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Antisocial Behavioral Syndromes in Cocaine and Cannabis Dependence

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Abstract

Antisocial personality disorder (ASPD) is highly associated with substance use disorders (SUD). In addition to the full ASPD syndrome, which requires both childhood conduct disorder and the adult features, other antisocial behavioral syndromes, including conduct disorder (CD) alone without the adult syndrome, and the adult antisocial behavioral syndrome without childhood CD (AABS) are also frequently diagnosed in patients with SUD. The aim of this study was to compare the rates of these various ASPD syndromes between cocaine-and cannabis-dependent individuals seeking treatment. A structured interview for ASPD excluding symptoms that occurred solely in the context of substance use was conducted in 241 outpatients (cocaine dependence, n = 111; cannabis dependence, n = 130). Overall, the proportion of substance-dependent individuals in this study with AABS was significantly larger than the proportion with ASPD (30.9% vs. 17.3%). A diagnosis of CD-only, where CD did not progress to ASPD, was uncommon. No significant differences in the prevalence of antisocial behavioral syndrome diagnoses were found between cocaine- and cannabis-dependent patients. Antisocial behavioral syndrome diagnosis did not influence treatment retention. Antisocial behavioral syndromes are commonly diagnosed in patients with SUD and future research should evaluate prognostic implications of AABS compared to ASPD in a variety of clinical treatment settings.

Keywords

Cocaine dependence; cannabis dependence; antisocial personality disorder

INTRODUCTION

Antisocial personality disorder (ASPD) is characterized by a pervasive pattern of disregard for and violation of the rights of others as well as an inability or unwillingness to conform to societal norms (1). The lifetime prevalence of ASPD in the United States is approximately 4%

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(2,3). ASPD and its developmental precursor, conduct disorder (CD), are highly associated with substance use disorders (SUD) (4,5). The National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) found that, even after adjusting for demographic characteristics and the presence of other psychiatric disorders, drug use disorders remained highly and significantly associated with ASPD, with an odds ratio of 2.9 (2.1–4.1) (6). Estimates of the prevalence of ASPD in clinical samples of patients receiving SUD treatment range from 7 to 53% (7-13). A diagnosis of ASPD has a negative impact on the prognosis of SUD, with poorer substance use and psychosocial outcomes (14-16).

While available epidemiologic data suggest that ASPD is a common disorder among patients with SUD, there are nosological issues that remain unresolved. The American Psychiatric Association *Diagnostic and Statistical Manual 4th Edition*, Text Revision (DSM-IV-TR) (17) criteria set for ASPD does not specifically distinguish between substance-related and more generalized antisocial behavior. Additionally, the applicability of the evolving concept of an adult antisocial behavioral syndrome (AABS), which is the criteria set for ASPD with the exception of a diagnosis of conduct disorder before age 15, continues to be an area of investigational interest (18-21). In studies of substance-abusing populations, the number of patients diagnosed with ASPD increased substantially when the childhood CD diagnostic requirement was not applied (22). The NESARC estimated the prevalence of ASPD at 3.6% and AABS at 12.3% (2). Evidence to date suggests that AABS is mostly indistinguishable from ASPD with regard to adult antisocial behavior, consequences of substance use, rates of co-occurring psychiatric disorders, and treatment outcomes (18,19,23-25), suggesting that these populations may be homogenous with the exception of a childhood history of CD. Related evidence suggests that, among individuals with ASPD in a nonclinical population, childhood-onset conduct disorder is associated with a greater prevalence of antisocial symptoms, violent behavior, and comorbidity with certain Axis I and Axis II disorders as compared to adolescence-onset conduct disorder (26), creating further potential distinctions within the diagnostic concept of ASPD.

