

# Factors predicting the decision to perform a psychiatric evaluation in patients with cocaine intoxication

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## CONFLICT OF INTEREST:

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**Background and objective:** Cocaine users often present in an altered mental state. This study aimed to determine factors that influence the decision to request emergency psychiatric evaluation in cases of cocaine intoxication.

**Methods:** Cases of cocaine intoxication attended in the emergency department were registered over 2 years. Patients were classified in 2 groups according to whether a psychiatric evaluation was performed or not. We recorded age, sex, vital signs, Glasgow score, combined abuse of alcohol or other substances, number of drugs used, time elapsed since drug use, emergency department work shift, mental health history, prior intoxications, symptoms, and destination on discharge. Logistic regression analysis was performed to identify factors that were independently associated with performance of a psychiatric evaluation.

**Results:** A total of 327 cases were registered. A psychiatric evaluation was performed in 69 (21.10%). The group of patients receiving such an evaluation were older ( $P=.007$ ), had a higher rate of benzodiazepine use ( $P=.002$ ), had higher rates of history of mental illness ( $P<.001$ ) and psychomotor agitation ( $P=.001$ ), and a lower rate of neurologic symptoms ( $P=.001$ ). Logistic regression showed that factors that were independently related to performance of a psychiatric evaluation were benzodiazepine use (OR, 2.58; 95% confidence interval [CI], 1.18-5.64;  $P=.018$ ), history of mental illness (OR, 7.40; 95% CI, 3.51-15.64;  $P<.001$ ), and absence of neurologic signs (OR, 2.74; 95% CI, 1.36-5.50;  $P=.005$ ).

**Conclusions:** Psychiatric evaluation is not often performed in emergency situations. Associated use of benzodiazepines, a history of mental illness, and an absence of neurologic symptoms are associated with a decision to request psychiatric evaluation. [Emergencias 2010;22:91-95]

**Key words:** Psychiatric evaluation. Intoxication, cocaine. Emergency health services.

## Introduction

Cocaine use and resulting visits to the emergency department (ED) have increased significantly in recent years, both in Europe<sup>1</sup> and Spain<sup>2</sup>. Six percent of the population aged 19-39 years are estimated to have used it on at least one occasion<sup>3</sup>. The National Drug Plan survey of 2005 confirmed an upward trend in the use of cocaine powder, from 1.6% in 1999 to 3% in 2005<sup>4</sup>. In addition, cocaine is the substance most often mentioned in hospital ED records on illicit drug intoxication. Two Spanish studies showed that ED

visits arising from cocaine use accounted for 28.6-66% of all cases of substance abuse<sup>5,6</sup>.

Illicit drug users show relatively frequent psychiatric comorbidity<sup>7</sup>, up to 30% in cocaine users<sup>8</sup>. In a recent study of young cocaine users in our country, up to 42.5% had psychiatric comorbidity, induced by drugs or not, with mood disorders and anxiety being predominant<sup>9</sup>. In addition, the substance most often associated with suicidal ideation is cocaine<sup>10</sup>. Given this high prevalence of concomitant psychiatric disorders, one could posit the need for psychiatric assessment of patients with cocaine intoxication who visit the ED. Howe-

ver, in daily practice, this is not the case. The aim of this study was to determine the percentage of psychiatric assessments carried out in the ED in patients treated for cocaine intoxication, and whether there are factors that influence the decision to solicit such assessment.

## Method

A record was kept of all visits to the ED for cocaine intoxication during the years 2003 and 2004. We excluded patients admitted directly to the emergency section of the department of Psychiatry. Data collected included age, sex, vital signs (blood pressure, heart rate and breathing rate), basal oxygen saturation by pulse oximetry, capillary blood glucose, concomitant use of alcohol or other illicit drugs, number of drugs used, time from cocaine use to arrival at the ED, day of the week, month and shift when the patient was attended (morning 7.30-14.30 am, afternoon: 14.30-21.30 h, night: 21.30-7.30), type of user (regular or occasional), history of previous intoxication, psychiatric history, type of symptoms, need for treatment and discharge destination (home, conventional hospital admission or ICU).

