TRADITIONAL AND NEWER IMPULSE CONTROL DISORDERS: A CLINICAL UPDATE

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Summary

Impulse control disorders (ICDs) are prevalent impairing conditions often comorbid with other psychiatric disorders. Although scattered data would indicate that psychopharmacological interventions maj be effective, ICDs are largely underdiagnosed and undertreated. The present article aims to present a review of some of the available literature on ICDs with a specific focus on diagnostic features, comorbidity patterns and pharmacological treatments. Besides the traditional ICDs included in the DSM-IV – kleptomania, pathological gambling, trichotillomania, pyromania and intermittent explosive disorder – a brief description of the new proposed ICDs – compulsive-impulsive (C-I) Internet usage disorder, C-I shopping, C-I sexual behaviors and C-I skin picking – is provided. In addition, the theoretical models which have suggested that ICDs may share some characteristics of disorders belonging to the obsessive-compulsive, addictive and the affective spectrums will be also discussed, mainly for their treatment implications.

Key words: Impulse Control Disorders (Icds) – Pathological Gambling (Pg) – Kleptomania – Compulsive-Impulsive (C-I) Shopping – Trichotillomania (Ttm) – Intermittent Explosive Disorder (Ied) – C-I Internet Usage Disorder – C-I Sexual Behaviors (C-Isbs) – C-I Skin Picking – Pyromania

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Introduction

In the clinical practice, ICDs are frequently underdiagnosed and undertreated with the majority of patients worldwide receiving no focused or scientifically-based help. In addition, although systematic investigations of the epidemiology of these disorders are still lacking, recent studies would indicate ICDs as prevalent conditions, often comorbid with other Axis I disorders. The diagnosis of ICDs is, however, further complicated by their secretive nature, so that the patients seldom seek for professional help. However, therapeutic strategies for ICDs patients have improved dramatically in recent years and psychiatrists should always investigate the presence of these conditions in their patients.

ICDs are characterized by repetitive behaviors and impaired inhibition of them. Important defining criteria for these disorders include: 1) the failure to resist an impulse to perform acts that are harmful to the individual or others; 2) an increasing sense of arousal or tension before committing or engaging in the act, and 3) an experience of either gratification, pleasure or release of tension while committing the act. Furthermore, there is usually a pattern of engaging in the abnormal behavior in spite of adverse consequences.

In the Diagnostic and Statistical Manual for Mental Disorders, 4th Edition, Text Revision (APA 2000), the chapter of ICDs includes kleptomania, pathological gambling, trichotillomania, pyromania, intermittent explosive disorder and ICD-NOS not otherwise specified (APA 2000). However, on the basis of the latest advancements, the DSM-V task force is debating and working on the extrapolation of further autonomous disorders from those currently included in the ICD-NOS and specifically the following: compulsive-impulsive (C-I) shopping, compulsive-impulsive Internet usage disorder C-I sexual behaviors and C-I skin picking. These conditions are referred as compulsive-impulsive in the light of the impulsive features (arousal) that initiate the behavior, and the compulsive drive that causes the behaviors to persist over time.

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The relationship between ICDs and the obsessive-compulsive (OC) spectrum (Hollander 1993) is considered one of the most consistent theories providing a phenomenological and clinical rationale for the effectiveness of specific treatments in ICDs which, over the past decade, has been supported by some focussed studies. Nonetheless, recent data obtained from neuroimaging (PET, fMRI etc.) and genetic studies exploring the biological and neuroanatomical characteristics of the ICDs, have suggested alternative models (Asahi et al. 2004, Rufer et al. 2006, Dell'Osso et al. 2006a), while underlying the possible relationships with the affective and addictive spectrums. Along this line, besides the classical serotonin reuptake inhibitors (SRIs), heterogenous pharmacological interventions, in particular opioid antagonists, mood stabilizers or dopamine reuptake inhibitors, have been preliminary proposed, which, in turn, broaden the theoretical perspectives.

Clinical features and treatment options of ICDs

Kleptomania is a ICD-NOS in which individuals impulsively steal even though there is no necessity to do so (i.e., the subject has money to pay for the stolen items or does not need them). Like other ICDs, kleptomania is characterized by an anxiety-driven urge to perform an act that is pleasurable when done, but causes significant distress and dysfunction thereafter (Aboujaoude et al. 2004). The prevalence of kleptomania in the U.S. has been estimated of 6 per 1000 people (Goldman 1991). In addition, given the embarassment surrounding this condition, kleptomania is often kept secret, while being often undiagnosed (Aboujaoude et al.). Kleptomania is thought to account for 5% of shoplifting in the U.S. (McElroy et al. 1991). Recent studies investigating the rate of OCD in patients with kleptomania showed widely differing rates, ranging from 6.5% to 60% (Grant and Kim 2002, Grant 2003).

