Comparison of Obsessive-Compulsive Disorder Patients With and Without Comorbid Putative Obsessive-Compulsive Spectrum Disorders Using a Structured Clinical Interview

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Increasing attention has been paid to the possibility that a range of disorders, the putative obsessive-compulsive spectrum disorders (OCSDs), may share overlapping phenomenological and neurobiological features with obsessive-compulsive disorder (OCD). The development of a structured clinician-administered interview for the putative OCSDs (SCID-OCSD) is described. This instrument was used to investigate differences between OCD patients with a comorbid putative OCSD and OCD patients without a comorbid putative OCSD. A sample of 85 adult patients (38 men and 47 women) presenting for treatment of OCD was interviewed with the SCID-OCSD. OCD patients without comorbid putative OCSDs (n = 36) were compared to patients with comorbid OCSDs (n = 49) in terms of demographic features, clinical characteristics, and associated comorbidity with other non-OCSD DSM-IV axis I disorders. Of the OCD patients, 57.6% currently met criteria for at least one putative OCSD and 67.1% had a lifetime history of at least one comorbid OCSD. The OCSDs with the highest prevalence rates were compulsive self-injury (22.4%), compulsive buying (10.6%), and intermittent explosive disorder (10.6%). There was a significantly larger proportion of women in the group with comorbid OCSDs. Although the two groups did not differ in terms of severity of OCD symptoms, the group with comorbid OCSDs had significantly more obsessions and compulsions. The two groups did not differ significantly in terms of associated psychopathology other than OCSDs. We conclude that the SCID-OCSD provides clinicians and researchers with an instrument for the diagnosis of putative OCSDs. Our findings suggest that putative OCSDs have a relatively high prevalence rate in OCD patients. In addition, OCD patients with comorbid OCSDs differ with regard to certain demographic and clinical features. Further research, particularly genetic and neuroimmunological work, may ultimately be useful in validating the obsessive-compulsive spectrum.

IN THE PAST FEW YEARS, a number of researchers have suggested that a range of disorders may belong to the so-called obsessive-compulsive spectrum disorders (OCSDs) on the basis of sharing certain features with obsessive-compulsive disorder (OCD).[1,2] Disorders hypothesized to belong to the putative OCSDs include eating disorders (anorexia nervosa and binge-eating disorder), somatoform disorders (body dysmorphic disorder [BDD] and hypochondriasis), dissociative disorders (depersonalization disorder), tic disorders (Tourette's syndrome), and (perhaps at the opposite end of a compulsive-impulsive spectrum) impulse control disorders (compulsive buying, kleptomania, compulsive self-injury, sexual compulsions, trichotillomania, pathological gambling) and impulsive personality disorders (e.g., borderline and antisocial personality disorder).[2]

Although these disorders share certain phenomenological features with OCD (e.g., the presence of obsessive thoughts and compulsive, repetitive behaviors), differences in the phenomenology of putative OCSDs and OCD have been noted.[3-5] For example, OCD symptoms are usually associated with harm avoidance, whereas the symptoms of impulsive OCSDs often express stimulation and pleasure seeking.[6]

Putative OCSDs are hypothesized to share other characteristics with OCD.[1,6-7] These features include symptom profile, associated features (age at onset, clinical course, and comorbidity), etiology (neurological and biological factors), modes of genetic transmission and family history, and response to certain behavioral and pharmacological therapies.[2,7]

Pharmacotherapy dissection studies have offered some support for the conceptualization of certain disorders as belonging to the putative obsessive-compulsive spectrum.[8] In a series of studies, Rapoport and colleagues found that hair pulling,[9] onychopagia,[10] stereotypic behaviors,[11] and obsessive-compulsive symptoms in autistic disorder[12] responded more robustly to a serotonin re-

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uptake inhibitor than to a noradrenergic reuptake inhibitor. Offering further proof for the involvement of the serotenergic system in putative OCSDs, preliminary data shows the selective efficacy of serotonin reuptake inhibitors (SRIs) for symptoms of body dysmorphic disorder,[13] self-injurious behavior in mental retardation,[14] and Tourette's disorder.[15] The apparently selective response of these conditions to SRIs may reflect the stereotypic nature of certain symptoms that characterize these disorders.[8]

