Why do we respond so differently? Reviewing determinants of human salivary cortisol responses to challenge.

Kudielka BM, **Hellhammer DH**, **Wüst S**.

Jacobs Center on Lifelong Learning and Institutional Development, Jacobs University Bremen, Campus Ring 1, 28759 Bremen, Germany; Psychology, Department of Clinical and Physiological Psychology, University of Trier, Johanniterufer 15, 54290 Trier, Germany.

Psychoneuroendocrinology. 2009 Jan;34(1):2-18.

Stress and stress-related health impairments are major problems in human life and elucidating the biological pathways linking stress and disease is of substantial importance. However, the identification of mechanisms underlying a dysregulation of major components of the stress response system is, particularly in humans, a very challenging task. Salivary cortisol responses to diverse acute challenge paradigms show large intra- and interindividual variability. In order to uncover mechanisms mediating stress-related disorders and to potentially develop new therapeutic strategies, an extensive phenotyping of HPA axis stress responses is essential. Such a research agenda depends on substantial knowledge of moderating and intervening variables that affect cortisol responses to different stressors and stimuli. The aim of this report is, therefore, to provide a comprehensive summary of important determinants of, in particular, human salivary cortisol responses to different kinds of laboratory stimuli including acute psychosocial stress as well as pharmacological provocation procedures. This overview demonstrates the role of age and gender, endogenous and exogenous sex steroid levels, pregnancy, lactation and breast-feeding, smoking, coffee and alcohol consumption as well as dietary energy supply in salivary cortisol responses to acute stress. Furthermore, it briefly summarizes current knowledge of the role of genetic factors and methodological issues in terms of habituation to repeated psychosocial stress exposures and time of testing as well as psychological factors, that have been shown to be associated with salivary cortisol responses like early life experiences, social factors, psychological interventions, personality as well as acute subjective-psychological stress responses and finally states of chronic stress and psychopathology.

PMID: 19041187 [PubMed - in process]

Related Articles

- ReviewPsychobiology of the acute stress response and its relationship to the psychobiology of post-traumatic stress disorder. [Psychiatr Clin North Am. 2002]
- HPA axis responses to laboratory psychosocial stress in healthy elderly adults, younger adults, and children: impact of age and gender. [Psychoneuroendocrinology. 2004]
- Acute HPA axis responses, heart rate, and mood changes to psychosocial stress (TSST) in humans at different times of day. [Psychoneuroendocrinology. 2004]
- Psychological determinants of the cortisol stress response: the role of anticipatory cognitive appraisal. [Psychoneuroendocrinology. 2005]
- ReviewThe effects of sex and hormonal status on the physiological response to

acute psychosocial stress. [Psychoneuroendocrinology. 2006]