technicians in Puerto Rico. We explore if these differ by whether or not the pharmacy accepts Medicaid.

Methods: A Probabilistic sample with 118 participants from 61 pharmacies (65% response rate) responded to a self-administered questionnaire in 2011. A univariate analysis was conducted using SPSS version 17.0 to describe the attitudes, knowledge and training needs. Bivariate analysis was conducted to assess if these differed by acceptance of Medicaid.

Results: 80% agreed they would provide service to a person with opioid dependence; 90% were willing to dispense the medication. In spite of this, 48% believe that participants can carry out thefts in the pharmacy and 50% fear for their safety. Knowledge scores did not differ by Medicaid acceptance but negative attitudes towards drug users was significantly greater among pharmacies accepting Medicaid ($p < 0.000$).

Conclusions: MAT expansion efforts must take into account the knowledge and attitudes of pharmacists as an important component of the system of care. Efforts to address negative attitudes towards drug users should initiate in pharmacies serving Medicaid beneficiaries.

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Persistent effects of tacrine on reinstatement of non-reinforced responding for cocaine

Kenneth Grasing, Shuangteng He

Substance Abuse Research, VA Medical Center, Kansas City, MO, United States

Aims: After treatment with tacrine or certain other cholinesterase inhibitors, some individual rats develop long-lasting reductions in cocaine-reinforced behavior, described as persistent attenuation (PA). This study determined whether cholinesterase inhibition also modified reinstatement of non-reinforced responding for drug, evaluated after extinction of cocaine self-administration.

Methods: Rats trained to self-administer intravenous cocaine under FR-5 (reinforcement after 5 lever-presses), and were then pretreated with either vehicle or 10 mg/kg-day of tacrine. Tacrine was administered following drug self-administration sessions, over a 21 h period. After reacquisition of cocaine-reinforced behavior, extinction (cues absent and responding had no consequence), reinstatement was initiated by pretreatment with 0, 3.2, or 10 mg/kg of cocaine.

Results: After tacrine pretreatment, rats either promptly reacquired cocaine self-administration at levels similar to their previous baseline, or self-administered lower levels, defined as PA negative or positive animals, respectively. Following extinction, pretreatment with cocaine elicited robust and dose-related responding on active levers in either PA negative or positive rats. At the highest dose of cocaine evaluated (10 mg/kg), active lever responding was significantly lower in PA positive rats. In addition, the time interval between responses was significantly longer in these animals. Responding on inactive levers or following low-dose cocaine did not differ.

Conclusions: In addition to effects on cocaine-reinforced behavior, this study shows that cholinesterase inhibition can attenuate reinstatement produced by high-dose cocaine, decreasing levels of lever pressing and slowing the rate of responding. These effects were not observed at a lower cocaine dose that was sufficient to motivate significant active lever responding. Because responding on inactive levers was not affected, the findings do not reflect a generalized reduction in operant responding.

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Cytokines during acute abstinence of crack cocaine: The role of early life stress

Rodrigo Grassi-Oliveira [1], Mateus L. Levandowski [1], Thiago W. Viola [1], Luiz E. Wearick [1], Julio Carlos Pezzi [2], Moises E. Bauer [1], Antonio L. Teixeira [1], Elisa Brietzke [1]

[1] *Centre of Studies and Research in Traumatic Stress, Pontifical Catholic University of Rio Grande do Sul, Porto Alegre, Brazil*
[2] *Pós Graduaçãoem Ciências da Saúde, Universidade Federal de Ciências da Saúde de Porto Alegre, Porto Alegre, Brazil*

Aims: Cytokines have been implicated in the pathophysiology of cocaine dependence disorder and early life stress (ELS). Aim: To investigate Th1, Th2 and Th17 cytokines plasma levels during acute cocaine withdrawal in women reporting childhood maltreatment (CM).

Methods: This study included 50 crack cocaine dependent women with (CRACK-ELS) and 58 without (CRACK) history of ELS. A healthy control group (HC), with 25 participants, was included to provide reference values. The Childhood Trauma Questionnaire (CTQ) retrospectively assessed childhood maltreatment history of patients. Blood samples and clinical assessment (withdrawal symptoms) were analysed at day 4th, 11th and 18th of detoxification. Flow cytometry was used for TNF-a, IFN-y, IL-2, IL-4, IL-6, IL-10, IL-17 plasma levels determination.

Results: CRACK participants recovered to control TNF-a levels after 18 days of withdrawal, while CRACK-ELS showed an exaggerated increase in TNF-a ($p = 0.04$). CRACK-ELS group increase IL-4 over time in contrast with the observed increased within CRACK group ($p < 0.001$). It was observed a decreasing IL-6 levels in CRACK-ELS during withdrawal in contrast with increasing in CRACK participants ($p < 0.001$). A marked increase in Th1 cytokines was detected in the whole sample.

Conclusions: ELS was related to an unbalance immune recovery during acute crack cocaine abstinence, showing a shift toward Th1 immunity within the balance Th1/Th2.

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Daily co-occurrences of marijuana use, alcohol use, and sexual intercourse among at-risk, truant adolescent girls

Hannah Graves, Lynn Hernandez, Christopher Kahler, Anthony Spirito

Brown University, Providence, RI, United States

Aims: Adolescence is a time in development when many girls initiate risk behaviors, including substance use and sexual intercourse. Research has shown that these behaviors tend to co-occur, particularly among girls. However, little is known about whether they tend to engage in these behaviors simultaneously on a daily

level. The purpose of this study was to test the hypothesis that marijuana and alcohol use would increase the odds of girls engaging in sexual intercourse on the same day.

