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Impulse Control Disorders and Depression

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This study assessed the frequency of impulse control disorders (ICDs) and their association with bulimia, compulsive buying, and suicide attempts in a population of depressed inpatients. We investigated ICDs using the Minnesota Impulsive Disorders Interview. Patients answered the Zuckerman Sensation-Seeking Scale and the Barratt Impulsivity Rating Scale. Among the 31 depressed patients who met criteria for ICD (ICD+ group), we found 18 cases of intermittent explosive disorder, three cases of pathological gambling, four cases of kleptomania, three cases of pyromania, and three cases of trichotillomania. Patients with co-occurring ICDs were significantly younger (mean age = 37.7 versus 42.8 years). Patients with kleptomania had a higher number of previous depressive episodes (5.7 versus 1.3), and patients with pyromania had a higher number of previous depressions (3.3 versus 1.3, $p = .01$). Bipolar disorders were more frequent in the ICD+ group than in the ICD− group (19% versus 1.3%, $p = .002$), whereas antisocial personality was not (3% versus 1%, p = ns). Bulimia (42% versus 10.5%, $p = .005$) and compulsive buying (51% versus 22%, $p = .006$) were significantly more frequent in the ICD+ group. Patients from the ICD+ group had higher scores of motor impulsivity assessed with the Barratt Impulsivity rating scale ($p = .01$).

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Impulse control disorders (ICD) are characterized by the repetitive occurrence of impulsive behavior. Other clinical characteristics of ICDs are failure to resist an impulse; the drive or temptation to perform some act harmful to oneself and/or to others; an increasing sense of tension or excitement before acting out; and a sense of pleasure, gratification, or release at the time the act is committed or shortly thereafter. The pathological types of behaviors associated with ICD are intermittent explosive disorder, kleptomania, trichotillomania, pyromania, and pathological gambling (McElroy et al., 1992).

The association between ICDs and depression is frequent; 72% of pathological gamblers have experienced at least one episode of major depression, and 52% have recurrent major affective episodes (Linden et al., 1986). Severity of depression is positively correlated to severity of pathological gambling (Becona et al., 1996). McElroy et al. (1991) studied 20 patients meeting DSM-III-R criteria for kleptomania, all of whom had lifetime diagnoses of major mood disorders. A high risk of mood disorder (.31) was found in their first-degree relatives. Ten of 18 patients receiving thymoleptic medication reported reduction or remission of their stealing behavior under treatment. Christenson and Crow (1996) found that 52% of patients with major depression had trichotillomania. From another point of view, ICDs are associated with a high level of impulsivity and sensation seeking. We showed (Lejoyeux et al., 1998) that scores of sensation seeking are higher in alcohol-dependent patients presenting with ICD than in alcohol-dependent patients without ICD.

No study has simultaneously assessed the prevalence of all ICDs in depressed patients. The present study was undertaken to determine the prevalence of all ICDs in a sample of depressive inpatients, and whether ICD-associated depression has clinical specificites (*e.g.*, different prevalence of bipolar disorders; association with other impulsive behaviors such as suicide attempt, bulimia, compulsive buying; or association with antisocial and borderline personality). In addition, we compared levels of impulsivity and sensation seeking in depressed patients with and without ICD. We tried to subtype major depressive episodes according to impulsivity assessed either on dimensional scales (impulsivity and sensation seeking) or on a categorical one. We studied for this purpose potential comorbidity with ICDs (compulsive buying, bulimia) or impulsive personalities (borderline, antisocial).

The 107 patients (23 men, 84 women) met DSM-IV criteria for major depression without psychotic symptoms. We evaluated the prevalence of ICDs and

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compared patients with (ICD+ group) and without (ICD− group) ICDs.

Methods

To ensure confidentiality, all identifying data were removed and all records were kept locked. The study was conducted at the Bichat-Claude Bernard hospital, an acute care university hospital that receives psychiatric patients from the northern districts of Paris. A total of 107 consecutive admissions of depressed patients to the eight-bed psychiatric unit were invited to participate in the study. The results were gathered from direct interviews. We did not preselect the participants and the study population strictly reflected the population of patients usually hospitalized for depression. Two psychiatrists (M. A. and M. L) interviewed all patients. The interviews were conducted during the first week of the hospital stay. All patients participated voluntarily in the study and a written informed consent was obtained from each of them.

A structured psychiatric interview (Mini International Neuropsychiatric Interview, MINI; Sheehan et al., 1997) was administered to all patients. This structured diagnostic interview enables an assessment of depressive disorders and bulimia according to DSM-IV criteria. Diagnosis of ICDs (pyromania, kleptomania, trichotillomania, intermittent explosive disorder, pathological gambling) was based on DSM-IV criteria and a modified version of the Minnesota Impulsive Disorders Interview (MIDI; Christenson et al., 1994). The MIDI is a 36-item semistructured interview developed at the University of Minnesota that includes separate screening modules diagnosing ICDs and enables the assessment of current comorbidity.