The aim of this study was to assess and compare the rates of antisocial behavioral syndrome diagnoses among individuals seeking treatment for cocaine or cannabis dependence. The existing literature does not contain comparisons of the relative prevalence rates of antisocial behavioral syndromes (CD-only, ASPD, and AABS) in cannabis- and cocaine-dependent patients. The use of illegal substances is often accompanied by antisocial behavior such as stealing or violence. A commonly held perception is that cocaine use is more highly associated with antisocial behavior than cannabis use, although comparisons of the rates of ASPD among individuals seeking treatment for cocaine and cannabis dependence are lacking. In order to conservatively estimate the prevalence of antisocial behavioral syndrome diagnoses, antisocial symptoms that occurred solely in the context of substance use were excluded from meeting diagnostic criteria. In addition, since the presence of ASPD has a negative impact on SUD treatment prognosis, the effect of antisocial behavioral syndrome diagnosis on retention rates was explored. Since antisocial behavioral syndrome diagnoses are common among patients with substance use disorders, better understanding of these disorders may suggest possible opportunities for intervention. Our hypothesis was that individuals with cocaine dependence would have higher rates of antisocial behavioral syndromes than those with cannabis dependence.

METHODS

Participants

All participants enrolling in a university-based research clinic offering pharmacotherapy clinical trials for cannabis dependence and cocaine dependence were included in the present analysis. Research protocols were approved by the New York State Psychiatric Institute

Institutional Review Board and all patients gave written informed consent. Recruitment methods for both trials were similar and consisted primarily of paid advertising and clinical referrals. Patients with criminal justice system involvement (e.g., probation or parole status) were not excluded. Potential participants for both trials were screened during the same general time period by the same clinical staff. Both trials were similar in design, as they were conducted exclusively in the outpatient setting for similar durations of time with similar financial compensation (e.g., small reimbursements for time and travel). There were also similar in methodology; all patients received manual guided cognitive behavioral therapy and participants were randomly assigned to either study medication (nefazodone or bupropion for the cannabis trial and gabapentin for the cocaine trial) or placebo under double-blind conditions.

Data Collection

A structured interview (27) for antisocial personality disorder (ASPD) was conducted in 241 outpatients (cocaine dependence, n = 111; cannabis dependence, n = 130). The structured interview inquired about each possible symptom of conduct disorder and antisocial personality disorder and coded whether the symptom was present in the context of alcohol and drug use only or if it the symptom occurred during periods of abstinence as well. In order to conservatively assess the prevalence of antisocial behavior syndromes symptoms that occurred solely in the context of substance use did not contribute to fulfilling diagnostic criteria. Patients were classified into one of four categories: 1) conduct disorder (CD)-only, 2) adult antisocial behavior syndrome (AABS), which was defined as meeting adult behavioral criteria for ASPD without the presence of CD diagnosed prior to the age of 15, 3) ASPD, and 4) no antisocial behavioral syndrome diagnosis. Clinical trial retention was calculated by weeks of study participation beyond the two-week lead in period (range:1–12 weeks).

Data Analysis

All data were analyzed using SAS version 9.1 (28). Prevalence of antisocial behavioral disorders among cocaine-and cannabis-dependent patients was compared using Chi-Square test. Differences between the four diagnostic groups in categorical variables (racial and gender distribution) were analyzed using the Fisher's exact test due to small expected cell counts upon stratification. Differences between groups on measures with continuous variables (age, age at first use, age at regular use and age at first treatment) were analyzed using ANOVA F-test. Retention in treatment was analyzed using Kaplan-Meier survival curves and the Log-Rank statistic. All significance levels were set at 0.05.

RESULTS

There were no significant differences in the prevalence of antisocial behavior syndrome diagnoses (CD-only, ASPD, AABS) between cannabis- and cocaine-dependent patients (Table 1). Overall, the proportion of substance-dependent individuals in this study with AABS was larger than the proportion with ASPD [30.9% (n = 68) vs. 17.3% (n = 38)]. There were no differences between diagnostic groups in demographic variables for either the cocaine-dependent (Table 2) or cannabis-dependent (Table 3) participants. As can be seen in Tables 2 and 3, patients without any antisocial syndrome had later onsets of any substance use, compared to patients with CD, AABS, or full ASPD, and these differences reached significance for age of first treatment among the cocaine patients (Table 2) and ages of first substance use and regular use for the cannabis patients (Table 3). However, these ages at onset were similar among the CD, AABS, and full ASPD categories. Using Kaplan-Meier survival analysis, clinical trial retention did not significantly differ between cocaine-and cannabis-dependent participants ($\chi^2 = 1.7$, df = 1, p = 0.19) or among antisocial behavioral syndrome diagnostic groups within

the substance dependence category [cocaine: (χ^2 = 2.7, df = 3, p = 0.45); cannabis: (χ^2 = 1.9, df = 3, p = 0.59)].

