

Luteal serum BDNF and HSP70 levels in women with premenstrual dysphoric disorder

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Abstract Premenstrual dysphoric disorder (PMDD) is a severe form of premenstrual syndrome characterized by psychological and somatic symptoms commencing in the luteal phase of the menstrual cycle and concludes with menstrual bleeding. PMDD affects 3–8 % of premenopausal women and represents a significant public health problem especially in young women. Decreased brain-derived neurotrophic factor (BDNF) levels are associated with several mental disorders. Heat-shock protein-70 (HSP70) is an important member of the molecular chaperone system, which provides a molecular defense against proteotoxic stress. We hypothesized that there would be changed levels of BDNF and HSP70 in women with PMDD compared with non-symptomatic women, reflecting impaired and/or activated stress-related responses involved in the underlying pathogenesis of PMDD. Female medical students were screened, and 24 women without premenstrual symptoms and 25 women with PMDD were enrolled in the study. Psychiatric evaluation and the Daily Record of Severity of Problems-Short Form were used for two consecutive menstrual cycles to diagnose PMDD. Serum BDNF and HSP70 levels were assessed in the third luteal

phase. Participants with PMDD had significantly higher serum BDNF and HSP70 levels compared with controls, and there was a significant positive correlation between serum BDNF and HSP70 levels. Increased HSP70 levels may reflect cellular distress in PMDD. Increased serum BDNF levels in the luteal phase in subjects with PMDD may reflect a compensation process, which results in subsequent improvement of PMDD-associated depressive symptoms in the follicular phase. Thus, increased serum BDNF levels may be indicative of a compensating capacity in PMDD.

Keywords Brain-derived neurotrophic factor · Heat-shock protein-70 · Premenstrual dysphoric disorder · Premenstrual syndrome

Abbreviations

BMI	Body mass index
BDNF	Brain-derived neurotrophic factor
DHEA	Dehydroepiandrosterone
DHEAS	Dehydroepiandrosterone sulfate
DRSP	Daily Record of Severity of Problems-Short Form
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, fourth edition
GABA	γ -Amino butyric acid
GCS	Glucocorticoids
GR	Glucocorticoid Receptor
HPA axis	Hypothalamic pituitary adrenal axis
HSPs	Heat-shock proteins
HSP70	Heat-shock protein-70
HSP90	Heat-shock protein-90
PCOS	Polycystic ovary syndrome
PMDD	Premenstrual dysphoric disorder
PMS	Premenstrual syndrome

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