Pharmacological treatments reported to be helpful in kleptomania include SSRIs, mood stabilizers and opioid antagonists, although none of these medications have been investigated in controlled trials so far. Amongst SSRIs, fluoxetine, alone or in combination with lithium or tricyclics, was reported to be effective in some case-reports (McElroy et al.1991, Burstein 1992), as were fluvoxamine and paroxetine (Chong and Low 1996, Durst et al. 1997, Lepkifker et al. 1999). Mood stabilizer trials and case-reports in kleptomanic patients showed mixed results for lithium (McElroy et al. 1991, Burstein 1992), valproic acid (McElroy et al. 1991, Kmetz et al. 1997) and carbamazepine (McElroy et al. 1991). Two different case reports (Dannon et al. 1999, Kim 1998) and a recent review (Grant 2005) indicated the effectiveness of the opioid antagonist naltrexone. Finally, two benzodiazepines, clonazepam and alprazolam, were shown to be helpful in treating kleptomania (McElroy et al. 1991, Grant and Kim 2002, Presta et al. 2002, Grant 2003, Burstein 1992, Chong and Low 1996, Durst et al. 1997 Lepkifker et al. 1999). Therefore, currently, SSRIs seem to be the most effective treatment of kleptomania, in both monotherapy and in combination with other psychotropic drugs (Durst et al. 2001).

Pathological gambling (PG) is characterized by recurrent and maladaptive patterns of gambling behavior that significantly disrupts the patient's functioning in the personal, familial, or vocational spheres. It is assumed to be a chronic disorder, with a clinical course that is continuous, unremitting, or episodic (Dell'Osso et al. 2005). The prevalence of PG ranges between 1% and 3% of the US adult population (Gerstein et al. 1999). The disorder is currently more common in men than in women. Of particular interest is the evidence of high rates of comorbidity with depression, bipolar disorders, anxiety and substance abuse, at least in patients seeking treatment (Roy et al. 1988, NRC 1999). This frequent comorbidity is consistent with the main core features of PG: impulsivity, compulsive drive to gamble, addictive features such as withdrawal symptoms during gambling abstinence, and bipolar features such as urges, pleasure seeking and decreased judgment due to unrealistic appraisal of the individuals' own abilities. Several authors highlighted the link between some core features of PG and neurobiological characteristics or treatment-response, and have differently conceptualized PG as belonging to OC, addictive or affective disorders spectrum (Linden et al. 1986, Potenza et al. 2002, Hollander et al., Argo and Black 2004), and have, thus, provided the theoretical rationale for the use of different pharmacological treatments in PG.

PG has demonstrated a good response to SSRIs, mood stabilizers and opioid antagonists in double-blind studies (Dell'Osso et al. 2005). Amongst the anti-depressants, the SSRIs fluvoxamine, paroxetine, citalopram, nefazodone and bupropion appeared to show different degrees of efficacy with a major issue of concern for this class of medications represented by the possibility of inducing mania or hypomania when there is comorbidity with bipolar spectrum disorders (Dell'Osso et al. 2005). The opioid antagonist naltrexone was effective in a double-blind trial and its risk of hepatotoxicity, pointed out but some authors as potentially limiting, was criticized in a recent study (Kim et al.2006). Of note, the opioid antagonist nalmefene has recently shown to be effective in preliminary observations as well (Grant 2005). Patients with other addictive disorders (alcohol and other substances) and intense urges and craving might particularly benefit from opioid antagonists. Mood stabilizers and anticonvulsants (lithium and divalproex assessed in double-blind controlled trials) have shown good results in recent studies, without any specific contraindication or side-effects in different subtypes of gamblers (Dell'Osso 2005), and particularly in those with affective instability.