DISCUSSION

The aim of this study was to assess the rates of Antisocial personality disorder (ASPD) and adult antisocial behavior syndrome (AABS) in patients seeking treatment for substance use disorders (SUD) in a conservative manner by allowing only antisocial behavior that occurred outside the context of substance use to satisfy the diagnostic criteria. When using this methodology of assessing nonsubstance-related antisocial behavior in a population of patients with SUD, more than half of patients who met the adult behavioral criteria for ASPD did not meet criteria for childhood diagnosed conduct disorder (CD), and were considered to have AABS. The results of this study are consistent with patterns of antisocial behavioral syndromes previously reported (2,21), where AABS (i.e., adult-onset ASPD) is more prevalent than ASPD and CD-only is relatively uncommon.

Personality disorders are conceptualized as life-long interpersonal behavior patterns, but the presence of antisocial symptoms in adults without a history of conduct disorder in childhood or adolescence suggests that these behaviors were acquired in adulthood. The results suggest that a greater proportion of observed antisocial behavior in individuals with substance use disorders is of adult-onset, and could be considered acquired and therefore potentially amenable to change. It may be that the lifelong conceptualization of personality disorders in general and antisocial personality disorder specifically is flawed. Future studies should examine the extent to which antisocial behavior syndromes appear to remit, which would also argue for an episodic or variable course for these disorders, rather than the chronic model.

Prevalence of ASPD or AABS did not differ between cannabis- and cocaine-dependent individuals. These results are surprising, since conventional wisdom would suggest that cocaine use is more highly associated with antisocial behavior. Perhaps antisocial behavioral syndromes are associated with substance use disorders, rather than particular substances of abuse. Since illegal drug use in general may be more highly associated with antisocial behavior than legal substance use, it would be worthwhile to compare the prevalence of ASPD between alcohol-dependent and illegal substance-dependent patients in clinical samples.

The validity of AABS as a clinical syndrome is not yet established. It is unclear if AABS represents a variant of ASPD (i.e., “late-onset” ASPD) where antisocial behavior is subthreshold prior to the age of 15, a diathesis with variable age at onset. An alternative possible explanation for patients with AABS not meeting criteria for CD is that AABS is a behavioral syndrome closely related to SUD, with its onset concurrent with SUD onset, typically later than age 15. Antisocial behavior could be a learned adaptation to the lifestyle of substance dependence, or drug use, an illegal activity itself, could prime the development of other antisocial behaviors. It is possible that treatment and the achievement of remission of the substance use disorder would lead to a reduction in antisocial behavior. The demographic and clinical variables examined in Tables 2 and 3 suggest that full ASPD and AABS are similar, perhaps favoring the single diathesis model. For example, patients with any of the three antisocial syndromes (CD-only, ASPD or AABS) have earlier ages at onset of substance use and treatment compared to those without an antisocial syndrome, but the ages at first lifetime onset of substance use and treatment are similar among ASPD and AABS and CD-only, as is retention in treatment. Future research should compare ASPD and AABS on a broader range of concurrent clinical features (e.g., other co-occurring psychiatric disorders and indicators of severity) as well as longitudinal course. Another confounding factor is the issue of historical recall of childhood symptoms in adults, which is similar to the difficulty in meeting childhood diagnostic criteria for attention deficit hyperactivity disorder (29).

The major limitation of this study is combining two different clinical trial populations, which potentially introduces differential selection bias, since each clinical trial had unique eligibility criteria. A related limitation is that clinical trial participants may not be representative of patients seeking SUD treatment in the community.

Another limitation is that we were not able to document the prevalence of antisocial personality symptoms or syndromes that were attributed to substance use, since these are not scored during the structured interview. DSM-IV has recognized "substance-induced" syndromes. For example substance-induced depression, is defined as a depression which has occurred only in the setting of substance abuse, but that exceeds what would be expected from the usual effects of substances and warrants clinical attention. It has been shown that such substance induced major depression is common in clinical samples seeking treatment for substance dependence, is associated with worse outcome (30), and often converts to independent depression during a one year follow-up—i.e., is observed to occur during remission of substance use disorder (31). Future research should examine whether a similarly defined substance-induced ASPD can be diagnosed reliably and whether it has clinical implications.