Diagnosis of antisocial and borderline personality disorders was determined by DSM-IV criteria, whereas compulsive buying was diagnosed according to the criteria of McElroy et al. (1994; simultaneous presence of repetitive and impulsive buying behavior, euphoria or excitation before purchasing, postpurchase guilt, and real negative consequences of buying). We also used a specific questionnaire especially designed for the assessment of compulsive buying among psychiatric patients (Lejoyeux et al., 1997).

Finally, all patients were tested with the Zuckerman Sensation-Seeking Scale (Zuckerman et al., 1978), the Barrat Impulsivity Rating Scale (Barrat and Patton, 1983), and a completed a questionnaire regarding their history of suicide attempts. Because all of our patients were French-speaking, we used a French translation of the Sensation-Seeking Scale (Carton et al., 1990). This 72-item scale gives five scores: general factor (F1), thrill and adventure seeking (F2), experience seeking (F3), disinhibition (F4), and boredom susceptibility (F5). The Barrat scale gives four scores: total score, "nonplanning" activity, cognitive impulsivity, and motor impulsivity.

Data Analysis

Comparisons for continuous variables were made by using unpaired two-tailed *t*-tests. For nonparametric data, differences in proportions were compared with the Fisher exact test. Statistical significance was determined at the .05 level of confidence.

Results

The study included 107 patients meeting DSM-IV criteria for major depressive episodes. No patient exhibited manic symptoms at the time of the assessment. Mean age of the sample was 41.3 years. The population consisted of 84 women (78%) and 23 men (22%), 55 (51%) of whom were married or living maritally.

A total of 31 patients (28.9%) met criteria for both ICDs and major depression. This group included 18 cases of intermittent explosive disorder, three cases of pathological gambling, four cases of kleptomania, three cases of trichotillomania, and three cases of pyromania. None of the patients presented an association of two or more ICDs.

The sociodemographic characteristics of patients are presented in Table 1. Patients with intermittent explosive disorder were significantly younger than those without ICDs (mean age = 37.7 and 42.8 years, respectively; $p = .03$). The sex ratio between patients with and without ICD was not significantly different. All patients with kleptomania or trichotillomania were women, but because of the small size of the population, statistical differences could not be determined. Patients with ICD were significantly more likely to be married (67%) than those without ICDs (44.7%, $p = .03$).

Clinical characteristics of the sample are presented in Table 2. Patients with kleptomania had a higher number of previous depressive episodes than patients from the ICD− group (5.7 versus 1.3, respectively; $p \leq .0001$). Patients with pyromania had also a higher number of previous depressions (3.3 versus 1.3, $p = .01$). Bipolar disorders were more frequent in the ICD+ group than in the ICD− group (19% versus 1.3%, $p = .002$). A history of manic episodes was found in 75% of patients with kleptomania.

TABLE 1
Sociodemographic Characteristics of Depressed Patients without (ICD−) and with (ICD+) Impulse Control Disorders

	ICD−	PG[a]	IED[b]	K[c]	TRI[d]	PYR[e]	All ICD+
Number (%) of patients	76 (71)	3 (2.8)	18 (16.8)	4 (3.7)	3 (2.8)	3 (2.8)	31 (29)
Age, yr (mean ± SD)	42.8 (13.9)	46.6 (13)	35.1 (10)*	39.7 (2.5)	30 (5)	49.3 (6.6)	37.7 (11)
Sex ratio (men/women)	17/59	2/1	3/15	0/4	0/3	1/2	6/25
Number (%) of married patients	34 (44.7)	3 (100)	9 (50)	3 (75)	3 (100)	3 (100)	21 (67)**

[a] Pathological gambling.
[b] Intermittent explosive disorder.
[c] Kleptomania.
[d] Trichotillomania.
[e] Pyromania.
* Difference statistically significant between the ICD+ and ICD− groups ($t = 2.19$, df = 92, $p = 0.03$).
** Difference statistically significant between the ICD+ and ICD− groups (chi-square = 4.66, df = 1, $p = 0.03$).

