Full length article

Prevalence and correlates of depressive symptoms during early methamphetamine withdrawal in Han Chinese population

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A R T I C L E   I N F O

A B S T R A C T

Background: Depression, a common comorbidity of drug abuse, is often a core component of withdrawal symptoms; however, risk factors associated with depressive symptoms during the acute stage of withdrawal among methamphetamine (METH) users are not well understood. This study investigated the correlations between several potential risk factors and depressive symptoms during acute METH withdrawal in a Han Chinese population.

Methods: A total of 243 eligible Chinese METH users were recruited from Wenzhou Sanyang Detoxification Institute in Zhejiang province from November 2012 to June 2013. A set of self-administrative questionnaires were used to collect information about socio-demographics, drug use history and depression. Thirteen-item Beck Depression Inventory (BDI-13) was used to measure depressive symptoms.

Results: METH users had a mean BDI-13 score of 12.39; 157 subjects (64.6%) reported depressive symptoms during METH withdrawal, of which 74 subjects (30.5%) reported moderate depressive symptoms and 83 subjects (34.1%) reported severe depressive symptoms. Higher frequency of drug use and history of METH-use relapse were associated with depressive symptoms (adjusted OR = 2.8; 95% CI = 1.56–5.04) and (adjusted OR = 3.4; 95% CI = 1.36–8.49), respectively. Moderate alcohol drinking was associated with less risk for depressive symptoms during acute withdrawal (adjusted OR = 0.54; 95% CI = 0.31–0.93).

Conclusions: Depressive symptoms are common during early METH withdrawal. In addition, several risk factors including frequency of METH use and history of relapse were positively associated with depressive symptoms during that period while moderate alcohol drinking was negatively associated with depressive symptoms.

1. Introduction

Amphetamine-type stimulants (ATS) abuse is a global concern. Methamphetamine (METH), a main type of ATS used widely, is highly addictive and has a significant impact on the central nervous system when taken repeatedly or at higher doses (Marshall and O'Dell, 2012). Long-term METH use was found to be associated with several serious mental and physical illnesses (Buxton and Dove, 2008; Marshall and Werb, 2010).

Depression is a common comorbid condition among ATS users (Bao et al., 2013; Sutcliffe et al., 2009; Zweben et al., 2004). An American epidemiological survey demonstrated that a history of depression was reported by 41.6% of amphetamine adult users (Conway et al., 2006). Previous treatment outcome studies showed that depressed METH users had less benefits from long-term psychotherapy compared to non-depressed subjects

(Kay-Lambkin et al., 2011) and decreased retention in treatment has been related to depressive symptoms following cessation of stimulants use (Leventhal et al., 2008). All above findings suggest that comorbid depression complicates METH abuse and treatment outcomes. Several studies suggest that depression is a core symptom of METH withdrawal symptoms during the first several weeks of abstinence (McGregor et al., 2005; Zorick et al., 2010). Failure to manage METH withdrawal symptoms may lead to the high rates of relapse in the first several weeks of abstinence (Brecht et al., 2000).

Until now, there was little information on risk factors associated with depressive symptoms in acute METH withdrawal (first week of abstinence; McGregor et al., 2005). In our study, we focused on the associations of potential risk factors and depressive symptoms in METH-dependent patients during early METH withdrawal. Identifying risk factors that predict depressive symptoms during acute METH withdrawal may help to develop approaches for relapse prevention.

2. Methods

2.1. Subjects and setting

The study was conducted at Wenzhou Sanyang Detoxification Institute, which is located in Wenzhou City, Zhejiang province. A total of 243 METH-dependent inpatients were recruited from November, 2012 to June, 2013. At the institute patients have no access to METH, and therefore, the study was carried out in a strictly controlled environment. To be included in the study, patients had to meet the following inclusion criteria: (1) be between 18 and 50 years of age; (2) meet DSM-IV criteria for METH dependence; (3) have had a positive urine test when admitted to the institute; (4) have been abstinent for 1–7 days; (5) and signed informed consent. The subjects were excluded if they met DSM-IV criteria for any other substance dependence disorders (except nicotine), and had significant mental or physical illnesses such as schizophrenia, cardiovascular disease or stroke.

The study was approved by the Human Research and Ethics Committee of Wenzhou Medical University. Written informed consents were obtained from all participants.

