
Disrupted regulation of social exclusion in alcohol-dependence: an fMRI study.

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Abstract

Objective: Alcohol-dependence is associated with cognitive and biological alterations, but also with interpersonal impairments. While overwhelming in clinical settings and involved in relapse, these social impairments have received little attention from researchers. Particularly, brain alterations related to social exclusion have not been explored in alcohol-dependence. Our primary purpose was to determine the neural correlates of social exclusion feelings in this population. Method: Forty-four participants (22 abstinent alcohol-dependent patients and 22 paired controls) played a virtual game ("cyberball") during fMRI recording. They were first included by other players, then excluded and finally re-included. Brain areas involved in social exclusion were identified and the functional connectivity between these areas was explored using psycho-physiological interactions (PPI). Results: While both groups presented dorsal anterior cingulate cortex (dACC) activations during social exclusion, alcohol-dependent participants exhibited increased insula and reduced frontal activations (in ventrolateral prefrontal cortex) as compared to controls. Alcohol-dependence was also associated with persistent dACC and parahippocampal gyrus activations in re-inclusion. PPI analyses showed reduced fronto-cingulate connectivity during social exclusion in alcohol-dependence. Conclusions: Alcohol-dependence is linked with increased activation in areas eliciting social exclusion feelings (dACC-insula), and with impaired ability to inhibit these feelings (indexed by reduced frontal activations). Altered frontal regulation thus appears implied in the interpersonal alterations observed in alcohol-dependence, which seem reinforced by impaired fronto-cingulate connectivity. This first exploration of the neural correlates of interpersonal problems in alcohol-dependence could initiate the development of a social neuroscience of addictive states.

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