TABLE 2
Clinical Characteristics of Depressed Patients without (ICD−) and with (ICD+) Impulse Control Disorders

	ICD− ($n = 76$)	PG[a] ($n = 3$)	IED[b] ($n = 18$)	K[c] ($n = 4$)	TRI[d] ($n = 3$)	PYR[e] ($n = 3$)	All ICD+ ($n = 31$)
Number of previous depressive episodes (mean ± SD)	1.3 (1.3)	1.3 (1.1)	1.3 (1.5)	5.7 (4)*	0 (0)	3.3 (1)**	1.9 (2.4)
History of manic episodes (bipolar disorder) (N and %)	1 (1.3)	0	3 (16)	3 (75)	0	0	6 (19)***
Number of suicide attempts (mean ± SD)	1.1 (2.1)	1 (1.7)	0.5 (0.6)	6 (4.2)****	0.6 (0.5)	1 (1)	1.3 (2.3)
Antisocial personality, n (%)	1 (1.3)	0	1 (5.5)	0	0	0	1 (3)
Borderline personality, n (%)	8 (10)	1	5	1	0	1	8 (26)
Bulimia	8 (10.5)	1 (33)	5 (27)	4 (100)	3 (100)	0	13 (42)*****
Compulsive buying	17 (22)	3 (100)	9 (50)	1 (25)	3 (100)	0	16 (51)******

[a] Pathological gambling.
[b] Intermittent explosive disorder.
[c] Kleptomania.
[d] Trichotillomania.
[e] Pyromania.
* Difference between the ICD− group and K group ($t = 5.33$, df = 78, $p = < .0001$).
** Difference between the ICD− and the PYR group ($t = 2.46$, df = 77, $p = .01$).
*** Difference between the ICD− and the ICD+ group (chi-square = 8.95, df = 1, $p = .002$).
**** Difference between the ICD− and the K groups ($t = 4.17$, df = 78, $p < .001$).
***** Difference between the ICD− and ICD+ groups (chi-square = 11.8, df = 1, $p = .0005$).
****** Difference between the ICD− and ICD+ groups (chi-square = 7.5, df = 1, $p = .006$).

Patients with kleptomania had made significantly more suicide attempts (6 versus 1.1, $p < .001$) than other patients in the sample. Antisocial personality was not significantly more often present in the ICD+ (3%) than in ICD− group (1%). Bulimia was more often found within the ICD+ group than within the ICD− group ($p = .0005$), and all patients with kleptomania or trichotillomania were bulimic. Similarly, compulsive buying was significantly more frequent in the ICD+ group (51% versus 22%, $p = .006$), and all patients with pathological gambling or trichotillomania were compulsive buyers.

Sensation Seeking and Impulsivity

The Zuckerman Sensation-Seeking Scale did not show statistical differences between the ICD+ and ICD− groups (Table 3). We did not find a difference in the general factor or in scores of the sensation-seeking subscales (thrill and adventure seeking, disinhibition, boredom susceptibility, and experience seeking) between the ICD+ and the ICD− groups, nor did we find a difference in terms of sensation seeking between subtypes of ICDs.

Total impulsivity scores, as assessed with the Barrat scale, were not significantly different between the ICD+ (53.5) and ICD− (47.8) groups. A significant difference was observed between the ICD+ and ICD− groups in terms of motor impulsivity scores (18.1 versus 14.3, $p = .01$). Kleptomaniacs had significantly higher total scores of impulsivity than patients from the ICD− group (77 versus 47.8, $p = .0009$). Kleptomaniacs also had significantly

TABLE 3
Impulsivity (Barratt scale) in Depressed Patients with (ICD+) and without (ICD−) Impulse Control Disorders

	ICD− (n = 76)	PG[a] (n = 3)	IED[b] (n = 18)	K[c] (n = 4)	TRI[d] (n = 3)	PYR[e] (n = 3)	All ICD+ (n = 31)
Total score (SD)	47.8 (16.7)	82.6 (14.1)*	43.7 (17.9)	77 (10)**	60 (28.9)	46 (5.1)	53.5 (22.1)
Nonplanning activity (SD)	16.4 (7.4)	31 (6)***	15 (6.8)	27 (6)****	19.3 (14.2)	9.3 (7)	17.9 (9.5)
Cognitive impulsivity (SD)	16.9 (5.6)	27.6 (2.5)*****	14.1 (7.3)	26.5 (1)******	17 (9.1)	15.6 (4.6)	17.4 (5.6)
Motor impulsivity (SD)	14.3 (7)	24 (7.9)*******	14.6 (8.1)	23.5 (3)********	23.6 (5.7)*********	21 (6.9)	18.1 (8.1)**********

[a] Pathological gambling.
[b] Intermittent explosive disorder.
[c] Kleptomania.
[d] Trichotillomania.
[e] Pyromania.
* Difference between the PG group and the ICD− group (t = 3.5, df = 78, $p < .0001$).
** Difference between the K group and the ICD− group (t = 3.43, df = 78, p = .0009).
*** Difference between the PG group and the ICD− group (t = 3.35, df = 78, p = .001).
**** Difference between the K group and the ICD− group (t = 2.79, df = 78, p = .006).
***** Difference between the PG group and the ICD− group (t = 3.26, df = 78, p = .001).
****** Difference between the K group and the ICD− group (t = 3.36, df = 78, p = .001).
******* Difference between the PG group and the ICD− group (t = 2.34, df = 78, p = .02).
******** Difference between the K group and the ICD− group (t = 2.59, df = 78, p = .01).
********* Difference between the TRI group and the ICD− group (t = 2.27, df = 78, p = .02).
********** Difference between the ICD+ and the ICD− group (t = 6, df = 105, p = .01).

