Universität Basel

Research Project

Effects of diacetylmorphine (heroin) on brain function

Third-party funded project

Project title Effects of diacetylmorphine (heroin) on brain function
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Project start 01.10.2009
Probable end 30.09.2011
Status Completed

Background: Heroin dependence (HD) is a chronic relapsing brain disorder that is defined by a compulsion to seek and use heroin, and a loss of control in limiting intake. Stress and craving are key factors for relapse in HD patients. The prescription of diacetylmorphine (heroin) itself for maintenance treatment is now established in several European countries. However, the neurobiological effects of diacetylmorphine (DAM) on brain functional magnetic resonance imaging (fMRI)remain unclear. Imaging the acute effects of DAM during stress and drug cues would further elucidate the neurocircuitry and neurobiology of substance use in patients with HD. Working hypothesis: After DAM administration, we expect an altered activation of different brain regions in response to emotional and cognitive stimuli, such as amygdala, prefrontal cortex and anterior cingulate regions, and an altered stress response. Specific aims: To investigate the acute effect of DAM intake on brain response using functional MRI, with cortisol concentrations, and neurophysiological stress parameters during different stress stimuli in patients with HD and co-occurring personality disorder traits. Methods: We will include HD patients who are on stable DAM maintenance treatment. In a pilot study (first phase), we will enrol 10 HD patients to test the feasibility of the proposed experiment. In a second phase, we seek to examine 30 HD patients after administration of DAM or matched saline in a randomized cross-over design. Expected value of the proposed project: No study so far has investigated the acute effects of DAM on brain response in HD patients. This study contributes to a better unterstanding of the basis of substance dependence, craving, and relapse, and is of great potential importance for improving efforts at prevention and treatment.

Financed by
Swiss National Science Foundation (SNSF)

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