17th World Congress in Fetal Medicine

Neurobehavioral outcomes in a well-characterized cohort of pregnancies complicated by fetal growth restriction and/or preeclampsia

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Objective

Preeclampsia and fetal growth restriction (FGR) share a common placental etiology and being responsible for short and long-term consequences for the fetus. However, these pathologies could be exhibitedin several clinical phenotypes with different maternal and perinatal outcomes. The aim of this study was to describe neurobehavioral outcomes of newborns in a well-characterized cohort of pregnancies complicated by fetal growth restricted (FGR), preeclampsia (PE) or both (FGR&PE) as compared to uncomplicated pregnancies.

Methods

A prospective cohort study including 579 pregnancies, subdivided into different phenotypes: normotensive FGR defined by birth weight < 10th centile (n=200), PE with normally grown fetuses (n=11), PE & FGR (n=62), and 306 uncomplicated pregnancies. Neurobehaviour was evaluated in the neonatal period (at 40 weeks of corrected age) using the Neonatal Behavioral Assessment Scale (NBAS).

Results

As expected, cases with PE and/or FGR showed lower gestational age at delivery (controls mean 40(SD 1), FGR 38(2), PE 37(4), PE&FGR 34(3) weeks; P=0. 001), birthweight (controls 3240(570), FGR 2412(568), PE 2810(376), PE&FGR 1650(598); P=0. 01) and higher rate of cesarean section (controls 22%, FGR 32%, PE 45%, PE&FGR 66%; P=0. 03) with similar Apgar score and umbilical pH as compared to controls. Abnormal neurobehaviour could be observed in FGR cases but also in PE with normally grown fetuses, with worst autonomic regulation (controls 9. 6%, FGR 17. 3%, PE 40%, PE&FGR 25. 4%; P=0. 001) and motor disabilities (controls 5. 3%, FGR 10. 9%, PE 10%, PE&FGR 12. 5% ; P=0. 05) as compared to controls.

Conclusion

Both FGR and maternal PE –even with normal fetal growth- associate worst neurobehabioral outcomes during the neonatal period. Thus, identifying these at-risk babies may benefit from early-targeted educational interventions.