The identification of drugs in urine was performed using solid phase dipstick (BIOSIGMA). Specifically, the diagnosis of cocaine intoxication was made by anamnesis, clinical symptoms and urinary toxins identified by the qualitative technique of thin layer chromatography (using a benzoylecgonine cutoff point of 300 ng/ml). The identification of other possible illicit drugs (phencyclidine, opiates, methamphetamine and amphetamine), was made by anamnesis and thin layer chromatography of urine samples. When present, cannabis and benzodiazepine in urine were identified by enzyme immunoassay. The diagnosis of gamma-hydroxybutyric acid consumption was made by anamnesis and compatible clinical symptoms. Similarly, in patients suspected of concomitant alcohol intoxication, ethanol detection was performed in plasma (alcohol dehydrogenase), by enzymatic spectrophotometry (Cobas Roche integrase 4000).

Presenting symptoms were typed as gastrointestinal, cardiovascular, respiratory, skin, neurological, agitation (including delirium and hallucinations) or absence of symptoms. We also recorded the presence or absence of suicidal ideation, but this was not considered a symptom of the intoxication.

Patients were divided into two groups according to whether they received psychiatric assess-

ment or not during their stay in the ED. Assessment was performed by a hospital psychiatrist during the morning shift or by the psychiatrist on duty (available 24 hours a day) during other hours.

Statistical analysis was performed using Windows SPSS v. 12.0. For the comparison of quantitative variables, we used Student's *t* or Mann-Whitney *U* test and chi-square test with Fisher or Pearson correction if necessary for comparison of proportions. Logistic regression was performed to determine which factors predicted the need for psychiatric assessment. A *p* value <0.05 was considered as statistically significant.

## Results

During the study period we recorded 1,531 cases of illicit drug intoxication, of which 327 were due to cocaine (250 men and 77 women). Psychiatric assessment was performed in 69 cases (21.10%).

Patients who underwent psychiatric assessment were older [33.16 (8.1) vs 30.12 (8.3), *p*= 0.007]. There were no significant differences in gender (20% of the men and 24.7% of the women received psychiatric assessment) or blood pressure values, heart rate, respiratory rate, basal oxygen saturation or capillary glucose (Table 1).

Table 2 shows the drugs associated with cocaine intoxication and the performance of psychiatric assessment. This is divided into three sections: column 1 specifies the associated drugs analyzed; column 2 reflects concomitant drug use; and column 3 shows the cases where psychiatric assessment was actually made. The most frequently associated drug was ethanol, followed by heroin and benzodiazepine. The concomitant use of cocaine and benzodiazepine was associated with an increased frequency of psychiatric assessment as compared with cocaine use without benzodiazepine (36.8 vs. 17.8%, *P* = 0.002). In contrast, none of the patients with concomitant use of gamma-hydroxybutyric acid or methamphetamine received psychiatric assessment. Concomitant use of alcohol and other drugs was not related with the need for psychiatric assessment. In general, the concomitant use of some type of drug with cocaine was related with a lower percentage of psychiatric assessments (26.1% in cases of cocaine alone vs 17.5% in cases with concomitant use of some other drug, *p*= 0.059).

Psychiatric assessment was not related with the day of the week, month, year, or with the time

**Table 1.** Vital constants, basal oxygen saturation and capillary glucose

	PA	No PA	p
Systolic BP (mmHg)	124.4 (21.7)	120.3 (21.4)	ns
Diastolic BP (mmHg)	73.6 (12.3)	71.1 (14.7)	ns
Heart rate (bpm)	91.6 (21.7)	91.4 (23.6)	ns
Respiratory rate (bpm)	17.7 (5.2)	16.9 (6.0)	ns
Basal O <sub>2</sub> Sat (%)	96.2 (2.6)	95.8 (6.1)	ns
Capillary glucose (mg/dl)	102.9 (25.4)	112.6 (41.9)	ns

PA: psychiatric assessment. BP: blood pressure. ns: non-significant. Values expressed as means and standard deviation (SD); Heart rate bpm: beats per minute; Respiratory rate bpm: breaths per minute.

elapsed between consumption and arrival at ED. However, there was a slight tendency towards a higher percentage of assessments performed when the patient was treated during the morning shift versus the afternoon and night shifts (29% vs 19%,  $p = 0.071$ ). No differences were found with regard to being regular or occasional consumer, or with a history of previous intoxications. As expected, patients with psychiatric history received psychiatric assessment more frequently (40.6% vs 8.7%,  $p < 0.001$ ).

Of the 327 cases of cocaine intoxication, only 11 had attempted suicide. Of these, four were not assessed by a psychiatrist: one disappeared, one voluntary discharge and two home discharges.

