

NEUROSTEROIDS AND STEROID HORMONES IN PRETERM BIRTH. GB Mayne (MA, ANTH), PE DeWitt, B Ringham, AG Warrener, U Christians, D Dabelea, and KJ Hurt. Department of Anthropology, University of Colorado, Denver, CO and Divisions of Maternal Fetal Medicine and Reproductive Sciences, Department of Obstetrics and Gynecology, University of Colorado Anschutz Medical Campus, Aurora, CO.

Chronic stress is a risk factor for preterm birth, however objective measures of stress in pregnancy remain elusive. Neurosteroids such as allopregnanolone (ALLO) play important roles in stress physiology. Low stress-responsive ALLO is associated with perinatal depression in humans, and animal models with low ALLO exhibit reduced gestational length. We hypothesized women who deliver preterm have lower maternal ALLO compared with women who deliver at full term. We evaluated maternal serum ALLO and five other steroid hormones in gestation and investigated associations with preterm birth. We performed a nested case-control study using biobank serum samples. We included healthy women with singleton pregnancy and excluded mothers with major medical illness, preeclampsia, or chronic hypertension. We matched preterm cases with term controls (1:1) by gestational age (GA) at first blood sample and least difference in time between samples (N=27 per group). We used a new high-performance liquid chromatography-tandem mass spectrometry assay for ALLO and five other steroids. We used T-test, linear and logistic regression as statistical tests. High maternal serum ALLO late in pregnancy was inversely associated with odds of preterm birth (at 32 weeks' gestation OR=0.94, 95% CI:0.92–0.97; $P<0.001$). We found no significant difference in mean maternal serum ALLO in direct comparison of preterm and term groups. Higher early pregnancy cortisol, cortisone and pregnanolone associated with increased odds of preterm birth. The clinical utility of these potential maternal steroid biomarkers deserves further evaluation.