A number of structural and functional imaging studies have suggested that prefrontal-basal ganglia-thalamic-prefrontal circuits are involved in OCD.[16,17] With regard to putative OCSDs, imaging studies have provided evidence for frontal-striatal circuit involvement in Tourette's disorder.[18] Although there currently exists a paucity in imaging studies of other putative OCSDs, the use of functional brain imaging in these disorders may shed more light on the relationship between putative OCSDs.[8] Some research indicates that OCD and Tourette's disorder[19,20] and OCD and trichotillomania[21] share a degree of genetic overlap; overlapping genetic contributions in other OCSDs need to be examined further.[8]

Some authors have, however, warned against premature and over-inclusive classifications.[22] First, a range of quite different disorders with substantially different phenomenological characteristics have been suggested to lie on the obsessive-compulsive spectrum. Second, there has been relatively little neurobiological validation of the obsessive-compulsive spectrum[8]; certainly, the fact that different disorders respond selectively to the same intervention does not itself allow the conclusion that they are clearly related (after all, both depression and enuresis respond to imipramine).

Most of the research on the association between OCD and putative OCSDs has been conducted on eating disorders[23-28], Tourette's disorder,[29-42] and trichotillomania.[43-48] Fewer studies have investigated the association between OCD and BDD[49,50]; compulsive buying[51]; pathological gambling[52]; nonparaphilic sexual disorder (i.e., hypersexual disorder)[53,54]; kleptomania[55,56]; compulsive self-injury[57] (e.g., skin-picking); and hypochondriasis.[58,59]

Estimates of the lifetime prevalence of OCD in anorexia nervosa range from 25%[60] to 37%,[61] whereas the lifetime prevalence of anorexia nervosa in OCD ranges from 9%[62] to 26%.[63] The lifetime prevalence of OCD in bulimia nervosa is estimated at 3%[61], whereas the lifetime prevalence of bulimia nervosa in OCD ranges from 3%[63] to 4.8%.[62] The lifetime prevalence of OCD in hypochondriasis is 9.5%.[64] Lifetime prevalence rates of OCD in patients suffering from BDD range from 8%[65] to 37.5%,[66] whereas the lifetime prevalence of BDD in OCD patients is estimated at 7.7%.[67] Lifetime prevalence estimates of OCD in Tourette's disorder range from 50%[19] to 62%.[68] Little is known about the comorbidity between compulsive self-injury (e.g., onychophagia) and OCD. However, OCD has a lifetime prevalence rate of 22.4% in skin-picking.[69] Skin-picking may occur with trichotillomania.[70] In addition, skin-picking appears to occur commonly in patients with BDD.[71] OCD has a lifetime prevalence of 45% in kleptomanics.[56] The lifetime prevalence of kleptomania in OCD is not known at present. Although there is a paucity of comorbidity data for pathological gambling, it has been reported that OCD has a lifetime prevalence of 20% in pathological gamblers.[52] Estimates of the lifetime prevalence of OCD in trichotillomania range from 13%[43] to 16%.[72] OCD occurs in 30% of persons suffering from compulsive buying[51]. Estimates of the prevalence of OCD in hypersexual disorder range from 12%[53] to 14%.[54] McElroy et al. found that the lifetime prevalence of OCD was 8% in their sample of persons with intermittent explosive disorder.[73] To date, there is a paucity of data on comorbidity between pyromania and dissociative disorders (e.g., depersonalization disorder) and OCD.

Although previous studies have investigated the prevalence of certain OCSDs in OCD, no study has systematically examined the prevalence of a wide range of putative OCSDs in an OCD sample. Such data may prove important in guiding clinicians' attention to those (often neglected) OCSDs that commonly co-occur with OCD. One aim of the present study was to add to the existing literature on the prevalence of a range of OCDs in OCD. To this aim, a structured clinical interview for the diagnosis of putative OCSDs (SCID-OCSD) was developed.