higher scores of unplanned activity (27 versus 16.4, p = .006), motor impulsivity (23.5 versus 14.3, p = .01), and cognitive impulsivity (26.5 versus 16.9, t = 3.36, df = 78, p = .001) than patients from the ICD− group. Compared with the ICD− group, pathological gamblers had higher total scores of impulsivity (82.6 vs. 47.8, p = .0006), unplanned activity (31 vs. 16.4, p = .001), motor impulsivity (24 vs. 14.3, p = .02), and cognitive impulsivity (27.6 vs. 16.9, p = .001).

Discussion

The applicability of our findings is limited because of the small number of patients assessed in this study. Furthermore, our population does not strictly reflect the general population of depressed patients. The selection of research subjects entering the hospital for treatment probably represents those with more severe forms of depression. Thus, the findings of the study may report an ICD prevalence that is higher than that which might be found in a less severely ill population. Given the large number of comparisons presented, it is also possible that some differences may represent chance associations. Nonetheless, our study is the first to systematically evaluate the prevalence of all ICDs in a clinical sample of depressed patients and to explore the association between bipolar disorders, other impulsive behaviors, and levels of impulsivity and sensation seeking.

We found a frequency of 29% for all ICDs, the two most frequent diagnoses being intermittent explosive disorder and kleptomania. Because of the size of our population, we did not find a statistically significant gender difference among patients with ICDs. However, trichotillomania and kleptomania were only found in women. Patients with co-occurring ICDs were younger than those without co-occurring ICDs, but we could not find an explanation for this difference.

Surprisingly, patients with ICDs were more often married. Other authors have suggested that ICDs induce marital disruption and affective loneliness (McElroy et al., 1992). Patients with kleptomania or pyromania had a higher number of previous depressive episodes, and patients with kleptomania had a history of more suicide attempts.

No patient exhibited manic symptoms at the time of the assessment. Bipolar disorders (history of manic episodes) were more frequent in the ICD+ group and especially among kleptomaniacs. Six patients in the ICD+ group and only one in the ICD− group presented with histories of manic disorder. To avoid "double counting" manic disorders and ICD, we studied the order of appearance of the two disorders. No patient presented with simultaneous manic disorder and ICD. In the six patients with ICD and bipolar disorders, the manic episode had ceased for more than 12 months and ICD was present during the past 6 months. In all cases, ICD appeared

when patients were no longer manic or hypomanic. No case of ICD was directly related to a manic episode.

Bulimia and compulsive buying are significantly associated with ICD. The associations among kleptomania, trichotillomania, and bulimia and among compulsive buying, pathological gambling, and trichotillomania are especially close. This observation needs to be replicated in a larger population, and suggests that bulimia and compulsive buying may be included in the clinical spectrum of ICDs.

Impulse control disorders are not associated with antisocial or borderline personality disorders, which correspond to a style of behavior that is impulsive and unable to tolerate frustration. In depressed patients, these personalities do not determine impulsive behavior. Although ICDs are not associated with an increased level of sensation seeking, depressed patients with ICD have higher scores of motor impulsivity than those without ICD. The Barratt Impulsiveness Scale explores three main impulsiveness subtraits: motor, cognitive, and nonplanned impulsiveness. Motor impulsiveness is defined as acting without thinking, whereas cognitive impulsiveness is characterized by quick cognitive decision and nonplanned impulsiveness by a lack of anticipation. In the ICD+ group, pathological gamblers and kleptomaniacs had significantly higher scores of motor, cognitive, and nonplanned impulsivity than patients from the ICD− group. These psychological dimensions of impulsivity were not increased in other ICDs. The comparison between subcategories of ICDs must be interpreted with precaution because of the small number of patients studied.

Conclusion

Our data emphasizes the frequency of association between ICDs and major depression, and 29% of the depressed patients also had an ICD. The subgroup of major depression with co-occurring ICDs corresponds with research subjects who are younger, more often married, and have a higher number of previous depressive episodes. A history of manic episodes was especially frequent in the ICD group and among patients with kleptomania (75%). Patients with kleptomania also had significantly more previous suicide attempts. Impulse control disorders were not associated with antisocial or borderline personality disorders, but were closely linked to other impulsive behaviors (*i.e.*, bulimia and compulsive buying). Depressed patients from the ICD+ group had higher scores of impulsivity assessed with the Barratt Impulsiveness Rating Scale.

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