Patients suffering from **trichotillomania** (TTM) describe an overwhelming urge to pluck out hairs; when they do so, the anxiety is momentarily relieved but is quickly replaced by another compulsive urge to pluck and even greater anxiety (Swedo and Rapoport 1991). The exact prevalence of TTM is unknown; however, rates from university surveys suggest that 1.5% of men and 3.4% of women endorse clinically significant hair pulling, with 0.6% endorsing all diagnostic criteria of TTM (Christenson et al. 1991). Rates for non-clinical hair pulling behavior in university surveys would be

even higher (Stanley et al. 1994). Swedo pointed out the egodystonic feeling and the resistance experienced by patients with TTM and OCD in describing the phenomenological similarities between these two disorders (Swedo 1993). Patients with TTM, in fact, recognize the behavior as senseless, undesirable and performed in response to increasing anxiety, with resultant tension relief. In addition, a higher than normal incidence of both OCD and TTM has been reported in first-degree relatives of patients with TTM (Lenane et al. 1992), and comorbidity data also support a relationship between OCD and TTM (Stein et al. 1995, Christenson and Mansueto 1999). However, recent investigation (Simeon and Favazza 1995, Lochner et al. 2005) has also conceptualized TTM in a spectrum of self-injurious behaviors (SIBs), including several conditions such as C-I skin picking.

In terms of pharmacological treatment, SSRIs appear as the safest and most helpful medications in patients with TTM, although double-blind controlled studies on their use have given mixed results. Clomipramine was found to be more effective than desipramine in a 10-week crossover study (Swedo et al. 1989) carried out in the late 1980s. While subsequent uncontrolled studies found fluoxetine, fluvoxamine and citalopram to be effective in patients with hair pulling (Stanley et al. 1991, Koran et al. 1992, Winchel et al. 1992, Stein et al 1997, Christenson et al. 1998), two controlled studies (Christenson et al. 1991, Streichenwein and Thomby 1995), with fluoxetine could not replicate the positive findings obtained in the open-label trials. Positive results have been also reported in open trials with venlafaxine, lithium and naltrexone (O'Sullivan et al. 1998, Ninan et al. 1998, Christenson et al. 1991, Christenson et al. 1995), as well as in open augmentation studies with SSRIs and pimozide (Stein and Hollander 1992, van Ameringen and Mancini 1996). However, several patients relapse during ongoing pharmacological treatments (Christenson et al. 1991). In a recent controlled study (Ninan et al. 2000) comparing cognitive behavioral therapy (CBT) with clomipramine and placebo, CBT showed an impressive reduction of symptoms and was significantly more effective than clomipramine or placebo.

Pyromania is characterized by impulsive, repetitive, deliberate fire setting without external reward. There are very few community sample studies of firesetting, not surprisingly since it is illegal, and thus, likely to be kept secret. The majority of epidemiological studies have investigated pyromania in childhood and adolescence reporting prevalence rates of 2.4% and 3.5% (Jacobson 1985, Kosky and Silburn 1984, Kolko and Kadzin 1988). In addition, boys would be at higher risk for firesetting than adolescent girls (Barnett and Spitzer 1994, Strachan 1981). Besides young age, features such as temperament, parental psychopathology, social and environmental factors, and possible neurochemical predispositions (Soltys 1992), have been hypothesized to trigger childhood pyromania. Some authors highlighted a close link between firesetting and aggression (Jesor and Jesor 1977) and between firesetting and antisocial behavior (Stickle and Blechman 2002). The available literature showing high rates of conduct disorder among young arsonists is consistent with this hypothesis (Geller 1987). Recent findings, moreover, revealed associations between firesetting and shyness, aggression and peer rejection (Chen et al. 2003).

To our knowledge, there are no available controlled pharmacological trials conducted in patients with pyromania. Non-pharmacological interventions for firesetters, including CBT (Kolko 2001), short-term counseling and day-treatment programs (Slavkin 2002), have been shown to be of some help. Undoubtedly, pyromania represents an ICD needing systematic pharmacotherapy research.

Intermittent explosive disorder (IED) is characterized by recurrent episodes of aggressive behavior that is out of proportion to psychosocial stressors and/or provocation and is not better accounted by another mental disorder, comorbid medical conditions, or the physiologic effects of a pharmacologic agent or psychotropic substance (APA 2000). Clinical surveys of psychiatric inpatients (Monopolis and Lion 1983) and clinical treatment studies (Felthous et al. 1991) reported prevalence rates for IED of 1%-2%. Coccaro and co-workers reported more recently much higher rates of IED (11.1%, lifetime prevalence and 3.2%, 1-month prevalence) in a community sample of 253 subjects (Coccaro et al. 2004). McElroy and co-authors reported rates of OCD around 22% in individuals with IED (McElroy et al. 1998), while subsequent studies have reported lower rates (du Toit et al. 2005, Fontenelle et al. 2005, Matsunaga et al. 2005).

