

dissociable effects support a role of the endocannabinoid system in reward dysfunction seen in depression, schizophrenia and addiction.

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Cortical thickness of resting state networks in the brain of male patients with alcohol dependence

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Abstract

Problem drinking is related to brain damage. At the same time, there are evidences that alcohol-induced brain damage can be recovered by abstaining for enough time. Brain functions associated with alcohol consumption can be assessed by the resting state functional connectivity in diverse resting state networks (RSNs). This study aims to ascertain the alcohol effect on the structures forming established RSNs by assessing their thickness.

Twenty-six abstinent male patients with alcohol dependence and the same number of age-matched healthy control were recruited from an inpatient mental hospital and community. All participants underwent a 3T MRI scan. Averaged cortical thickness of areas constituting default mode, cognitive control and other RSNs were determined by using FreeSurfer with Yeo atlas derived from cortical parcellation estimated by intrinsic functional connectivity.

Mean cortical thicknesses of all networks were differed between groups significantly. However, their effect size of group difference is most prominent in ventral attention network (closely relate to cingulo-opercular network of control network, Cohen's $d = 1.00$), and default mode network had the lowest effect size (Cohen's $d = 0.67$).

There are differences in degree and pattern of structural recovery after abstinence across areas forming RSNs. Considering previous observation with same participants that group differences of connectivity was significant only in cingulo-opercular network, we can explain recovery pattern of cognition and emotion related to default mode network and the mechanisms for craving and relapse associate with control network.

Reference

Yeo et al. (2011). The organization of the human cerebral cortex estimated by intrinsic functional connectivity. *Journal of Neurophysiology*, 106(3), 1125–1165.

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Impaired fronto-insular activation during risky decision making in young adults with internet gaming disorder

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Abstract

Objectives: Internet gaming disorder (IGD) is defined as the excessive and compulsive internet gaming behavior despite negative psychosocial consequences. We tested the hypothesis that subjects with internet gaming disorder would be less

sensitive to high-risk situations and exhibit aberrant brain activation related to risk prediction processing.

Methods: 24 young male adults with IGD (IGD group; mean age=24.8±2.8) and 24 age-matched male healthy controls underwent functional MRI while performing a risky decision-making task (Odd-Even-Pass task). Task stimuli consisted of sets of white, solid-colored circles on a black background. The participants were asked to estimate whether the total number of coins was odd or even. The task consisted of 2 conditions: 1) a certain condition, in which the participants could easily estimate the correct answer; and 2) an uncertain condition, in which the coins were overlapped and the borders were blurred, so the participants could only make a guess. The trials with uncertainty were designed to give the feedback "correct" at a fixed rate of 16.6%, regardless of the participants' responses, so the feedback indicated the same prediction error to every participant.

Results: The IGD group, compared with the healthy control group, exhibited attenuated fronto-insular activation in response to high-risk uncertain conditions. Additionally, the healthy control group showed stronger activations within the dorsal attention network, including the dorsal prefrontal cortex and posterior parietal cortex.

Conclusion: We found that fronto-insular activation was impaired under uncertain, high-risk conditions in young adults with internet gaming disorder. This impairment might lead to impaired sensitivity to the negative adverse consequences of excessive internet gaming and a more generalized inability to adopt new behavioral strategies, even when realizing the risk is higher than predicted.

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Neuroanatomical pathways associated with post-stroke affective and apathetic depression

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Abstract

Objectives: Our goal was to localize lesions in post-stroke depression patients using magnetic resonance imaging (MRI), based on the statistical parametric maps (SPM) image analysis technique that can be used to combine image data from multiple participants and correlate these images with other data sets.

Methods: Magnetic resonance imaging acquisitions were obtained from 149 post stroke patients, who were assessed for affective and apathetic symptoms using the Hospital Anxiety and Depression Scale (HADS) and the Apathy Scale (AS) respectively. We created a SPM that displayed an association between lesion location and affective and apathetic symptoms.

Results: Among the patients with higher depressive scores, the lesion overlap centered on the brainstem, left basal ganglia and left frontal cortex. Among the patients with higher apathy scores, the lesion overlap centered on the brainstem and bilateral striatum. The overlap lesion for both affective and apathetic depression centered mainly on the brainstem, however the two types of depression often did not overlap.

Conclusions: Two core symptoms that can occur after stroke, affective and apathetic symptoms, appear to be associated with different monoaminergic neuroanatomical pathways (serotonergic and dopaminergic).