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EFFECTS OF EARLY LIFE ADVERSITY ON CORTISOL/SALIVARY ALPHA-AMYLASE ASYMMETRY IN FREE-RANGING JUVENILE RHESUS MACAQUES

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Abstract

Adverse early life experience affects physiological and behavioral development, leading to differences in life history outcomes. One key component is the relationship between the developing sympathetic nervous system (SNS) and hypothalamic-pituitary-adrenal (HPA) axis. Recent studies have suggested an association between early life adversity (ELA) and asymmetry in cortisol (a measure of HPA axis activation) and salivary alpha-amylase (a correlate of SNS activation) responses to stress among human children, but to my knowledge there have been no studies of such a relationship in nonhumans. Here, I investigate the responses of these analytes to non-stressful and stressful events in a cohort of free-ranging juvenile rhesus macaques (*Macaca mulatta)* on Cayo Santiago, Puerto Rico. Behavioral data collected on maternal rejection and abuse during each juvenile's first three months of life was used to determine individual ELA categories. Saliva samples were collected from juveniles during both "low stress" and "high stress" states. High ELA juveniles were found to exhibit blunted cortisol responsiveness during "high stress" situations compared to moderate and low ELA juveniles. These juveniles were also found to have the highest "low stress" cortisol levels of the three groups. Further, sAA output was higher overall during "high stress" states than during "low stress" states, but did not significantly differ among the three ELA categories. Cortisol and sAA values were positively correlated among juveniles in the low ELA category, suggesting symmetry, but were not positively correlated among juveniles of high and moderate ELA categories, suggesting asymmetry. These findings suggest dysregulation of the stress response among juveniles maltreated during infancy: specifically, attenuated cortisol coupled with typical sAA reactivity characterize the stress response profiles of juveniles exposed to higher rates of ELA during the first three months of life.