A second aim of this study was to investigate possible differences between the group of OCD patients without any comorbid putative OCSDs

and the group of OCD patients with comorbid OCSDs. It may be argued that such a comparison does not take cognizance of the heterogeneous nature of putative OCSDs. Certainly OCSDs differ with regard to phenomenology as well as neurobiological factors. We were especially interested in determining whether putative OCSDs are primarily related to OCD symptom severity or whether OCD patients with comorbid OCSDs differed from OCD patients without comorbid OCSDs in terms of associated psychopathology, demographic features, and clinical characteristics.

METHOD

Participants

Participants included outpatients older than 18 years, who presented with a DSM-IV principal diagnosis of OCD (N = 85). All participants were referred for an evaluation at an anxiety disorders clinic of a teaching hospital. Most participants were referred to the clinic by community-based general practitioners and psychiatrists. Thirty-eight (44.7%) participants were male and 47 (55.3%) were female. The mean age of participants was 35.05 years (SD 13.04).

Measures

The Structured Clinical Interview for Obsessive-Compulsive Spectrum Disorders (SCID-OCSD) was developed to determine the presence of certain putative obsessive-compulsive spectrum disorders. This structured interview was constructed on the basis of the Structured Clinical Interview for DSM-IV Axis I disorders (SCID-I)[74] and consists of nine subscales developed to determine the presence of Tourette's disorder, intermittent explosive disorder, kleptomania, pyromania, pathological gambling, trichotillomania, compulsive self-injury (e.g., skin-picking), compulsive buying, and sexual compulsions (i.e., hypersexual disorder). The choice of OCSDs measured by the SCID-OCSD was based on previous literature reviews on putative OCSDs.[1,2,6] For putative OCSDs measured by the SCID-I (i.e., binge-eating disorder, anorexia nervosa, hypochondriasis, BDD, and bulimia nervosa) SCID-I modules were used.

The SCID-OCSD is administered by a trained clinician. The first question (i.e., the screening question) of every module is always asked. If particular criteria are not met for a particular disorder, the interviewer proceeds to the next module in a similar manner as in the SCID-I. The presence of both current and past disorders is determined. The items of the SCID-OCSD were based on DSM-IV criteria. The criteria for hypersexual disorder[75] and for compulsive buying[51,76] were based on criteria suggested in the literature. Criteria for compulsive self-injury (e.g., skin-picking, nail-biting, etc.) were based on DSM-IV criteria for trichotillomania.

Inter-rater reliability of the SCID-OCSD has been established for a subsample of 18 randomly selected patients. These patients were seen by two independent interviewers. The kappa statistical coefficients[77] for each of the nine modules were determined. In keeping with Feinstein,[78] the following correspondence was used to analyze the kappa agreement results: (poor) $\kappa < 0$; (low) $0.0 \leq \kappa \leq 0.20$; (fair) $0.21 \leq \kappa \leq 0.40$; (moderate) $0.41 \leq \kappa \leq 0.60$; (strong) $0.61 \leq \kappa \leq 0.80$; and (nearly perfect) $0.81 \leq \kappa \leq 1.0$. Inter-rater reliability data are presented in Table 1. As is evident, most of the modules had strong to nearly perfect inter-rater reliability.

Table 1. Inter-Rater Reliability of SCID-OCSD Modules (N = 18)

	Current		Lifetime	
Disorder	Kappa	*P* Value*	Kappa	*P* Value*
Tourette's disorder	1	†	.686	.004
Compulsive self-injury	.557	.017	.446	.058
Kleptomania	.64	.004	.769	.001
Pyromania	‡	—	‡	—
Pathological gambling	‡	—	1	*
Trichotillomania	.64	.004	.64	.004
Compulsive buying	‡	—	‡	—
Hypersexual disorder	1	†	1	*
Intermittent explosive disorder	.6	.011	.824	*

* Statistical significance assumed at $P < .05$.
† $P < .001$.
‡ Lack of variability in ratings.