Methods: The sample consisted of 30 truant girls between the ages of 13-18 years. A Timeline Follow-Back calendar assessment was used to collect data on marijuana use, alcohol use, and sexual intercourse over a 90-day period.

Results: Results from a series of General Estimating Equation models analyzing 2700 days demonstrated that using marijuana on a given day increased the odds of engaging in sexual intercourse, OR = 2.89, 95% CI [1.95, 4.28], $p < .001$. Alcohol use did not change the odds of engaging in sexual intercourse on the same day; however, frequency of alcohol use did increase the odds of engaging in sexual intercourse, OR = 1.12, 95% CI [1.02, 1.07], $p = 0.001$. When all problem behaviors were included in the same model, frequent marijuana users were less likely to engage in sexual intercourse than infrequent users, OR = 0.99, 95% CI [0.98, 0.9995], $p = 0.04$.

Conclusions: This study found an important distinction between infrequent and frequent alcohol and marijuana users and their engagement in sexual intercourse. Consistent with previous findings, frequent alcohol use was related to increased rates of sexual intercourse and should be a focus of early intervention. Further, frequent female marijuana users may have less interest in engaging in sexual intercourse or have some common factor which reduces their frequency of engaging in sexual intercourse. Intervention/prevention programs should address the differential effects of frequency of marijuana and alcohol use on the odds of engaging in sexual intercourse among girls.

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Increased weight gain and sucrose intake during extinction of nicotine self-administration in adult male rats

Patricia Grebenstein [1,2], Danielle Burroughs [1], Christine Hernandez [1], Mark G. LeSage [1,2]

[1] *Medicine, Minneapolis Medical Research Foundation, Minneapolis, MN, United States*
[2] *Medicine, University of Minnesota, Minneapolis, MN, United States*

Aims: Cigarette smoking is characterized by decreased sweet food preference and consumption, which is reversed during cessation. These changes in food intake may mediate weight gain and risk for Type II Diabetes in individuals who quit smoking. Prior studies of these effects in rodents have been limited most often to use of noncontingent nicotine administration. The purpose of this research is to characterize changes in body weight and ad libitum chow and sucrose pellet intake during extinction of nicotine self-administration (NSA).

Methods: Male Holtzman rats were given ad libitum access to sucrose and chow (C + S group) or chow only (C group), on an FR1 schedule during 23 h sessions. When baseline food intake was stable, rats were given access to nicotine on an FR1 schedule. After NSA and food intake stabilized, saline extinction was arranged for 10 days. Food intake and weight gain were calculated relative to the last 5 days of the nicotine phase.

Results: Total food intake (sucrose plus chow) increased over time in the C + S group compared to the C group ($F = 8.7$; $p < 0.01$). There was no difference in the rate of chow intake between the C and C + S groups; both groups showed an immediate increase in chow intake (~25%) followed by a slow, stable increase. Sucrose intake increased at a greater rate compared to chow intake in either the C group ($F = 39.9$; $p < 0.0001$) and C + S group ($F = 11.3$; $p < 0.01$). Chow intake did not differ between groups. The increase in sucrose intake resulted in greater weight gain in the C + S group compared to the C group ($F = 12.5$; $p < 0.01$) and a saline control group ($F = 38.8$; $p < 0.0001$).

Conclusions: These results are consistent with human studies suggesting that weight gain during smoking cessation is largely due to increases in sweet food intake. In addition, they suggest that animal models that fail to include foods other than chow may underestimate the effects of nicotine withdrawal on food intake and weight gain.

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Deconstructing clozapine further: Toward medication for alcohol use disorder in schizophrenia

Alan I. Green, Jibran Y. Khokhar

Psychiatry, Dartmouth College, Lebanon, NH, United States

Aims: Drug and alcohol use disorder occurs commonly in patients with schizophrenia and dramatically worsens their clinical course. While most antipsychotics do not lessen alcohol use in patients with schizophrenia, the atypical antipsychotic clozpine (CLOZ) does, although the mechanism is unknown. Since CLOZ's toxicity severely restricts its use, understanding its mechanism of action, may lead to development of new safer drugs which could limit alcohol use in this population. We hypothesize that CLOZ's ability to decrease alcohol drinking in patients with schizophrenia is contributed to by the dopamine (DA) D2 partial agonism of its primary metabolite norclozapine (NCLOZ) as well as its DA D3/D4 antagonism. This was tested by administering NCLOZ or buspirone (BUSP, DA D3/D4 antagonist) to Syrian golden hamsters- an animal model with face and predictive validity for alcohol use in schizophrenia

Methods: Hamsters were acclimated to alcohol drinking and then treated chronically with either NCLOZ (1–20 mg/kg s.c. or BUSP (1–10 mg/kg s.c.) in a 2-bottle free-choice paradigm.

Results: 10 mg/kg NCLOZ significantly reduced both alcohol intake and preference, whereas the 20 mg/kg group trended toward decreased alcohol intake. 10 mg/kg BUSP also significantly reduced alcohol intake and preference.

Conclusions: These data suggest that CLOZ's ability to decrease alcohol drinking may depend, in part, on its partial DA D2 receptor agonism as well as DA D3/D4 receptor antagonism. Further study of the mechanism of action of CLOZ will help develop new drugs that can safely limit alcohol and substance use in patients with schizophrenia.

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