
Neuroendocrinological Findings in Patients with Pathological Gambling and Internet Use Disorder

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Background:

Brain-derived neurotrophic factor (BDNF) plays important roles in neurotransmitter release and synaptic plasticity and has been hypothesized to be involved in the development and maintenance of addictive disorders. Also, alterations in secretion of stress hormones within the hypothalamic–pituitary–adrenal (HPA) axis have repeatedly been found in substance-related addictive disorders. It has been suggested that glucocorticoids might modulate behavioural responses to substances of abuse. Therefore, we investigated alterations of BDNF expression and HPA axis activity in non-substance-related addictive disorders, i.e. pathological gambling (PG) and Internet use disorder (IUD).

Methods:

We measured serum BDNF levels, plasma levels of copeptin, a vasopressin (AVP) surrogate marker, adrenocorticotrophic hormone (ACTH) and cortisol in male patients with PG (n=14), IUD (n=11) and carefully matched healthy controls for PG (n=13) and IUD (n=10).

Results:

BDNF serum levels were significantly increased in patients with PG in comparison to healthy control subjects ($p = 0.016$). Furthermore, cortisol plasma levels correlated negatively with the PG-YBOCS total severity score ($r^2 = -.626$, $p = .039$) in patients with PG. There was no significant difference in BDNF serum levels of patients with IUD in comparison to control subjects. Plasma levels of copeptin, ACTH and cortisol in patients with PG and IUD did not differ among groups.

Conclusions:

These preliminary results might suggest that the pathophysiology of PG shares some characteristics with substance-related addictive disorders on a neuroendocrinological level, whereas those similarities could not be observed in IUD.