The pharmacological treatment suggested for IED includes different options, such as mood stabilizers, phenytoin, SSRIs, β-blockers, α_2-agonists and antipsychotics. Most trials with these compounds, however, have involved subjects with impulsive aggression rather than with a specific diagnosis of IED, and several authors still consider that the current DSM-IV criteria for the diagnosis of IED are not adequate (Coccaro 2000). Amongst mood stabilizers, the most convincing evidences derive from controlled trails with lithium (in both children and adolescents) (Sheard et al. 1976, Campbell et al. 1984, Campbell et al. 1995, Malone et al 1998, Malone et al. 2000) and divalproex (Lindenmayer and Kotsaftis 2000), which showed a significant efficacy in different populations of aggressive subjects (Hollander et al. 2005, Hollander et al. 2003). Carbamazepine was found to be effective in double-blind study and in open-label trials, carried out, unfortunately, in small sample of patients (Foster et al. 1989, Mattes 1984) Positive results with phenytoin have been reported in two controlled double-blind studies (Barratt et al. 1997, Stanford et al. 2001). As far as SSRIs are concerned, a double-blind placebo-controlled trial of fluoxetine (Coccaro and Kavoussi 1997) in patients with personality disorder showed a significant improvement of measures of irritability and aggression in patients taking the active compound. Propranolol and pindolol, β-blocker compounds, have also shown positive results in controlled studies (Greendyke and Kanter 1986a, Greendyke et al. 1986b), while reducing aggressive behaviors in patients with brain damage. The α-agonist clonidine was reported to decrease aggression in an open-label trial (Kemph et al. 1993) carried out in adolescents, although its tolerability was problematic for some subjects. Risperidone, an atypical anti-

psychotic, was also shown to be an effective treatment of aggression in controlled studies (Buitelaar et al. 2001, Findling et al. 2001). Finally, controlled studies of behavioral interventions including CBT, group therapy, family therapy and social skill training have shown positive results in aggressive patients (Alpert and Spilman 1997, Edmondson and Conger 1996).

C-I Internet Usage Disorder, also referred as Internet Addiction appeared only recently in the psychiatric literature as an explanation for uncontrollable and damaging use of the Internet (Stein 1997, Shapira et al. 2000). People suffering from this condition often report increasing amounts of time spent web surfing, gambling, shopping or exploring pornographic sites and spending time in chat rooms or corresponding by email. These people often develop a preoccupation with the Internet, a need for escape to the Internet and an increasing irritability when they try to cut back their Internet use. Their attempt to cut back is eventually unsuccessful. As a result of problematic Internet use, several subjects develop different degrees of functional impairing including marital or family strife, job loss or decreased job productivity and legal difficulties or school failure (Beard 2005). Although diagnostic criteria for this disorder have been proposed, methods of assessing C-I Internet usage disorder are limited and several published articles contain not empirically researched information (Cho and Hsiao 2000). For some individuals, the excessive Internet use may be completely accounted for by another Axis I disorder such as PG or C-I sexual behaviors. Problematic Internet use has been reported in any age, social, educational and economic range (Young 1998), however, while previous studies used to stereotype the typical addicted patient as a young introverted man (Scherer 1997, Young 1996), a recent investigation has shown increasing rates of this disorder amongst women (Young 1998), as a result of the increased availability of the Internet. The prevalence of C-I Internet usage disorder is unknown with most studies conducted with small samples. Moreover, people enrolled had frequently comorbid psychiatric diagnoses. Aboujaoude and coworkers (2006a) recently conducted a nationwide survey of the prevalence of problematic Internet use, while reporting a prevalence rate of 0.7%. In another study (Shapira et al. 2000), all Internet addicted subjects also met DSM-IV criteria for ICD-NOS. Some investigations assessing comorbidity rates between OCD and C-I Internet use reported rates ranging between 10% and 20% for lifetime OCD and up to 15% for current OCD in Internet addicted patients (Shapira et al. 2000, Shapira et al. 2003, Aboujaoude et al. 2006).

Given its recent recognition as a possible psychiatric problem, understandably no controlled pharmacological study in patients with Internet Addiction has been reported so far. Recently, Sattar and Ramaswamy (2004) described the case of a 31 year-old man with severe Internet addiction successfully treated with escitalopram (10 mg/d). Our group recently conducted a combined open-label/double-blind trial supporting the efficacy of escitalopram in this condition (Dell'Osso et al. 2006b). Most treatment strategies for problematic Internet use involve behavioral therapy techniques limiting the amount of time on the Internet rather than requiring abstinence, as indicated for other addictive behaviour, such as substance abuse. Self-help groups are also useful to address the problem. Given the increasing use of the Internet in the new generations, a growing prevalence and incidence of this disorder is arguable. Finally, controlled studies are expected in order to investigate the treatment response of Internet addicted patients to putative pharmacological compounds and psychotherapy.

