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Prevalence and correlates of cocaine physical dependence subtypes using the DSM-IV in outpatients receiving opioid agonist medication

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Abstract

The present study used a cross-sectional design to examine the relationship between endorsement of physiological dependence to cocaine (i.e., tolerance and/or withdrawal) and lifetime, and current problem severity (i.e., psychiatric and substance use disorders, medical and psychosocial problems) for opioid and cocaine dependent individuals ($n = 719$) newly admitted to a treatment program using opioid-agonist medication. All participants completed the structured clinical interview for the Diagnostic and Statistical Manual (DSM-IV) (SCID-IV) and the Addiction Severity Index (ASI). Participants were first classified into physiological ($n = 549$) versus non-physiological ($n = 170$) cocaine dependence groups for one set of analyses and then categorized into one of four groups for further analyses: (1) tolerance only ($n = 215$), (2) tolerance plus withdrawal ($n = 279$), (3) withdrawal only ($n = 55$) or (4) no physiological dependence ($n = 170$). Those participants who endorsed physiological dependence reported higher rates of lifetime psychiatric and substance use disorders, higher rates of current drug use and more current problems. The four-group analyses showed that endorsement of withdrawal, with or without tolerance, was associated with the most severe problems. These findings suggest that physiological dependence to cocaine (particularly the presence of withdrawal) is a marker for a more severe substance use disorder and higher rates of comorbid psychopathology and other problems.

Keywords: Cocaine dependence; Physiological dependence; Methadone treatment; Drug abuse; Substance use diagnoses

1. Introduction

The Diagnostic and Statistical Manual (DSM IV; American Psychiatric Association, 1994) nosology system is the most commonly applied measure of substance use disorder in people seeking treatment for an alcohol or drug use problem in the United States (Forman et al., 2004). Unlike prior versions of this nosology, the DSM-IV encourages clinicians and researchers to subtype the dependence syndrome into those with versus without evidence of physiological dependence. This diagnostic subtype is based on the presence or absence of tolerance and withdrawal symptoms elicited during the diagnostic interview. Tolerance and withdrawal are clearly recognized symptoms of dependence across many drug classes and evidence of these symptoms from diagnostic interviews is generally associated with a more severe syndrome and a poorer treatment prognosis (American Psychiatric Association, 1994; Schuckit et al., 1998, 1999). Schuckit et al. (1998), for example, used data from a DSM III-R based diagnostic interview to show that alcohol dependent individuals reporting one or both of these symptoms of physical dependence had higher rates of drinking, more alcohol-related problems, more psychiatric symptoms and more DSM non-physical symptoms of dependence than those who denied symptoms of physiological dependence.

The findings generally observed between physical symptoms of dependence and problem severity with alcohol and

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several other drug classes (e.g., Schuckit et al., 1999) are generally not as clear for cocaine, and only a few studies have examined these relationships using evidence of physical dependence derived by a DSM diagnostic interview. Rounsaville and Bryant (1992), for example, evaluated treatment and non-treatment seeking cocaine abusers using the substance use disorder section of the SCID for the DSM III-R and the Addiction Severity Index (ASI), and showed that lifetime diagnostic indices of tolerance and withdrawal were no more strongly associated with baseline or 1-year follow-up ASI composite scores than non-physical symptoms of dependence. Carroll et al. (1994) used a similar descriptive approach to report that endorsement of lifetime diagnostic (DSM III-R) symptoms of tolerance or withdrawal were not markedly superior to other symptom criteria in predicting total number of dependence symptoms, family histories of substance-related problems or baseline and 6-month follow-up ASI composite severity scores.

