



## Response to “Letter to the Editor” by Federico Prefumo

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We thank Federico Prefumo and colleagues for their comments regarding our recently published study on the correlation between Doppler parameters and short-term variation with adverse perinatal outcome in low-risk fetuses! [1].

In their letter to the editor, they report the results of their prospective observational study on Doppler parameters and neonatal outcome. They included 48 appropriate for gestational age (AGA) fetuses delivered by scheduled Cesarean section at term and evaluated the correlation between maternal/fetal Doppler parameters and neonatal acid–base status at birth. The authors found that cerebroplacental ratio (CPR) provides a poor prediction of fetal oxygenation in healthy AGA fetuses.

They further speculated that events in labor might play a much greater role than pre-labor fetal oxygenation in the development of fetal distress in labor, and that acid–base status at birth might reflect placental perfusion, as they showed a significant negative correlation between mean uterine artery pulsatility index (PI), umbilical artery pH and umbilical vein pH and between the umbilical artery (UA) PI, arterial pH and venous pH whereas no correlation with acid–base status at birth was found for the CPR.

However, the methodology of our study was completely different: we retrospectively included 1008 singleton pregnancies with planned vaginal delivery, AGA-fetuses and available Doppler measurements of UA and middle cerebral artery (MCA) prior to delivery. We found that CPR was significantly associated with emergency cesarean delivery. A subgroup analysis revealed that in fetuses with low CPR (< 0.6765 Multiples of Median) the rate of emergency cesarean delivery and secondary cesarean delivery due to fetal distress were significantly higher compared to fetuses with normal CPR. The results of our study are in line with other studies. A prospective study by Prior et al. [2] showed that fetuses

with low CPR were more likely to be delivered by cesarean delivery due to fetal distress than those with a normal CPR.

Dall’Asta et al. [3] examined the association of CPR and adverse perinatal outcome assessed in early labor. In their study, 562 women with low-risk singleton pregnancies at term were included. Doppler parameters were performed in early labor. It was shown that cases with reduced CPR MoM were three times more likely to have operative intervention due to fetal distress than fetuses with normal CPR (16.7% vs 5.5%;  $p=0.004$ ). Moreover, cases with low CPR had significantly higher rates of cord arterial pH < 7.10 (9.2% vs 2.4%;  $p<0.01$ ).

As there are several studies showing an association between CPR and adverse perinatal outcome in low-risk fetuses we think that CPR could be a useful parameter to predict adverse perinatal outcome. However, we agree that the results of these studies might be biased by several possible events during labor!

### Compliance with ethical standards

**Conflict of interest** The authors report no conflict of interest.

### References

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