The depersonalization disorder module of the Structured Clinical Interview for DSM-IV Dissociative Disorders-Revised (SCID-D)[79-83] was used to determine the presence of depersonalization disorder. The SCID-D is an extensively field-tested semistructured interview for the diagnosis and assessment of dissociative symptoms and disorders.[83] It consists of modules that evaluate the range, nature, and severity of five dissociative symptom areas, including depersonalization. In the present study, only the depersonalization module was used, since it has been hypothesized that depersonalization disorder may lie on the putative obsessive-compulsive spectrum.

The Research Version of the Structured Clinical Interview for DSM-IV Axis I disorders (SCID-I/P, Version 2)[74] is a structured clinical interview developed to determine the presence of DSM-IV axis I disorders. The Research Version includes probes for the subtypes of a number of disorders, as well as severity and course specifiers.

In order to determine the severity of OCD symptoms, the Yale-Brown Obsessive-Compulsive Rating Scale (Y-BOCS)[84,85] was also administered. The Y-BOCS is a 16-item scale designed to measure the severity of OCD symptoms. The sum of the first 10 items of the scale is reported as the total Y-BOCS score. Each of these questions is rated on a 0 to 4 scale, yielding a maximum total score of 40. The greatest asset of the scale is that allows for the comparison of severity between subjects irrespective of the specific content of their symptoms.[86]

The Y-BOCS Symptom Checklist,[87] a clinician-administered symptom checklist, was administered to patients to determine the nature of obsessions and compulsions experienced by patients. The obsessions section of the checklist comprises eight categories (aggressive obsessions, contamination obsessions, sexual obsessions, hoarding / saving obsessions, religious obsessions, obsessions with need for symmetry or exactness, miscellaneous obsessions, and somatic obsessions). The com-

pulsions section consists of eight categories (cleaning/washing compulsions, checking compulsions, repeating rituals, counting compulsions, ordering/arranging compulsions, hoarding/collecting compulsions, mental compulsions, and miscellaneous compulsions).

Procedure

The study was conducted on 85 consecutive adult OCD patients who were referred to our Anxiety Disorder unit over a 2-year period. After obtaining informed consent, demographic data were obtained and both the SCID-I and the SCID-OCSD were administered to participants. The Y-BOCS, the Y-BOCS Symptom Checklist, and the depersonalization module of the SCID-D were also administered to participants. Patients were interviewed by one of two clinicians. In order to attain optimal rating consistency, both clinicians were trained to use the SCID-OCSD and regular calibration meetings were held thereafter. SCID-OCSD interviews were recorded and randomly selected interviews were played back and discussed at calibration meetings. In addition, feedback regarding research findings for each patient was given to referring clinicians. The feedback obtained from referring clinicians was also discussed during calibration meetings.

Statistical Analyses

Data were analyzed using the computer program Statistical Package for Social Sciences (SPSS, Chicago, IL; Version 9). The group of OCD patients without comorbid putative OCSDs was compared to the group of OCD patients with comorbid putative OCSDs on demographic variables (sex, mean age, employment status). In addition, the two groups were compared on age at onset of OCD, overall number of comorbid non–obsessive-compulsive spectrum DSM-IV axis I disorders per patient, and mean total Y-BOCS scores. For normally distributed continuous variables, two-tailed *t* tests were used, whereas the Mann-Whitney *U* test was used for continuous variables for which normality could not be assumed. For categorical data, between-group differences were tested using 2 x 2 chi-square analysis and two-sided Fisher exact tests. Differences between the two groups on the prevalence rates of non–obsessive-compulsive spectrum disorders were investigated using 2 x 2 chi-square analysis and two-sided Fisher exact tests. Findings are presented without correction for multiple comparisons (i.e., with significance levels of $P < .05$) given that this is a hypothesis-generating preliminary study.