2.2. Measures

Each subject was interviewed in a separate room and completed a self-administrated case report form (CRF), which included socio-demographic characteristics, drug-use history, cigarette smoking, alcohol drinking and depressive symptoms. Trained interviewers reviewed each question with the subjects to make sure everyone understood the questionnaire. The socio-demographic characteristics included age, gender, education, nationality, marriage, family status, dwelling condition, employment, etc. Information about drug use included age of onset, the route of drug administration, single or multiple drug use and duration of drug use etc. Smoking and alcohol use status were also obtained. The short 13-item Beck Depression Inventory was used to measure depressive symptoms. Each item is scored from 0 to 3 with cumulative scores ranging from 0 to 39. The score of 0–4, 5–7, 8–15, $\geq$16 were classified as no depression, mild, moderate and severe depression, respectively (Beck et al., 1974).

2.3. Statistics analysis

Characteristics of the study sample including demographic characteristics, drug-use history, cigarette smoking, alcohol drinking, BDI score and prevalence of depressive symptoms were summarized using descriptive statistics. Pearson's chi-square test and bivariate logistic regression were used for the analysis of demographic characteristics, information of drug use, cigarette smoking and alcohol drinking with different depression status. A multivariate logistic regression model was constructed using a forward LR sequence. The significant predictors identified in the univariate logistic regression were then entered in a multivariate logistic regression model controlling for the potential effects of age, gender and education level. All analyses were performed using SPSS software. A two tailed P value of less than 0.05 was considered to be statistically significant.

3. Results

3.1. Characteristics and pattern of drug use

A total of 243 METH-dependent inpatients in very early abstinence (1–7 days from last drug use) were recruited from

Table 1
Characteristics of the study group.

Characteristics	(n = 243)
Age; mean age (range)	31.88 (18–50)
Male n (%)	198 (81.5)
Junior high school or less n (%)	210 (86.4)
Family status	
Intact family n (%)	175 (72)
Single parent n (%)	58 (23.9)
Orphan n (%)	10 (4.1)
Living alone n (%)	100 (41.2)
Unmarried n (%)	116 (47.7)
Living in rural n (%)	96 (39.5)
Unemployed n (%)	92 (37.9)
Cigarette smoking n (%)	220 (90.5)
Alcohol drinking n (%)	114 (46.9)
Gambling n (%)	95 (39.1)
Family history of mental illness n (%)	14 (5.8)
Source of drug supply	
Illegal drug market n (%)	110 (45.3)
Peers or friends n (%)	129 (53.1)
Entertainment places n (%)	3 (1.2)
Cause of first time use	
Peer influence n (%)	92 (37.9)
Experimenting n (%)	109 (44.9)
Pursuit of euphoria n (%)	6 (2.5)
Boredom n (%)	6 (2.5)
Alleviation of unpleasant emotions n (%)	24 (9.9)
Other n (%)	6 (2.5)
Route of drug administration	
Smoking n (%)	238 (97.9)
Age of onset; mean (range)	26.58 (12–49)
Frequency of drug use (2–5 times a week or more) n (%)	104 (42.8)
Poly-substance use n (%)	51 (21)
Duration of METH use >12 months n (%)	190 (78.2)
Days of abstinence; mean (range)	4.62 (1–7)
Number of previous detoxification >1 n (%)	90 (37)
Cessation for 12 months or more n (%)	39 (16)
History of relapse n (%)	220 (90.5)

Wenzhou Sanyang detoxification institute in Wenzhou city, Zhejiang province. Socio-demographic and drug use characteristics of inpatients are listed in Table 1. The mean age for the whole study group was 31.88 years, ranging from 18 to 50 years. The majority of our subjects were male (81.5%). 210 (86.4%) did not have high school education, 175 (72%) were from intact families, 58 (23.9%) were from single parent families and 10 (4.1) were orphans. 116 (47.7%) were unmarried, 100 (41.2%) were living alone, 96 (39.5%) were living in rural area. 92 (37.9%) had no job, 14 (5.8%) reported a family history of mental illness.

All recruited subjects were in the state of acute METH withdrawal, average of days of abstinence was 4.62 days ranging from 1 to 7 days. Among the 243 METH-dependent inpatients, the majority (97.9%) used METH by smoking. The average age of onset for METH use was 26.58 years, ranging from 12 to 49 years. Experimenting (44.9%), peer influence (37.9%) and self-medicating to alleviate unpleasant emotions (9.9%) were the main causes of drug use for the first time. Supply from peers or friends (53.1%) and illegal drug market (45.3%) were the main drug resources. One hundred and four (42.8%) subjects used METH 2–5 times a week or more. Fifty-one (51%) subjects reported a history of poly-substance use, including methamphetamine, ecstasy, heroin, ketamine. Most subjects (78.2%) had used METH for more than one year. 37% of subjects had detoxification more than once in the past, not including this study period. The majority (90.5%) reported a history of relapse. About 90.5%, 46.9% and 39.1% METH users reported coexisting cigarette smoking, alcohol drinking (neither abuse nor dependence) and gambling, respectively.