

Evaluation of cognitive functioning in 101 patients before opiate detoxification: Implications in setting up therapeutic strategies

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ABSTRACT

Many studies have brought to light the facts that repeated use of drugs significantly influences one's cognitive functions, and that cognitive problems could interfere directly with one's capacity to participate in a rehabilitation program. In this research, we used the Global Deterioration Scale (GDS) to assess the cognitive status of 101 hospitalized patients in an opiate detoxification program. The results reveal that a majority of the tested patients present cognitive abnormalities to varying degrees of severity. Furthermore, these cognitive deficits are correlated with four Addiction Severity Index (ASI) scales (medical, alcohol use, drug use, and psychiatry, respectively). Considering the results, because cognition is a major issue in detoxification and rehabilitation programs, simple cognitive screening (as with the GDS) coupled with a particular interest in some aspects of a patient's anamnesis could lead to better management of opiate-dependent patients.

Key words: detoxification, rehabilitation, cognitive function, addiction

INTRODUCTION

Many studies have highlighted cognitive abnormalities in the behavior of patients presenting with various psychological or psychiatric disorders such as schizophrenia,¹⁻³ mood disorders (e.g., depression),⁴⁻⁶ mania,⁴ bipolar disorders,⁷⁻¹⁰ nonemotional disorders (e.g., anxiety),^{11,12} somatic disorders,¹² dissociative disorders,¹² sexual identity disorders,¹² and even eating disorders.¹² Studies also have demonstrated that repeated use of drugs significantly influences cognitive function.¹³⁻²² In addition, other authors have implicated cognitive mechanisms in the emergence of symptoms during a phase of hysteria.²³ However, in psychiatry, neuropsychological aspects are taken into account very little. This lack of consideration is detrimental to the diagnosis, treatment, and

rehabilitation of patients.²⁴ The length of time necessary to carry out the tests, as well as the difficulty sometimes encountered in transmitting practical information to clinical staff, make systematic neuropsychological evaluation a fairly unattractive prospect in the psychiatric routine.

Concentrating particularly on the influence of drugs on cognitive functions, studies have demonstrated that cocaine,^{14,15,22} cannabis,^{16,20} crack,^{15,21} heroin,^{18,19} alcohol,^{18,25} and, of course, polytoxicomania¹⁷ were likely to interfere with the cognitive functions. Since a history of polytoxicomania is encountered frequently among patients admitted to opiate detoxification, it appears that focusing particular attention on cognitive functions could be beneficial to patients. Consequently, far from the complexity of certain cognitive models described in the neuropsychological literature, we set up a simple and pragmatic procedure of cognitive evaluation of patients admitted to opiate detoxification. This procedure allowed us to easily identify the cognitive interference in patients admitted to detoxification and to inform the clinical staff who would be able, if necessary, to take adequate measures.

The aim of this paper is to find out what percentage of opiate-dependent patients seeking treatment present cognitive deficits. It also attempts to discover which factors are associated with these deficits. We hypothesized that some of the patients admitted for detoxification had a cognitive deficit likely to interfere with their treatment, and we assumed that these deficits have various etiologies and cannot exclusively be attributed to drug use or abuse.

MATERIAL AND METHODS

Subjects and treatment setting

One hundred and one inpatient admissions for a therapeutic program participated in this investigation (Table 1).

Table 1. Age and educational levels of subjects

Sex	Age	Educational level				
		I	II	III	IV	V
Men (n = 76)	32.58 (SD = 5.98) Range 17 – 57	68% (n = 52)	16% (n = 12)	7% (n = 5)	4% (n = 3)	5% (n = 4)
Women (n = 25)	34.52 (SD = 8.89) Range 19 – 55	44% (n = 11)	36% (n = 9)	12% (n = 3)	8% (n = 2)	

Note: Table 1 shows demographic data, namely age and educational levels (I = primary school; II = secondary school; III = high school; IV = college; V = university), according to the sex (men or women) of the 101 subjects included in the study. Age is expressed in mean with standard deviation (SD) and range. Educational levels are expressed in percentage.

To be admitted into this program, patients had to meet opiate abuse or dependence criteria according to the *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition* (DSM-IV) and be under methadone maintenance. Abuse of or dependence on other drugs at the time of admission was an exclusion criterion. All the patients were admitted for methadone detoxification with no other substance abuse. After admission, the patients received their regular dose of methadone until the beginning of the detoxification procedure. Within 24 hours, a trained psychiatrist assigned them to a detoxification protocol, and a trained psychologist administered the Addiction Severity Index (ASI). A trained neuropsychologist administered the Global Deterioration Scale (GDS) the second day of hospitalization before the beginning of the detoxification procedure. Opiate detoxification treatment included rapid antagonist induction under general anesthesia or methadone tapering combined with clonidine.

Test material and procedure

All patients were subjected to the following two tests: the ASI and the GDS.