The absence of neurological symptoms was associated with increased frequency of psychiatric assessments (29% vs 14%,  $p = 0.001$ ). Patients with Glasgow Coma Scale scores greater than 13 at the time of admission to the ED had a greater percentage of psychiatric assessments (25.5% vs 12.1%,  $p = 0.006$ ). Also associated with a higher percentage of psychiatric assessments was the presence of agitation (28.7% vs 14.1%,  $p = 0.001$ ). In contrast, the presence of other symptoms did not influence the decision to seek psychiatric evaluation in the ED.

There were no differences in the fact of being treated for cocaine with the fact of receiving psychiatric assessment. The destination of patients at discharge is shown in Figure 1. There were no differences when comparing patients discharged home with those who required hospitalization. Of all patients, eight required urgent admission to a psychiatric ward, which represents 3% of the total, but 11.6% for the group of patients who underwent psychiatric assessment. Only four patients required admission to the Intensive Care Unit (ICU), one of whom died. In these cases, psychiatric evaluation was not performed in the ED.

Logistic regression analysis showed that the concomitant use of benzodiazepines (OR = 2.58,

**Table 2.** Correlation between use of drugs associated with cocaine use, and the performance of psychiatric assessment in the emergency department

Associated drug	Concomitant use N (%)	Psychiatric Assessment N: 69		p
		Used	Not used	
BZD	57 (17.4%)	36.8%	17.8%	0.002
Heroin	86 (26.3%)	15.1%	23.2%	ns
Cannabis	56 (17.1%)	14.3%	22.5%	ns
Meta-Amphetamine	18 (5.5%)	0%	22.3%	0.017
Amphetamine	8 (2.4%)	12.5%	21.3%	ns
GHB acid	37 (11.3%)	0%	23.8%	0.001
Methadone	16 (4.9%)	31.3%	20.6%	ns
Ketamine	7 (2.1%)	0%	21.6%	ns
LSD	1 (0.3%)	0%	100%	ns
Ethanol	175 (53.3%)	20.6%	21.7%	ns

BZD: benzodiazepine; GHB: gammahydroxybutiric; LSD: lysergic acid diethylamide. ns: not significant.

CI 95%: 1,18-5,64,  $p = 0.018$ ), history of psychiatric disorders (OR = 7.40, CI 95 % 3,51-1,5.64,  $P < 0.001$ ) and the absence of neurological symptoms (OR = 2.74, 95% CI: 1.36 -, 5.50,  $P = 0.005$ ) were independent factors for psychiatric evaluation in the ED.

## Discussion

In our study, the independent factors associated with the request for psychiatric evaluation in patients attending the ED for acute cocaine intoxication were associated use of benzodiazepines, the presence of psychiatric history and the absence of neurological symptoms. Agitation was not an independent factor for assessment. This could be because agitation with hallucinations and delirium often ceases with resolution of the intoxication, so, since the symptoms do not persist, the physician may consider that the need for psychiatric evaluation is not urgent.

The non-psychiatric effects associated with use of cocaine have been widely studied<sup>11,12</sup>, while acute and chronic psychiatric disorders associated with its use are the subject of recent investigations. Generally, euphoria occurs in the acute pha-

**Table 3.** Final destination of the 327 patients attended in the Emergency Department for cocaine intoxication

	N (%)
Direct discharge from ED within 12 hours	199 (60.9)
Direct discharge from ED after at least 12 hours	61 (18.7)
Disappearance from ED	25 (7.6)
Voluntary discharge from ED	23 (7.0)
Admission to psychiatric ward	8 (2.4)
Admission to non-psychiatric hospital ward	7 (2.1)
Admission to Intensive Care Unit	4 (1.2)

se of cocaine. It is sometimes associated with agitation, anxiety, panic and psychosis, and even delirium, coma and convulsions<sup>11</sup>.

Acute cocaine intoxication can cause psychiatric symptoms or even schizophrenic-like episodes<sup>13</sup>. This could justify soliciting psychiatric assessment, although there are certain features that allow discriminating a schizophrenic from a patient with cocaine intoxication<sup>13</sup>. In addition, psychiatric comorbidity that may be present is another reason for psychiatric assessment to be performed. Among the non-acute psychiatric disorders associated with cocaine use are depressive syndromes when combined with alcohol or other drugs<sup>14</sup>, and social adaptive disorders<sup>15</sup>. Thus, in our setting, 42.4% of cocaine users have been shown to have some type of psychiatric comorbidity, of whom 16% had drug-induced disorders<sup>9</sup>, with certain phenotypes being associated with cocaine use<sup>16</sup>.

