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Short communication

Association between subjective and cortisol stress response depends on the menstrual cycle phase

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Summary

The relation between the physiologic and subjective stress responses is inconsistently reported across studies. Menstrual cycle phases variations have been found to influence the psychophysiological stress response; however little is known about possible cycle phase differences in the relationship between physiological and subjective stress responses. This study examined the effect of menstrual cycle phase in the association between subjective stress and physiological response. Forty-five women in either the follicular ($n=21$) or the luteal phase of the menstrual cycle were exposed to a psychosocial stress task. Salivary cortisol, cardiovascular, and subjective stress were assessed throughout the experiment. Results revealed a significant group difference in the association between peak levels of cortisol and post task subjective stress. In women in the follicular phase a negative association was observed ($r^2=0.199$, $p=0.04$), while this relation was positive in the group of women in the luteal phase ($r^2=0.227$, $p=0.02$). These findings suggest a possible role of sex hormones in modulating the cortisol stress response function in emotion regulation.

Section snippets

Participants

Forty-five women, (age 21.4 ± 2.46) were recruited via classified ads at McGill University. Exclusion criteria for the study were medication use, prior or present neurological or psychiatric illness, smoking, body mass index ≥ 27 or ≤ 18 , substance abuse, amenorrhea and/or use of contraceptive medication during the past 6 months and menstrual cycle length >25 or <35 . Menstrual cycle phase was assessed based on self-report measures. All subjects were questioned twice in regard to their menstrual...

Results

There were 24 women in the luteal phase and 21 in the follicular phase. No group difference was observed in age, BMI, testing time and cycle length (all $F \leq 3.4$, $p \geq 0.08$; see Supplementary Table 1). Measures of cortisol were not normally distributed and log-transformed.

Analysis of variances revealed a main effect of time over the cortisol levels ($F(1.851,76.6)=12.829$, $p < 0.001$; GG corrected; see Fig. 1). Pair-wise comparisons demonstrated that cortisol levels at 20min following the task onset (+20...

Discussion

In the current study, we demonstrated that the association between the subjective and neuroendocrine stress responses significantly varies across the menstrual cycle, with no such effect apparent for the cardiovascular stress response. This finding underlies the complex effect of menstrual cycle phase on the psychophysiological stress response. The current results more generally demonstrate the role of modulating factors in influencing the relation between the emotional and physiological stress ...

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Conflict of interest statement

None declared....

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