RESULTS

It was found that 49 (57.6%) of patients with OCD currently also met criteria for at least one other putative OCSD, and nine (10.6%) had three or more of these conditions in addition to their OCD. Further it was found that 57 (67.1%) patients had at least one OCSD at some time in their life and 10 (11.8%) had a lifetime prevalence of three or more OCSDs.

Demographic data for the group of OCD patients without comorbid putative OCSDs and the group with comorbid putative OCSDs are presented in Table 2.

Table 2. Demographic Features of OCD Patients Without Comorbid Putative OCSDs and OCD Patients With Comorbid OCSDs (N = 85)

Variable	Patients Without OCSDs (n = 36)	Patients With OCSDs (n = 49)	*P* Value†
Age (yr)	38.6 ± 13.9	32.5 ± 11.8	.033‡
Sex			
Male	21 (58.3%)	17 (34.7%)	.046§
Female	15 (41.6%)	32 (65.3%)	
Employment			
Employed	26 (72.2%)	44 (89.8%)	NS
Unemployed	4 (11.1%)	4 (8.2%)	
Retired	6 (16.7%)	1 (2%)	
Education‖	4.7 ± 1.1	4.8 ± 1	NS

NOTE. Results are presented as no. (%) or as mean ± SD.
Abbreviation: NS, not significant.
† Statistical significance assumed at $P < .05$.
‡ $t = 2.173$, df 83.
§ $\chi^2 = 4.691$, df 1.
‖ As measured by a 6-point scale (1 = no schooling, 2 = grade 1-7, 3 = grade 8-10, 4 = grade 11-12, 5 = graduated 2-yr college, 6 = obtained at least 1 university degree).

The two groups did not differ significantly with regard to employment status and level of education. However, the sex ratio of the two groups differed significantly. In addition, the group without comorbid OCSDs was significantly older than the group with comorbid OCSDs (group without OCSDs: 38.6 ± 13.9 years; group with OCSDs: 32.5 ± 11.8 years; $t = 2.173$, df 83, $P = .033$).

The current incidence and lifetime prevalence of the various conditions putatively characterized as OCSDs in OCD patients are presented in Table 3. The most common comorbid conditions in OCD were compulsive self-injury (n = 19, 22.4%), compulsive buying (n = 9, 10.6%), and intermittent explosive disorder (n = 9, 10.6%). Pathological gambling (0%) and pyromania (0%) were seen only rarely. Although only two (2.4%) patients had comorbid Tourette's disorder, 10 (11.8%) participants had a lifetime history of motor and/or vocal tics.

In addition, the presence of subclinical disorders on the putative obsessive-compulsive spectrum was investigated and tabulated in Table 4. Disorders were considered to be subclinical when patients met the criterion addressed by the stem question for a particular OCSD, but did not meet the minimum number of criteria to qualify for a clinical diagnosis.

Table 3. Current and Lifetime Prevalence Rates of Putative OCSDs in OCD Patients (N = 85)

Disorder	Current		Lifetime	
	No.	%	No.	%
Eating disorders (SCID-I)*				
Anorexia nervosa	2	2.4	5	5.9
Bulimia nervosa	3	3.5	4	4.7
Binge-eating disorder	0	0	0	0
Somatoform disorders*				
Hypochondriasis	6	7.1	7	8.2
Body dysmorphic disorder	11	12.9	11	12.9
Movement disorders†				
Tourette's disorder	2	2.4	2	2.4
Impulse control disorders†				
Kleptomania	2	2.4	3	3.5
Pyromania	0	0	1	1.2
Pathological gambling	0	0	1	1.2
Trichotillomania	6	7.1	11	12.9
Compulsive buying	9	10.6	11	12.9
Hypersexual disorder	4	4.7	6	7.1
Intermittent explosive disorder	9	10.6	14	16.5
Compulsive self-injury	19	22.4	24	28.2
Dissociative disorders‡				
Depersonalization disorder	3	3.5	3	3.5

* Measured by SCID-I modules.
† Measured by SCID-OCSD.
‡ Measured by SCID-D depersonalization module.

