Maternal Emotions Can Affect Neonatal Physiology

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BOSTON — Maternal cortisol levels dur- ing pregnancy are highly correlated with newborn cortisol in the first days of life, a study has shown. Additionally, both prenatal anxiety and postpartum depression can significantly predict newborn cortisol levels, according to Raquel Cost, a doctoral candidate at the University of Minho in Braga, Portugal.

These findings from a prospective inves- tigation of 56 mother-child pairs support the hypothesis that a woman’s emotional state both during pregnancy and after child delivery can have a significant impact on the newborn’s physiology. Ms. Costa said in a poster presentation at a meeting of the Society for Research in Child Development.

As part of the current study were enrolled during their third trimester of pregnancy and had none of multiple gestations. Upon enrollment through 48 hours after childbirth, each woman provided 24 urine samples to measure cortisol levels, as well as blood samples to measure oxytocin levels. For assessment of fetal physiology at both times in utero, each woman completed the 10-item Edinburgh Postnatal Depression Scale (EPDS) and the State-Trait Anxiety Inventory (STAI). Newborn cortisol levels were measured via urine sample within 2 days of birth.

Approximately 30% of the mothers screened positive for depression during pregnancy, and 17% screened positive after childbirth, Ms. Costa said. With respect to anxiety, positive screens were observed in 20% of the women prior to giving birth and 20% after childbirth, she said.

Measurement of maternal cortisol showed that approximately 53% of the women had levels higher than the normative range of 20-90 mcg/ml 24 hours during pregnancy, and 17% had levels higher than the normative range after childbirth.

Regarding oxytocin measurements, pri- or to childbirth 12% of the women had levels higher than the group’s mean. Follow- ing childbirth, 49% of the mothers had oxytocin levels higher than the group’s postpartum mean.

In a test for independent samples to an- alyze differences in newborn’s cortisol lev- els according to mothers’ levels of recent anxiety, mood, anxiety, and cortisol lev- els before and after childbirth, there was no significant dif- ference in the newborn’s cortisol levels. Analysis of the data is ongoing in the other task and will be in additional samples.

Ms. Costa stated. However, linear re- gression analysis of the neonatal cortisol levels with the maternal levels of anxiety, mood, oxytocin, and cortisol levels both during pregnancy and post partum “suggested that maternal anx- iety during pregnancy and depression af- ter childbirth were predictive of neonatal cortisol levels,” she said. Ms. Costa neither maternal cortisol nor oxytocin levels were predictive of newborn cortisol levels in the regression analyses, she noted.

Together with the results of earlier stud- ies linking elevated prenatal cortisol levels in mothers to stressors and low birth weight in newborns, and those as- sociating prenatal stress with behavioral problems and motor / cognitive deficits in newborns, the findings of the current study highlight the importance of assess- ing maternal emotional status and stress hormone levels during pregnancy, and implementing early intervention strategies when warranted, Ms. Costa said.

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Ms. Costa reported.

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