This study identified a number of factors associated with the request for urgent psychiatric assessment, the first being the concomitant use of benzodiazepines. A possible explanation for this is that the ED physician suspected possible prior anxiety disorder. Regarding neurological symptoms, when present, it is logical that the physician would devote most effort to ruling out organic lesions associated with cocaine use. Finally, it seems obvious that the existence of a psychiatric history is a determining factor for requesting psychiatric assessment.

The limitations of our study include the fact that it was performed in a single center. Another is the question as to whether psychiatric assessment should always be requested as urgent, given that only 11.6% of these patients required admission to a psychiatric ward. In another study, this percentage of admission was 27.35%<sup>17</sup>, although the data are not strictly comparable because it was performed directly in Emergency Psychiatry, whereas in our study patients were psychiatrically evaluated according to ED physician criteria. Also, it must not be forgotten that cocaine is the drug most often associated with suicidal ideation<sup>10</sup>, which is another reason for urgent assessment.

In summary, psychiatric evaluation in patients consulting the ED for cocaine toxicity is rarely performed. The factors influencing this are concomitant benzodiazepine use, previous psychiatric history and no neurologic symptoms. The question remains as to whether urgent psychiatric assessment is absolutely in all cases. To answer this, further studies are required to help identify which patients should be assessed urgently.

Considering the increasing number of ED visits for cocaine intoxication, there are authors who advocate secondary prevention work in relation to drug addiction, initiated by the ED itself<sup>18</sup>. This set of activities, known collectively as SBIRT (Screening Brief Intervention Referral and Treatment)<sup>19</sup>, means that the ED physician's role is not limited to management and stabilization of acute problems, but includes detecting risk behaviour, starting health education and referral to a specialist on drug dependence<sup>18</sup>. This would require the development of joint protocols between emergency physicians and psychiatrists. However, the effectiveness of these interventions remains to be seen.

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## Factores que influyen en la realización de una valoración psiquiátrica en pacientes que consultan por intoxicación por cocaína

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**Objetivo:** Los consumidores de cocaína presentan frecuentemente alteraciones psiquiátricas. El objetivo de este trabajo es determinar qué factores influyen en la decisión de solicitar una valoración psiquiátrica urgente ante una intoxicación por cocaína.

**Método:** Registro de dos años de las intoxicaciones por cocaína asistidas en urgencias. Se dividieron en dos grupos en función de si se realizó una valoración psiquiátrica. Se recogió edad, sexo, constantes vitales, escala de Glasgow, asociación de alcohol u otras sustancias de abuso, número de drogas consumidas, tiempo transcurrido desde el consumo, turno de asistencia, antecedentes psiquiátricos y de intoxicaciones previas, sintomatología y destino. El análisis estadístico incluyó una regresión logística para determinar factores independientes asociados a la realización de valoración psiquiátrica.

**Resultados:** Se recogieron 327 casos. Se realizó una valoración psiquiátrica en 69 (21,1%). Los pacientes valorados por psiquiatría eran de mayor edad ( $p = 0,007$ ), habían asociado benzodiazepinas más frecuentemente ( $p = 0,002$ ), tenían mayor porcentaje de antecedentes psiquiátricos ( $p < 0,001$ ) y agitación psicomotriz ( $p = 0,001$ ) y tenían sintomatología neurológica con menor frecuencia ( $p = 0,001$ ). La regresión logística mostró que la asociación de benzodiazepinas (OR = 2,58; IC 95%: 1,18-5,64;  $p = 0,018$ ), los antecedentes psiquiátricos (OR = 7,40; IC 95%: 3,51-15,64;  $p < 0,001$ ) y la ausencia de sintomatología neurológica (OR = 2,74; IC 95%: 1,36-5,50;  $p = 0,005$ ) eran factores independientes para realizar una valoración psiquiátrica.

**Conclusiones:** La valoración psiquiátrica urgente se realiza en pocas ocasiones. El consumo conjunto de benzodiazepinas, los antecedentes psiquiátricos y la ausencia de sintomatología neurológica se asocian a la solicitud de valoración psiquiátrica. [Emergencias 2010;22:91-95]

**Palabras clave:** Valoración psiquiátrica. Intoxicación por cocaína. Servicio de urgencias.