In this study, ASPD or AABS was not associated with worse treatment retention. Since professional psychotherapy has been shown to have beneficial effects among SUD patients with ASPD (16) and all patients in these samples received manual-guided psychotherapy, this intervention may have improved retention. Future research should examine the prognostic implications of AABS compared to full ASPD in a wider range of real-world treatment settings.

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Table 1

Prevalence of antisocial behavioral syndrome diagnoses by cannabis- and cocaine-dependence

	Cocaine-Dependent (N = 99)	Cannabis-Dependent (N = 121)	X^2	p-value
	n (%)	n (%)		
Conduct Disorder Only	3 (3.03)	5 (4.13)		0.7844*
AABS	30 (30.30)	38 (31.40)	0.03	0.86
ASPD	15 (15.15)	23 (19.01)	0.5668	0.4515
None	51 (51.52)	55 (45.45)	0.8011	0.3708

* Fisher's Exact Test was conducted due to small expected cell counts

Table 2

Distribution of variable by antisocial behavioral disorders among cocaine-dependent patients

	Conduct Disorder Only (N = 3) Mean (SD)	AABS (N = 30) Mean (SD)	ASPD (N = 15) Mean (SD)	None (N = 51) Mean (SD)	p-value *
Age	37.3 (3.8)	36.5 (7.1)	39.8 (9.3)	39.9 (6.6)	0.2155
Age at first use	17.3 (1.5)	20.5 (6.3)	21.0 (6.8)	22.4 (6.3)	0.3914
Age at regular use	21.0 (4.4)	22.1 (7.9)	22.8 (6.9)	25.7 (7.2)	0.2178
Age at first treatment	37.3 (3.8)	31.5 (6.8)	31.2 (7.9)	36.9 (7.5)	0.0043
	n (%)	n (%)	n (%)	n (%)	
Gender					
Male	3 (100)	28 (93.3)	14 (93.3)	43 (84.3)	0.6546
Female	0 (0)	2 (6.7)	1 (6.7)	8 (15.7)	
Race					0.7326
White	0 (0)	7 (23.3)	2 (13.3)	11 (21.6)	
Hispanic	2 (66.7)	7 (23.3)	3 (20.0)	16 (31.4)	
Black	1 (33.3)	13 (43.3)	10 (66.7)	20 (39.2)	
Others	0 (0)	3 (10.0)	0 (0)	4 (7.8)	

* F-test was used for continuous variables. Fisher's exact test was conducted for categorical variables due to small expected cell counts.

Table 3

Distribution of variable by antisocial behavioral disorders among cannabis-dependent patients

	Conduct Disorder Only (N = 5) Mean (SD)	AABS (N = 38) Mean (SD)	ASPD ASPD Mean (SD)	None (N = 55) Mean (SD)	p-value*
Age	31.2 (10.5)	33.4 (10.5)	29.7 (7.2)	33.2 (9.8)	0.4354
Age at first use	13.8 (1.6)	14.9 (3.5)	13.1 (3.3)	16.4 (4.1)	0.0035
Age at regular use	16.0 (4.5)	17.4 (4.1)	16.0 (3.5)	19.9 (4.8)	0.0011
Age at first treatment	24.0 (9.4)	28.7 (10.1)	27.3 (6.7)	30.3 (8.4)	0.3461
	n (%)	n (%)	n (%)	n (%)	
Gender					
Male	5 (100)	26 (68.4)	19 (82.6)	43 (78.2)	0.3976
Female	0(0)	12 (31.6)	4 (17.4)	12 (21.8)	
Race					0.3238
White	4 (80.0)	10 (26.3)	5 (21.7)	24 (43.6)	
Hispanic	0(0)	12 (31.6)	8 (34.8)	14 (25.5)	
Black	1 (20.0)	13 (34.2)	7 (30.4)	11 (20.0)	
Others	0(0)	3 (7.9)	3 (13.0)	6 (10.9)	

* F-test was used for continuous variables. Fisher's exact test was conducted for categorical variables due to small expected cell counts.