The ASI is a semistructured interview designed to address seven potential problem areas in substance-abusing patients: medical status, employment and support, drug use, alcohol use, legal status, family/social status, and psychiatric status.²⁷ Severity scores range from 0 to 9, and their interpretations are as follows:

- 0 to 1: no problem, treatment not necessary;
- 2 to 3: slight problem, treatment probably not necessary;
- 4 to 5: moderate problem, treatment probably necessary;

- 6 to 7: considerable problem, treatment necessary; and
- 8 to 9: extreme problem, treatment absolutely necessary.

The ASI provides an overview of all the problems related to substance abuse, rather than focusing on a single area. It was administered to all subjects within the first 24 hours of hospitalization. Three trained members of the clinical team (psychologists) administered the ASI.

The GDS²⁸ is used to assess the cognitive status of patients. It was administered to all subjects on the second day of hospitalization. This period was chosen to allow an initial evaluation of each patient’s mental state before the initiation of the detoxification procedure. A trained neuropsychologist—who was not a member of the treatment team and did not participate in other diagnosis work—administered all GDS tests. The GDS is an instrument that assesses the cognitive state and classifies it in one of seven stages, from a normal cognitive state to a very severe cognitive deficiency. This instrument provides a 7-point rating scale designed to evaluate the cognitive and functional capacity of patients from normal aging through dementia.²⁶ Because opiate-addicted patients are not in such an important state of cognitive deterioration, we adapted this scale and took into account only the first four evolutionary stages of the cognitive state. Indeed, the last three stages of this scale correspond to very severe deficits that do not concern the patients of this study. The patients answering to the criteria of these last three stages are generally seriously impaired and require a separate and specific therapeutic evaluation. According to Salmon,²⁶ *Stage 1* corresponds to normal cognition and function, *Stage 2* is commonly associated with complaints of cognitive deficits without clinical manifestations, *Stage 3* is associated with subtle

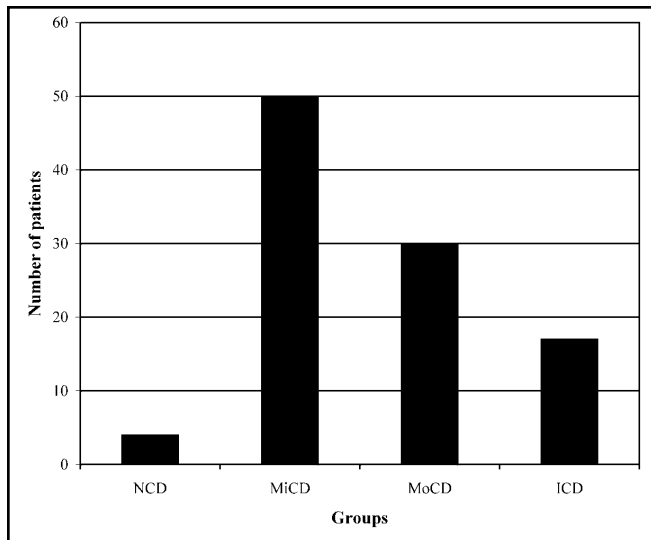


Figure 1. Repartition of patients according to the level of cognitive deficit. Shows patients' repartition in different groups according to the GDS results. Patients can be subdivided into four categories: "NCD" group (no cognitive deficit, n = 4), "MiCD" group (mild cognitive deficit, n = 50), "MoCD" group (moderate cognitive deficit, n = 30), and "ICD" group (important cognitive deficit, n = 17).

cognitive deficits commonly associated with decreased function in demanding work or social settings, while *Stage 4* is associated with obvious cognitive deficits that generally interfere with activities of daily living.

RESULTS

Using the GDS scores, patients were classified as follows:

- Level 1: no cognitive deficit (NCD);
- Level 2: mild cognitive deficit (MiCD);
- Level 3: moderate cognitive deficit (MoCD); and
- Level 4: important cognitive deficit (ICD).

Different groups of patients then were compared with the ASI composite results (i.e., medical status, employment and support, drug use, alcohol use, legal status, family/social status, and psychiatric status).

Do the patients present cognitive deficits?

According to the GDS results, patients can be subdivided as follows:

- Four patients in the NCD group;

- 50 patients in the MiCD group;
- 30 patients in the MoCD group; and
- 17 patients in the ICD group.

These results indicate that patients showing no cognitive deficit represent a minority. A majority of patients (96 percent of the tested population) present cognitive deficits to varying levels of severity (Figure 1).

Which variables are associated with cognitive deficits?

We performed a regression analysis between groups (NCD, MiCD, MoCD, and ICD) and ASI categories (medical, employment, alcohol use, drug use, legal, family/social, and psychiatric). The results show that a significant linear relationship exists between the first category of ASI (medical) and cognitive deficit ($f = 14.959$, $p = 0.001$); between the third category of ASI (drug use) and cognitive deficit ($f = 12.486$, $p = 0.001$); between the fourth category of ASI (alcohol use) and cognitive deficit ($f = 4.975$, $p = 0.028$); and between the seventh category of ASI (psychiatric status) and cognitive deficit ($f = 8.337$, $p = 0.005$). Together, these results show that our sample of opiate-dependent patients admitted for a detoxification program presents various degrees of cognitive deficit. These deficits are correlated with the severity of four ASI scales: medical status, alcohol use, drug use, and psychiatric status (Figure 2).