The two groups were compared in terms of certain clinical features (Table 5). In particular, we wanted to determine whether they differed in terms of OCD severity or OCD symptomatology.

Although the two groups did not differ significantly with regard to Y-BOCS totals, the group with comorbid OCSDs reported significantly greater resistance against obsessions/preoccupations ($z = 2.049$, $P = .040$), as well as a significantly greater degree of resistance against compulsions ($z = 2.159$, $P = .031$) than the group without comorbid OCSDs. In addition, compulsive symptoms of the group with comorbid OCSDs took up significantly more time ($z = 2.159$, $P = .031$).

The group with comorbid OCSDs had significantly more obsessive-compulsive symptoms than the group without comorbid OCSDs ($z = 2.812$, $P = .005$). Furthermore, the group with comorbid OCSDs had significantly more obsessive symptoms ($z = 3.007$, $P = .003$), as well as significantly more compulsive symptoms ($z = 2.216$, $P = .027$) than the group without comorbid OCSDs.

In order to determine possible differences between the two groups in terms of associated psychopathology, the prevalence rates of various axis I conditions were determined (Table 6). No significant differences between the two groups were found.

DISCUSSION

Lifetime prevalence rates of anorexia nervosa,[88] bulimia nervosa,[88] hypochondriasis,[89-90] Tourette's disorder,[88] trichotillomania,[91,92] and compulsive buying[93] tended to be higher in the OCD patients included in the present study than in the general population. Data on the lifetime prevalence in the general population of BDD, compulsive self-injury, kleptomania, hypersexual disorder, intermittent explosive disorder, pyromania, and depersonalization is limited; it is therefore not possible at present to compare the results obtained for these disorders with prevalence estimates for the general population.

There exists a paucity of information on the prevalence of a number of OCSDs in OCD. Findings with regard to the current and lifetime prevalence of bulimia nervosa and BDD in OCD patients were comparable to findings obtained in previous studies.[49,62,67] The lifetime prevalence of anorexia nervosa in OCD was lower in the sample

Table 4. Current and Lifetime Prevalence Rates of Subclinical Putative OCSDs in OCD Patients (N = 85)

Disorder	Current		Lifetime	
	No.	%	No.	%
Eating disorders (SCID-I)*				
Anorexia nervosa	1	1.2	1	1.2
Bulimia nervosa	4	4.7	4	4.7
Binge-eating disorder	0	0	1	1.2
Somatoform disorders*				
Hypochondriasis	1	1.2	2	2.4
Body dysmorphic disorder	1	1.2	1	1.2
Movement disorders†				
Tourette's disorder	2	2.4	7	8.2
Impulse control disorders†				
Kleptomania	0	0	3	3.5
Pyromania	0	0	0	0
Pathological gambling	1	1.2	2	2.4
Trichotillomania	0	0	1	1.2
Compulsive buying	1	1.2	3	3.5
Hypersexual disorder	3	3.5	3	3.5
Intermittent explosive disorder	4	4.7	8	9.4
Compulsive self-injury	4	4.7	6	7.1
Dissociative disorders‡				
Depersonalization disorder	7	8.2	13	15.3

* Measured by SCID-I modules.
† Measured by SCID-OCSD.
‡ Measured by SCID-D depersonalization module.

Table 5. Clinical Features of OCD Patients Without Comorbid OCSDs and OCD Patients (N = 85)

