Uterine and umbilical artery Doppler combined with placental growth factor assays for placental function expertise in the assessment of fetal growth restriction

TO THE EDITORS: We read with great interest the article by Agrawal et al1 who assessed “the diagnostic performance of serum measurements of placental growth factor” in relation to placental pathologies. However, the objective of determining trajectories specific to different placental lesions according to Doppler analysis of the uterine artery flow (UtAD) in a wide variety of settings, is a challenge. Indeed, the use of angiogenic factor assays in clinical practice was rapidly spreading in the period between 2017 to 2021, from suspected preeclampsia to “any suspected risk of placental dysfunction (PD), hypertensive disorders of pregnancy, or fetal growth restriction (FGR)”. Because of this great variability—both in the clinical context and in the underlying placental disease—the large overlap of UtAD findings and/or placental growth factor values between identified placental pathologies, cannot allow diagnostic or prognostic conclusions clear enough to support decision-making.

In actuality, a strong prediction of the classic “physiologic changes” in the uteroplacental vessels and, in their absence, of the development of histologic features of maternal vascular malperfusion2 can be obtained with good accuracy using UtAD.2 Among 645 high-risk pregnancies, Li et al3 reported that the incidence of abnormal UtAD was found in 77.6%, and 73.9% were those who gave birth to a newborn whose birth-weight was less than the third percentile and among those who developed preeclampsia. The authors also showed that increasing UtAD impedance or bilateral notching closely correlates with adverse perinatal outcomes (P<0.0001).4 Seven fetal deaths occurred; in 5 of these cases, high pulsatility index and bilateral notching coexisted bilaterally at 23 to 24 weeks’ gestation after UtAD, of which in 3 cases, absent or reversed end-diastolic flow measurements in umbilical artery Doppler was associated with abnormal UtAD. In the setting of FGR and/or preeclampsia at <32 weeks, Herraiz et al5 have specified the respective roles and benefits of velocimetry and these biomarkers for the assessment of PD. In a series of high-risk patients with FGR at <32 weeks’ gestation, they reported that almost half of them developed preeclampsia, all of them with PlGF/sFlt-1 ratio >200 between 8 to 14 days before delivery, PlGF/sFlt-1 ≥655, and PlGF <50 pg/mL within the last 48 hours before delivery. After identifying placenta-related FGR through serial measurements of these biomarkers, this approach allows for more intensive maternal-fetal monitoring and optimizes the delivery dates of these very premature neonates, thanks to a timely prenatal corticosteroid treatment for fetal maturation and possible magnesium-sulfate therapy for neuroprotection.

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