C-I shopping, also referred as compulsive buying, is characterized by impulse and/or maladaptive preoccupations to buy or shop. These are experienced as irresistible, intrusive and/or senseless, accompanied by frequent episodes of buying items that are not needed and/or cost more than can be afforded. Frequently, compulsive shoppers engage in these behaviors for longer periods of time than intended, and experience distress and significant impairment in social and occupational life. As specified for many other ICDs, the excessive buying or shopping behavior does not occur exclusively during periods of hypomania or mania (McElroy et al. 1995, McElroy et al. 1995). Koran and colleagues recently conducted an epidemiologic study on C-I shopping and reported a prevalence of 5.8% in the U.S. population (Koran et al. 2006). A previous study estimated the prevalence of this disorder to be between 2% and 8% of the general adult population in the U.S. and reported a higher prevalence of women (Black 2001). Onset usually occurs in the late teens or early twenties, and the disorder is generally chronic. Studies investigating rates of OCD in patients with C-I shopping reported rates of 12.5% to 30% (McElroy et al. 1995, Koran et al. 2006, Black 2001, Christenson et al. 1994); lower rates of compulsive buying have been found in patients with OCD (from 2.2% to 10.6%) (du Toit et al. 2005, Fontenelle et al. 2005, Matsunaga et al. 2005), except for one study (23.3%) (Lejoyeux et al. 2005). Some compounds, in particular antidepressants and mood stabilizers, have been shown to be helpful in compulsive shoppers (McElroy et al. 1995). Fluvoxamine was reported to be effective in compulsive shoppers without comorbid major depression, while suggesting that improvement was independent from the treatment of affective symptoms (Black et al. 1997). However, two double-blind placebo-controlled trials (Ninan et al. 2000, Black et al. 2000) did not confirm the superiority of fluvoxamine over placebo. An open-label trial of citalopram (Koran et al. 2002) and a subsequent open-label trial followed by a double-blind discontinuation phase (Koran et al. 2003) reported positive results. Naltrexone was found also to be effective in a case series (Kim 1998). In terms of psychotherapy interventions, a recent study reported some benefits from cognitive behavioral (Mitchell et al. 2006).

Patients with **C-I sexual behaviors** (C-ISBs) show repetitive sexual acts and compulsive sexual thoughts. The subject feels compelled or driven to perform the behavior, which may or may not cause subjective distress. Even though generally not ego-dystonic, the behavior may interfere with several aspects of the patient's life, causing social or occupational impairment and legal or financial consequences (Black et al. 1997). C-ISBs include a broad range of paraphilic or non-paraphilic symptoms (Coleman 1991). Paraphilic C-ISBs involve unconventional sexual behaviors in which

there is a disturbance in the object of sexual gratification or in the expression of sexual gratification (e.g., exhibitionism, voyeurism). Non-paraphilic C-ISBs, on the other hand, involve conventional sexual behaviors that have become excessive or uncontrolled (Coleman 1991). The exact prevalence of C-ISBs is unknown, given the hetereogeneity of these disorders, as well as the secretive nature of these conditions. Investigations conducted in the early 90's reported prevalence rates of C-ISBs ranging from 5% to 6% of the U.S. population (Coleman 1991, Schaffer and Zimmerman 1990). Men would seem to be more affected than women (Cooper et al. 1990, Weissberg and Levay 1986). It is not clear, however, how large this sex difference is and to which extent may be due to the fact that male patients arrive to the professional attention with a greater frequency. Studies assessing the rates of OCD in patients suffering from C-ISBs (Black et al. 1997, Kafka and Prentky 1994) reported a prevalence between 12% and 14%.

Controlled pharmacological trials on patients with C-ISBs are still lacking, and the available literature on the topic includes essentially open-label trials and case-report series. Positive results have been reported with lithium and tricyclics (Cesnik and Coleman 1989, Coleman et al. 1992, Kruesi et al. 1992), SRIs (Emmanuel et al. 1991, Kafka 1994, Stein et al. 1992, Fedoroff 1993), buspirone (Fedoroff 1988, Fedoroff 1992) and nefazodone (Coleman et al. 2000). As for other ICDs, the opioid antagonist naltrexone has recently shown to be effective in a case study (Raymond et al. 2002). Furthermore, different forms of psychotherapy have shown to be effective for specific subtypes of C-I sexual behaviors (Coleman 1995).

