

P177. Doppler studies in patients with chronic venous disease and prediction of neonatal hypoxia.

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Context: Venous Doppler flow measurements registered to allow for a more detailed analysis of the fetal circulatory and cardiac condition especially in the presence of abnormal arterial Doppler waveforms. Ductus venosus (DV) flow plays a fundamental role in fetal hemodynamics and could be helpful for assessing fetal hypoxemia during the third trimester of pregnancy.

Objective: Evaluate whether DV Doppler velocimetry might be a good diagnostic model for the prediction of neonatal hypoxia in patients with chronic venous insufficiency

Methods: This prospective observational study was conducted at 1st Minsk clinical hospital. The examinations were performed by one of the investigators using a real-time ultrasound machine «Siemens ACUSON X 500» (USA) connected to a convex linear 3.5-MHz vector transducer with pulsed and color Doppler options.

Patient(s): It included thirty-one high-risk pregnant patients in the third trimester with singleton pregnancies admitted because of diagnosed chronic venous disease and progressive placental dysfunction.

Intervention(s): Arterial or venous blood gas determinations, the umbilical artery pH was performed after delivery.

Main Outcome Measure(s): Adverse neonatal outcome was considered by neonatal hypoxia defined as Apgar score <7 at 5 min and neonatal acidosis defined as cord blood pH <7.25.

Results: The prevalence of adverse neonatal outcome was 54, 8% (n=17), in 14 cases the condition of newborns was reassuring. For the identification of patients who developed adverse neonatal outcomes the area under the ROC curve (AUC) was 0.87 for the resistance index (RI) of the DV (CI=0.76–1.01, p<0.001), the ventricular systole (S)/ventricular diastole (D) ratio and pulsatility index (PI) were not good parameters for prediction of neonatal asphyxia in this population. Analysis of the ROC curves of the umbilical artery (UA) was 0.81 (CI=0.64–0.96, p=0.003) indicated that the S/D ratio was reliable to predict hypoxia. The middle cerebral artery (MCA) S/D ratio was not reliable to predict hypoxia (AUC less than 62%, CI=0.382–0.847, p=0.354), PI was weak (AUC<64%, CI=0.432–0.886, p=0.204).

Conclusions: Abnormal DV blood velocity is more frequently recorded in high-risk pregnancies with placental dysfunction and chronic venous disease than UA or MCA blood velocities. DV RI appears to be a better predictor of perinatal outcome than MCA S/D ratio.