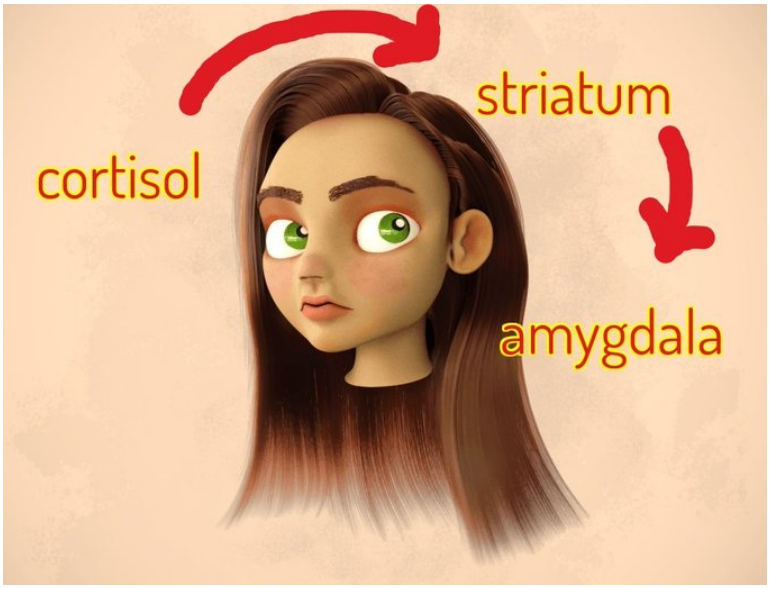

Stress-dependent cortisol modulation promote avoidance conditioning through inhibitory dopamine activity in the striatum.

Jack Bortone
jack@open-neurosecurity.org
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Abstract

Chronic intermittent hypoxia (CIH)-induced noradrenergic dysregulation is associated to increased disinhibitory dopamine activity in the paraventricular nucleus of the thalamus (PVT). Secondly, chronic hypoxic stress may increases cortisol production through a disinhibitory reuptake mechanism associated with a locus coeruleus (LC-NE)-mediated rise in extracellular dopamine levels in the dorsal striatum. Consequently, chronic intermittent hypoxia (CIH) may enhances stress-dependent cortisol responses (c-Fos expression) in the striatum through dopaminergic projections from the locus coeruleus.

Hypoxia-mediated cerebral hypometabolism

Hypoxia-induced changes to noradrenergic signaling may modulate the sympathetic nervous system thereby altering cerebral blood glucose levels in the midbrain region (ventral striatum and hippocampus). Secondly, the

upregulation of cerebral blood flow (CBF) in the striatum caused by hypoxia-induced sympathetic overactivity is influenced by nitric oxide (NO)-mediated metabolic changes (ie: SpO2/FiO2) in tissues.

Stress-induced instrumental conditioning

The persistent stress-induced dopamine (D2) modulation in the PVT may creates a motivational conflict associated to the neurocircuitry of fear extinction learning and may promote passive avoidance mecanism in the striatum. Moreover, the human PVT is connected with the nucleus accumbens to mediate aversive conditioning and reward-motivated learning by stimulating phasic dopamine D2 expression.

Effects of chronic social stress in womens experiencing intimate partner violence (IPV)

Social isolation (SI) may promote inhibitory control of fear extinction memory and reinforce passive avoidance mechanisms in womens experiencing intimate partner violence (IPV). Likewise, chronic stress may enhance avoidance conditioning through the persistent modulation of locus coeruleus (LC) activity thereby increasing cortisol levels.

Conclusion

Hypoxia-mediated noradrenergic dysregulation is driven by increased basolateral amygdala-striatum reactivity altering the dopamine-noradrenaline response (LC-NE) following chronic episodes of mild and intermittent hypoxia (IH), independently of pulse oxymetry status.

In specific, stress-dependent cortisol modulation of the striatum may promotes aversive and instrumental coping mechanisms through inhibitory connectivity from the locus coeruleus and paraventricular thalamus.

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