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THE PSYCHOBIOLOGY OF STRESS IN HUMAN PREGNANCY*

Wadhwa, P. D.; Dunkel-Schetter, C.; Chicz-DeMet, A.; Sandman, C. A.

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Abstracts of Papers for 1999 Annual Meeting: Paper Session: Psychobiological Processes During Pregnancy and the Post-Partum Period

University of Kentucky College of Medicine, Lexington, KY.

The American Psychosomatic Society has accepted the following abstracts for presentations at the APS 57th Annual Scientific Meeting to be held March 17-20, 1999 in Vancouver, B.C., Canada. For registration information contact the APS National Office at 703-556-9222.

We present a psychobiological model of human pregnancy that proposes maternal stress exerts significant influences on fetal development and gestational outcomes, in part, via its effects on the maternal-placental-fetal neuroendocrine axis, and that these effects are outcome-specific and are modulated by the nature, timing and duration of stress.

Components of this model were tested in prospective, longitudinal studies of over 375 mother-fetus/infant dyads. Structured interviews were conducted to assess prenatal stress and related constructs. Maternal and cord plasma samples were collected for assays of stress hormones, including CRH, ACTH, and cortisol. Fetal assessments included biometry and umbilical doppler flow velocimetry. An experimental paradigm was developed to quantify fetal arousal, learning and habituation, assessed by fetal heart rate responses to a series of vibroacoustic stimuli.

To date, findings indicate that a) adjusting for biomedical risk, maternal psychosocial stress significantly predicted premature birth; b) despite the pregnancy-induced activation of the neuroendocrine axis, maternal psychosocial factors, including stress and social support, were significantly correlated with maternal stress hormones levels; c) the application of a mild behavioral stressor produced significant physiological stress responses in pregnant women at varying gestational ages; d) maternal pituitary-adrenal stress hormones modulated the activity of placental CRH in-vivo; and e) placental CRH levels during pregnancy significantly predicted fetal growth restriction and preterm birth.

Together, these studies provide important preliminary evidence to support the above psychobiological model. Implications and future directions are discussed.

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