DISCUSSION

The results indicate that an overwhelming majority of the patients participating in this study (96 percent) present cognitive deficits to varying degrees of severity, and that these deficits are related to the index of severity for some of the ASI categories (medical status, alcohol consumption, drug use, and psychiatric status). The use of drugs and/or having psychiatric problems could be deteriorating to the cognitive state, but are not inevitably determining. Meanwhile, alcohol abuse and associated medical problems could be partly responsible for cognitive deficits observed among opiate-addicted patients admitted for detoxification. Our results are in accordance with those of other studies. Darke et al.³⁰ showed that methadone-maintained patients have cognitive deficits, and that a lifetime diagnosis of alcohol dependence and the amount of nonfatal heroin overdoses were independent significant predictors of poorer cognitive performance. In their study, Darke et al.³⁰ did not rule out the possibility of other contributing factors, such as psychiatric status or previous patterns of drug use, which are clearly highlighted in our study.

Our results show that the large majority of patients under methadone-maintenance treatment present cognitive abnormalities that are apt to interfere with their daily activities.

Independent of certain behavior explained in light of neuropsychological models, to understand the importance of a specific treatment and benefit from a psychotherapeutic intervention (e.g., during a detoxification procedure), it is necessary to encode new data, compare them with events stored in memory and, if necessary, carry out adjustments. Compared to those without deficits, the patients with cognitive deficits could have more difficulty in achieving successful treatment. The early identification of cognitive deficits, therefore, can give crucial information to the clinical team that takes into account these deficits in the daily management of patients, which in turn increases the effectiveness of treatment by limiting the dropout rate and preventing risk of relapse during follow-up.

Consequently, it appears highly necessary to systematically evaluate the cognitive functions of patients admitted to detoxification at the beginning of their treatment to adjust the therapeutic strategy accordingly. Particular attention must be paid to a patient's history of alcohol and/or medical problems to help the clinicians identify the patients most likely to suffer from cognitive disorders. Nevertheless, even if several studies suggest that drugs induce specific cognitive impairment,^{13,15,17,19,21} it is not clear whether drug use is more of an aggravating factor than an initial cause of cognitive deficit. Consequently, assessing the cognitive function and identifying a history of associated alcohol and somatic problems seems much more important than solely focusing on patterns of drug use.

In the practical evaluation of cognitive functions in methadone-maintained patients admitted to a detoxification program, a focus on history of alcohol abuse/dependence and medical problems (e.g., overdoses, head trauma) combined with a test like the GDS seem to adequately identify cognitive problems. Results obtained by such a procedure could help to identify patients presenting profiles "at risk" for cognitive problems, lead to further neuropsychological investigation, and/or bring about a more efficient therapeutic strategy. Indeed, the cognitive problems could interfere with a patient's capacity to take part in a therapeutic program. Therefore, efforts should be made to gradually integrate a pragmatic cognitive evaluation in setting up a therapeutic strategy. This approach would help the patient in his/her efforts as much as possible and lead to a successful treatment. Even if using cognitive tests in a noncompliant psychiatric population raises an additional problem, the use of GDS in conjunction with careful attention paid to certain aspects of a patient's history could lead to pertinent clinical information. This information could be communicated to the clinical team, which could adapt the therapeutic strategy accordingly—for example, by involving a member of the family in the supervision of treatment for a patient with memory problems.

CONCLUSION

In conclusion, our study indicates that a majority of the

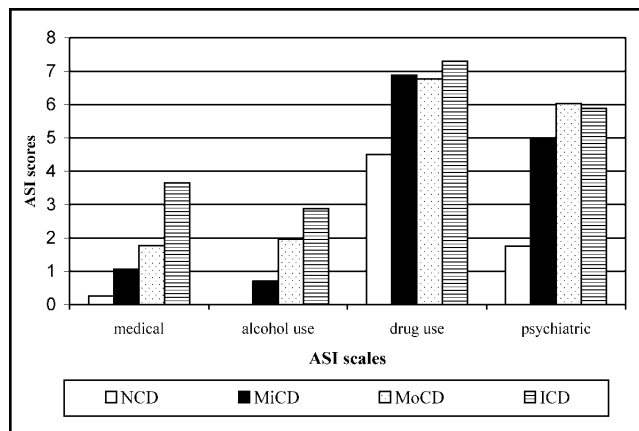


Figure 2. ASI scores in groups with different levels of cognitive deficit. Shows the four groups of patients (NCD, MiCD, MoCD, ICD) with their respective score on significant ASI scales.

patients present cognitive abnormalities to varying degrees of severity. These abnormalities exist mainly among patients presenting the antecedents of alcoholism and various associated somatic deficits but are also correlated with the gravity of drug abuse and psychiatric condition. The testing procedure makes it possible to rapidly identify patients presenting cognitive impairments and to communicate this information to the clinical team, which in turn can decide on the best course of action to take (e.g., complementary examinations, etc.). Complementary studies are necessary to confirm our results, to specify which cognitive investigation would be most useful, and to learn how to communicate the results to the clinical team to improve the management of patients.

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