Variable	Patients Without OCSDs (n = 36)	Patients With OCSDs (n = 49)	*P* Value*	z Value†
Age at onset of OCD (yr)	16.4 ± 9.1	19 ± 10.6	NS	—
Severity				
Y-BOCS total	19.2 ± 7.4	21.8 ± 6.7	NS	—
Obsessions/preoccupations	10.4 ± 4.0	11.4 ± 3.5	NS	—
Time preoccupied	2.4 ± 1.2	2.3 ± 1.1	NS	—
Interference	2.0 ± 1.1	2.3 ± 1.0	NS	—
Distress	2.2 ± 1.1	2.6 ± 1.0	NS	—
Resistance	1.3 ± 1.0	1.8 ± 0.8	.040	2.049
Control	2.4 ± 1.1	2.5 ± 1.0	NS	—
Compulsions	9.1 ± 4.2	10.6 ± 4.3	NS	—
Time preoccupied	1.7 ± 1.1	2.2 ± 1.1	.031	2.159
Interference	1.6 ± 1.0	1.9 ± 1.1	NS	—
Distress	2.1 ± 1.3	2.3 ± 1.1	NS	—
Resistance	1.4 ± 1.0	2.0 ± 1.1	.031	2.158
Control	2.2 ± 1.2	2.3 ± 1.0	NS	—
No. of symptoms				
Obsessive symptoms				
Aggressive obsessions	2.0 ± 2.2	2.7 ± 2.1	.050	1.959
Contamination obsessions	1.7 ± 2.0	2.8 ± 2.4	.020	2.321
Sexual obsessions	0.4 ± 0.8	.46 ± 1.0	NS	—
Hoarding/saving	0.2 ± 0.4	0.4 ± 0.5	NS	—
Religious obsessions	0.8 ± 0.9	0.8 ± 0.8	NS	—
Symmetry/exactness	0.4 ± 0.6	0.7 ± 0.6	.017	2.384
Miscellaneous	2.5 ± 2.0	3.7 ± 2.4	.023	2.277
Somatic	0.3 ± 0.6	0.5 ± 0.7	NS	—
Total no. of obsessive symptoms	8.2 ± 5.4	12.2 ± 6.2	.003	3.007
Compulsive symptoms				
Cleaning/washing	0.9 ± 1.3	1.4 ± 1.5	NS	—
Checking	2.0 ± 1.7	2.4 ± 1.7	NS	—
Repeating	0.6 ± 0.8	0.9 ± 0.8	NS	—
Counting	0.3 ± 0.5	0.6 ± 0.5	.021	2.307
Ordering/arranging	0.3 ± 0.5	0.5 ± 0.5	.021	2.305
Hoarding	0.3 ± 0.5	0.3 ± 0.5	NS	—
Mental compulsions	1.6 ± 1.4	2.1 ± 1.5	NS	—
Miscellaneous	1.3 ± 1.1	1.6 ± 1.3	NS	—
Total no. of compulsive symptoms	7.4 ± 4.6	9.8 ± 5.1	.027	2.216
Total no. of symptoms	15.6 ± 8.4	22.0 ± 10.1	.005	2.812

* Statistical significance assumed at $P < .05$.

† Mann-Whitney *U* tests performed for each comparison.

included in the present study than in previous studies.[28,62,63] Further research into the prevalence of putative OCSDs in the general population as well as in other psychiatric populations is necessary to determine whether putative OCSDs have significantly higher prevalence rates among OCD patients.

The group of patients with comorbid OCSDs and the group of patients without comorbid OCSDs were compared in terms of demographic characteristics, clinical features, and associated psychopathology. Although the OCSDs are certainly heterogeneous, the main aim of this comparison was to determine whether OCD patients with comorbid OCSDs differed significantly from OCD patients without comorbid OCSDs.

The finding that a significantly greater proportion of the group with OCSDs were female when compared to the group without OCSDs, may reflect differences in the sex ratio of specific putative OCSDs such as anorexia nervosa,[88] bulimia nervosa,[88] trichotillomania,[47,70] and compulsive self-injury.[71]

The two groups did not differ significantly on OCD severity. However, the group with comorbid putative OCSDs had significantly more obsessive

Table 6. Current Comorbid DSM-IV Axis I Disorders Excluding Putative OCSDs in OCD Patients With Comorbid OCSDs and OCD Patients Without Comorbid OCSDs