In contrast to these findings, recently published prospective studies of patients with cocaine use disorder showed that the presence of withdrawal symptoms based on DSM-IV diagnostic interviews was significantly associated with treatment drop-out (Kampman et al., 2001a; Mulvaney et al., 1999). And data from the National Comorbidity Study (NCS) (Kessler et al., 1994) showed that cocaine users reporting DSM-IV symptoms of tolerance or withdrawal are more likely to meet the full criterion for dependence than those reporting only psychosocial and "control" symptoms of the syndrome (Shaffer and Eber, 2002). Taken together, these studies provide some evidence that the presence of physical symptoms of dependence on cocaine as measured by DSM-based diagnostic interviews is associated with a greater severity of problems.

A study by Schuckit et al. (1999) provides more direct evidence of the positive associations between physiological dependence on cocaine as measured by diagnostic interview and severity of the disorder. Using a cross-sectional study design, alcohol-dependent individuals with comorbid cocaine dependence disorder were sorted into one of three groups using lifetime DSM-III-R diagnostic criteria: (1) history of withdrawal from cocaine (with or without tolerance), (2) history of tolerance to cocaine only and (3) history of non-physiological dependence of cocaine. They found that cocaine-dependent participants, who reported a history of tolerance or withdrawal and especially those reporting withdrawal, had more severe emotional and physical problems, more symptoms of cocaine dependence and cocaine-related problems, higher rates of other substance dependence diagnoses and higher rates of antisocial personality disorder. This set of findings was also observed across opioids and other co-occurring substance-dependence diagnoses present in their sample.

The present study modifies the Schuckit et al. (1999) design in several important ways. First, the sample in the present study was drawn from a population of treatment-seeking opioid-dependent outpatients with a concurrent diagnosis of cocaine dependence. Cocaine dependence is a highly prevalent problem in opioid agonist treatment programs (e.g., Brooner et al., 1997) and is strongly associated with poor treatment outcome (e.g., Kolar et al., 1990; Magura and Nwakeze, 1998). Second, only participants with current (versus lifetime) cocaine dependence were studied to enhance the accuracy of interview-based, self-report data. Thirdly and perhaps most importantly, the sample in the present study was ultimately classified into four (versus the three used in the Schuckit et al. report) distinct diagnostic subgroups to distinguish participants reporting cocaine "withdrawal only" from those reporting both withdrawal and tolerance. And lastly, the DSM-IV (1994) was used to assess cocaine use, as well as other substance use and non-substance use psychiatric problems. This version accounts for the most recent changes in the classification of substance use disorders (e.g., Cottler et al., 1985), including the expansion of cocaine withdrawal syndrome to include vivid and unpleasant dreams, increased appetite and psychomotor retardation.

In the present study, opioid-dependent patients with a current diagnosis of cocaine dependence were classified into mutually exclusive study groups based on the presence or absence of physical symptoms of dependence (cocaine tolerance or withdrawal). Participants were initially sorted into one of two subgroups of cocaine dependent patients: (1) with symptoms of physiological dependence or (2) without symptoms of physiological dependence. The second scheme replicated and extended Schuckit et al. (1999) methodology to categorize patients into one of four mutually exclusive current cocaine diagnostic subgroups: (1) tolerance only, (2) tolerance plus withdrawal, (3) withdrawal only or (4) no physiological dependence. Study groups were compared on lifetime and current rates of other substance use and psychiatric diagnoses, current ASI composite severity scores and current self-reported drug use. Participants with versus without physiological dependence to cocaine were expected to have higher rates of other substance use and psychiatric diagnosis, higher ASI drug use composite severity scores and greater amounts of drug use. Further, this overall pattern of findings was expected to be strongest in the two diagnostic subgroups reporting cocaine withdrawal symptoms.

2. Method

2.1. Participants

Participants were 719 new admissions to the Addiction Treatment Services (ATS; $n = 390$) and the Behavioral Pharmacology Research Unit (BPRU; $n = 329$) in Baltimore, MD. These programs are located in the same building on the campus of the Johns Hopkins Bayview Medical Center and both provide drug abuse treatment using opioid-agonist medication. All participants satisfied DSM-IV criteria for opioid dependence and the Center for Substance Abuse Treatment guidelines for long-term use of agonist medications. All par-