Uterine and umbilical artery Doppler combined with PlGF assay for placental function

expertise in the assessment of fetal growth restriction

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We read with great interest the article by Agrawal et al (1), who assessed “the diagnostic performance of serum measurements of placental growth factor” (PlGF) 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 assay in clinical practice was rapidly spreading in the 2017-2021 period, from suspected preeclampsia to “any suspected risk of placental dysfunction (PD), hypertensive disorders of pregnancy, or fetal growth restriction (FGR)” (2). Because of this great variability both in the clinical context and in the underlying placental disease, the large overlap of UtAD findings/PlGF values between identified placental pathologies cannot allow diagnostic/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 malperfusion (1) can be obtained with a good accuracy using UtAD (2). Among 645 high-risk pregnant women, Li et al (3) reported that the incidence of abnormal UtAD was 77.6% and 73.9%, respectively, in women who gave birth to a newborn whose birth weight was less than the third percentile and among those who developed preeclampsia. These authors (3) also showed that increasing UtAD impedance/bilateral notching closely correlates with adverse perinatal outcome ($p < 0.0001$). Seven fetal deaths occurred, in five of these cases high pulsatility index and bilateral notching coexisted bilaterally at 23–24 weeks’ gestation UtAD, of which in three cases absent/or/reversed end-diastolic flow in umbilical artery Doppler was associated with abnormal UtAD. In the setting of FGR and/or preeclampsia < 32 weeks, Herraiz et al (4) have specified the respective roles and benefits of velocimetry, then these biomarkers for the assessment of PD. From a series of high-risk patients with FGR <32
weeks’ gestation, they reported that half developed preeclampsia, all of them with PlGF/sFlt-1 ratio > 200 from 8–14 days before delivery, PlGF/sFlt-1 ≥ 655 and PlGF <50pg/ml within the last 48 h before delivery. This approach, after identifying placenta-related FGR, allows through serial measurements of these biomarkers, for more intensive maternal-fetal monitoring, and optimizes the date of birth of these very premature neonates thanks to a timely prenatal corticosteroid treatment for fetal maturation and possible magnesium-sulfate therapy for neuroprotection.

REFERENCES


