPD. [Methods] This study was approved by ethics committees from the university. The study was conducted on sixty healthy pregnant women at 17-36 weeks of gestation. We collected the data such as E/A ratio, myocardial performance index (MPI), velocity time integral (VTI) and valve diameters to get fetal cardiac output (CO). Color-M-mode was used to calculate IVPD with MATLAB. [Results] The IVPD in the right (RV) and left (LV) ventricle significantly increased toward term (RV, LV: r=0.63, 0.71, p<0.001, respectively). Indeed the apical IVPD, but not basal IVPD, increased toward term. Both VTI was well correlated with the IVPD (p<0.001), which induced a linear correlation between the CO and the IVPD (p<0.001). Combined CO (p<0.001) and E/A ratio (p<0.05), but not left MPI demonstrated a good correlation with the IVPD. [Conclusion] Increased apical IVPD with gestation might imply the acquired diastolic suction with myocardial maturation. IVPD might be a novel index reflecting fetal myocardial function.

ISP-18-3 HDlive silhouette mode in diagnosis of fetal jejunal atresia

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[Objective] We present our first experience of using HDlive silhouette mode to construct images of two cases of jejunal atresia diagnosed in the third trimester of pregnancy. [Case series] In the first case, two-dimensional (2D) sonography revealed cystic dilatations in the upper region of fetal abdomen. HDlive silhouette mode clearly depicted panoramic ventral view of fetal gastrointestinal tract (GIT) showing the dilated stomach, different part of the dilated duodenum in addition to the atretic jejenum. Active peristalsis of the duodenum was evident. Diagnosis of jejunal atresia was ascertained after birth. In the second case, 2D sonography showed double bubble appearance of dilated stomach and duodenum. HDlive silhouette mode detected the small atretic jejenum. Moreover, spatial relationships between fetal GIT, and surrounding anatomical landmarks as spine and umbilical vein were demonstrated. Diagnosis of jejunal stenosis was confirmed postnatally. Every sonographic examination in this study was performed based on the consent of the patient. [Conclusion] HDlive silhouette mode provides more comprehensive, detailed view of different parts of fetal GIT that might be beneficial in diagnosing and differentiating cases of intestinal atresia.