Disorder	Patients Without OCSDs (n = 36)		Patients With OCSDs (n = 49)		*P* Value*
	No.	%	No.	%	
Mood disorders	10	27.8	19	38.5	NS
Major depressive disorder	7	19.4	15	30.6	NS
Bipolar disorder	0	0	0	0	‡
Dysthymic disorder	3	8.3	4	8.2	NS
Substance abuse/dependence	1	2.8	0	0	NS
Alcohol abuse	1	2.8	0	0	NS
Alcohol dependence	0	0	0	0	‡
Other substance abuse	0	0	0	0	‡
Anxiety disorders†	17	47.2	32	65.3	NS
Panic disorder with agoraphobia	3	8.3	10	20.4	NS
Panic disorder without agoraphobia	3	8.3	5	10.2	NS
Agoraphobia	2	5.6	3	6.1	NS
Social phobia	7	19.4	11	22.5	NS
Specific phobia	5	13.9	15	30.6	NS
PTSD	1	2.8	4	8.2	NS
GAD	10	2.8	13	26.5	NS
Psychotic disorders	0	0	1	2	NS
Psychotic disorder NOS	0	0	1	2	NS

Abbreviations: PTSD, post-traumatic stress disorder; GAD, globalized anxiety disorder.

* Statistical significance assumed at $P < .05$.

† The total is less than the sum of the individual disorders because some subjects had more than one disorder in a given category.

‡ Lack of variability in ratings.

symptoms as well as more compulsive symptoms than the group without comorbid OCSDs. It seems, therefore, as if patients with comorbid OCSDs have a tendency to experience a broader range of OCD-related symptomatology. Possibly, the underlying heterogeneity of the group with comorbid OCSDs may be associated with greater heterogeneity in OCD-related symptomatology. Future studies should investigate whether differences in OCD symptomatology reflect underlying genetic or neurobiological differences between patients without comorbid OCSDs and patients with comorbid OCSDs.

In a recent study by Phillips et al.,[49] various significant differences in the lifetime prevalence of DSM-III-R disorders were found between a group of 53 patients with BDD and a group of 53 patients with OCD. However, the OCD-group and a group of 33 patients with BDD as well as OCD differed significantly only in terms of the lifetime prevalence rate of psychotic disorders.[49] In the present study, no differences in prevalence rates of associated non-OCSDs DSM-IV axis I disorders between the group without comorbid OCSDs and the group with comorbid OCSDs were found.

The relatively high rate of comorbidity and lifetime prevalence of OCSDs in OCD patients, suggests that these disorders may well be associated with OCD. However, there has been no systematic study of the prevalence of a range of OCSDs in other psychiatric populations. Therefore, comorbidity and lifetime prevalence data offer at best preliminary evidence for the validity of the putative obsessive-compulsive spectrum.

The OCSDs may be associated with significant impairment in occupational, social, academic, and family functioning. A number of writers have argued that disorders such as trichotillomania[94,95] and BDD[96] are associated with substantial morbidity. In addition the psychosocial and economic costs of OCSDs such as pathological gambling and compulsive buying may be considerable.[97-99] Future studies need to investigate the effect that comorbid putative OCSDs have on the quality of life of patients with OCD as well as patients without comorbid OCD.

CONCLUSION

The present study has significant limitations. In particular a normal control group and a clinical control group were not included. Future studies

should investigate the prevalence of a range of putative OCSDs in psychiatric populations as well in the general population using measures such as the SCID-OCSD. Furthermore, OCD patients with a group of heterogeneous OCSDs were compared to OCD patients without putative OCSDs. Future studies should investigate differences between OCD patients with and OCD patients without specific putative OCSDs. Although inter-rater reliability statistics have been determined for the modules of the SCID-OCSD, other psychometric properties of this instrument (e.g., test-retest reliability) still need to be determined.

Despite these limitations, the development of assessment instruments such as the SCID-OCSD is a necessary first step in investigating the relationship between OD and putative OCSDs as well as between putative OCSDs. Certainly, a structured diagnostic instrument in addition to the SCID-I is necessary if the full range of putative OCSDs is to be identified in OCD patients. Ultimately, more neurobiological work is necessary to validate the OCSD concept and to determine whether different genetic and neuroimmunological factors are involved in OCD with comorbid OCSDs and OCD without comorbid OCSDs.

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