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P1-113 | Fetal heart rate responses over pregnancy predict infant mental and motor development during the first year of life

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Aims: A significant proportion of variation in infant and adult health outcomes and disease risk is attributable to developmental processes during fetal life. We recently found that fetal heart rate (FHR) response to a vibroacoustic stimulus (VAS) follows a distinct maturity pattern over gestation that is affected by placental corticotrophic-releasing hormone concentrations. The aim of the current study was to investigate the predictive quality of these FHR responses over gestation for infant development.

Study design: The FHR response to a startling VAS was assessed longitudinally at 26, 31 and 36 weeks of gestation. Sensors from a fetal monitor were placed on the mothers' abdomen and FHR was obtained during a resting period and after a startling VAS. The infants' mental and motor developmental status was assessed with the Bayley Scales of Infant Development at 6 and 12 months postpartum.

Subjects: 124 fetuses/infants born at term.

Outcome measures: Canonical correlation models were applied to predict mental and motor development at 6 and 12 months postpartum by the following FHR measures at each gestational age: baseline FHR 120 seconds pre VAS, post VAS maximum increase from baseline and the square root of the mean of the squared differences between adjacent RR intervals.

Results: Controlling for gestational age at birth, FHR measures over gestation accounted for 8 15% of variance in infants' mental and 12 18% of variance in infants' motor development over the first postnatal year.

Conclusions: FHR measures reflect fetal maturity during gestation and predict mental and motor development postnatally.