C-I skin picking is a repetitive, intentionally performed behavior that may cause substantial physical damage and significant distress. Affected patients often present to dermatologists, and it has been estimated that about 2% of dermatology clinic patients may suffer from this condition (Doran et al. 1985, Gupta et al. 1986). Prevalence in the general population or in psychiatric clinics is unknown. Frequently, skin picking is not a transient behavior and may persist with a waxing and waning lifetime course. It should be considered pathological when it becomes habitual, chronic and extensive, leading to significant distress, dysfunction or disfigurement (Simeon and Favazza 1995). Two recent studies indicated the majority of patients with C-I skin picking as women; their condition is assumed to be chronic with excoriations on both single or multiple sites (Simeon et al. 1997, Arnold et al. 1998). The face is the most common site of excoriation, but picking can involve any area of the body. Both studies found the majority of patients experiencing an increased tension before the act, relief after the act or both. Comorbid lifetime rates of skin picking in patients with hair pulling were reported to be approximately 10% in both studies (Simeon et al. 1997, Arnold et al. 1998), whereas lifetime comorbid OCD was present in rates ranging from 6% to 19%. Wilhelm and colleagues (Wilhelm et al. 1999) reported rates of OCD around 52% in a sample of patients with C-I skin picking. As mentioned for hair pulling, the inclusion of C-I skin picking within a spectrum of self-injurious behaviors is receiving increasing support from clinical and neuroimaging studies (Simeon and Favazza 1995).

Frequently, patients with skin picking meet criteria for other psychiatric disorders (BDD and OCD), and due to medical complications of their psychopathology, such as infection and scarring, they are referred to clinicians other than psychiatrists (i.e. dermatologists). A controlled trial (Simeon et al. 1997) of fluoxetine, at a mean dose of 55 mg/d for 10 weeks, showed a significant superiority over placebo in decreasing the behavior in 21 adults with chronic skin picking. More recently, a combined open-label and double-blind trial (Block et al. 2001) confirmed the efficacy of fluoxetine in subjects with C-I skin picking. In a subsequent open-label study (Kalivas et al. 1996), sertraline (mean dose: 95 mg/d) showed clinically significant improvement in the majority of patients with skin picking after one month of treatment. Finally, uncontrolled psychodynamically oriented treatments and behavioral interventions have given mixed results described elsewhere (Aronowitz 2001).

Conclusions

ICDs are prevalent and disabling conditions still poorly understood in terms of diagnosis, in spite of the relatively high prevalence of some of them, in particular PG and C-I sexual behaviors, as well as of treatment strategies. Moreover, accumulating data on "classical" and more-recently characterized ICDs, such as Internet Addiction, C-I Skin Picking, C-I Shopping and C-I Sexual Behaviors, suggest that, taken as a whole, they would currently represent one of the most frequent and impairing class of mental conditions worldwide, while showing also a constant increase.

Although over the last decade, some studies on different pharmacological treatments of ICDs have been carried out, systematic controlled trials are still lacking for the majority of ICDs. In addition, almost all of the studies on ICDs describing patterns of comorbidity suffer from ascertainments bias, i.e. they are performed on patients seeking treatment. Several studies, moreover, were conducted on small sample sizes and the confidence in the reported results is therefore limited. Nonetheless, a clinical point that still appears relevant in the pharmacological choice for patients with ICDs is the comorbidity with other psychiatric conditions such as affective and addictive disorders. The presence of bipolar or addictive comorbidity, in fact, might determine the most appropriate choice when different treatments have proven to be effective for a specific disorder. Moreover, investigating the relationships between specific ICDs and other major psychiatric conditions (i.e. OCD, bipolar disorders, addictive disorders) in terms of phenomenological issues and comorbidity patterns is not only of theoretical interest; indeed, it would provide the rationale for the use of specific pharmacological treatments and behavioral interventions. If the first conceptualization of ICDs was that including them within the OC spectrum disorders, evidence do also support their relationships with addictive and affective disorders. In any way, it should be noted that the different models of conceptualizing the ICDs are not mutually exclusive and have contributed to recognize specific subtypes

within the disorders, as well as to promote the use of new pharmacological treatments, such as mood stabilizers and opioid antagonists which appear promising, besides the SSRIs.

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