sFlt-1/PlGF ratio, in pregnancies complicated by HDP and/or FGR, for prediction of maternal and perinatal complications

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Objective. Hypertensive disorders (HDP) and fetal growth restriction (FGR) are characterized by placental oxidative stress and angiogenic imbalance. We hypothesized that the sFlt-1/PlGF ratio could be a valid diagnostic tool for predicting adverse maternal and perinatal outcomes.

Materials and Methods. We recruited pregnant women affected by isolated FGR or HDP. Ultrasound data and sera samples were collected at the diagnosis. Patients were classified according to the occurrence of maternal (abruptio placenta, HELLP syndrome, severe preeclampsia) and perinatal complications (perinatal death, cord pH < 7.1 or BE > -12, Apgar score < 7 at 5th minute, and major neonatal complications). The survey was divided into an interpretative statistical analysis of the test population and a subsequent predictive phase.

Results. We recruited 350 consecutive singleton pregnancies and respectively, 81 and 90 cases developed maternal and perinatal complications. Patients developing complications at delivery had a significantly higher sFlt-1/PlGF ratio (236.1252.5) at recruitment than those who did not (44.170.3) (p < 0.001). Multivariate analysis showed that for each 10-unit increase in the sFlt-1/PlGF ratio the chance of developing maternal and perinatal complications increased by 8% (OR 1.008, 95%CI 1.005-1.010, p = 0.007) and by 6% (OR 1.006, 95%CI 1.004-1.009, p < 0.001) respectively. We constructed a predictive model with Sn 75%, Sp 88%, AUC 81% for maternal (p = 0.008) and Sn 81%, Sp 89%, AUC 85% for perinatal complications (p < 0.001).

Conclusions. Our analysis showed that the sFlt-1/PlGF ratio, in a high-risk population, proved to be a useful tool for predicting the onset of maternal and perinatal complications, weeks prior to delivery.