Severe Obsessive-Compulsive Disorder With and Without Comorbid Hair Pulling: Comparisons and Clinical Implications

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Objective: Chronic hair pulling and trichotillomania are putative obsessive-compulsive spectrum disorders. This study determined the prevalence of hair pulling in an inpatient obsessive-compulsive disorder (OCD) population and compared clinical characteristics and treatment response between subgroups with and without comorbid hair pulling.

Method: Patients with severe DSM-IV–diagnosed OCD (N = 154) who were consecutively admitted to an OCD residential treatment facility between August 2000 and July 2003 were included. Clinician-rated (Yale-Brown Obsessive Compulsive Scale) and patient-rated (Massachusetts General Hospital Hairpulling Scale, Beck Depression Inventory, and Posttraumatic Diagnostic Scale) measures were administered at index evaluation. OCD patients with and without moderate to severe hair pulling were statistically compared on clinical and treatment characteristics and treatment response.

Results: Of the OCD subjects, 18.8% (N = 29) endorsed any hair pulling, 15.6% (N = 24) had moderate to severe hair pulling, and 7.8% (N = 12) had severe hair pulling comparable to that of a specialty trichotillomania clinic population. OCD patients with moderate to severe hair pulling were more likely to be women ($p < .001$), endorse > 1 comorbid tic ($p < .05$), and have earlier-onset OCD ($p = .001$). This cohort also had fewer contamination obsessions ($p = .04$) and checking compulsions ($p = .04$) and was more likely to be receiving stimulant ($p = .006$) or venlafaxine ($p = .02$) medication than those patients without hair pulling. Posttraumatic Diagnostic Scale scores were nearly significantly higher in the OCD + hair pulling group ($p = .08$). OCD treatment response was unaffected by the presence of comorbid hair pulling.

Conclusion: Hair pulling is a highly common comorbidity in severe OCD. Women and early-onset OCD patients appear to be more vulnerable to comorbid hair pulling. OCD sufferers with comorbid hair pulling also exhibit an increased risk for tics and may present with different OCD symptomatology.

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Hair pulling (HP) and trichotillomania (TTM) have been described as putative obsessive-compulsive spectrum disorders.[1] It has been postulated that obsessive-compulsive spectrum disorders may represent a variant phenotype of the genetic diathesis to obsessive-compulsive disorder (OCD).[2] A genetic link between these disorders has been identified, with increased rates of OCD among relatives with TTM.[2,3] OCD and HP or TTM also occur as comorbid syndromes, with elevated rates of OCD in HP and TTM (13%–16%).[4–6] The comorbidity of HP and TTM in OCD also exceeds that reported for control[7] and social phobia[8] groups, ranging between 3% and 10%.[2,7–10] The extent of overlap between OCD and HP or TTM is of theoretical and clinical interest. No study to date has examined the prevalence of HP in severe OCD. Elucidating differences between severe OCD patients with and without comorbid HP or TTM may help to identify potential OCD subgroups for use in future genetic, etiologic, and treatment studies.

Although the DSM-IV defines OCD as a single nosologic entity, data from clinical, genetic, neuroimaging, and treatment response studies have emphasized its heterogeneous nature. Studies have attempted to identify more homogeneous subgroups, according to the presence of comorbid disorders,[11] age at OCD onset,[12–14] OCD symptom patterns or dimensions,[11,15–18] and treatment outcomes.[19] These variables are examined in the current study in severe OCD patients with and without HP comorbidity.

One potential difference between OCD subgroups with and without HP or TTM may be the presence of additional comorbidities. Several specific comorbidities are likely to be increased in those with HP or TTM. Although depression is already a well-known comorbidity of OCD, one could argue that the negative impact on self-esteem, poorer quality of life, and functional impairment associated with HP may increase the likelihood of depression in the OCD + HP subgroup. Tics also commonly occur among those with OCD, and there is a known genetic link between OCD and tic disorders.[20] Additionally, given suggestions that TTM is more similar to tic disorders than OCD,[21] an increased rate of comorbid tics can be hypothesized for the OCD + HP subgroup. Lastly, given a reported association between childhood trauma and both OCD and TTM,[22,23] an increased risk for posttraumatic stress disorder (PTSD) could be postulated for the OCD + HP subgroup. The potential of this additional comorbidity is significant, as the presence of PTSD indicates decreased treatment responsiveness for OCD.[24]

Hypothetically, the comorbidity of HP or TTM with OCD, independent of other co-occurring disorders, might necessitate different treatment avenues than for OCD alone. For example, although cognitive-behavioral therapy has been proven to be effective for both OCD and TTM, exposure and response prevention is the treatment of choice for OCD,[25] and habit reversal training is recommended for TTM.[26] For TTM, serotonin reuptake inhibitors have had mixed results,[27] and alternate medications such as venlafaxine[28] and traditional and atypical antipsychotics[29] have also been tried. Although these medications have all demonstrated efficacy for OCD,[25] the presence or absence of comorbid HP or TTM may result in different treatment approaches by clinicians. Furthermore, poorer response to intensive residential treatment may occur, based upon the notion that HP or TTM interferes with and distracts from cognitive-behavioral therapy exposure and response prevention, a central component of intensive residential treatment.

In this study, the prevalence of HP was assessed in a population of severely ill OCD patients at an intensive residential treatment program (a combined program of McLean Hospital and Massachusetts General Hospital [MGH], Belmont, Mass.). We hypothesized that the prevalence rate of HP exceeds that previously reported for outpatient OCD patient samples. Further, we compared demographic, comorbidity, clinical, and treatment features for OCD patients with and without comorbid HP. We hypothesized that those patients with comorbid HP would be more predominantly female, with increased rates of depression and tics. We further hypothesized that distinctions in OCD characteristics and treatment regimens would emerge and that the group with comorbid HP would have poorer OCD treatment response.

METHOD

Sample

All consecutive admissions (N = 154) to the McLean-MGH OCD Institute Intensive Residential Treatment Program between August 2000 and July 2003 who completed admission measures and the MGH Hairpulling Scale (HPS)[30] were enrolled. This sample comprised a subgroup from a larger previously described treatment sample with severe, treatment-refractory OCD.[31] Briefly, the larger sample of 403 consecutive admissions to intensive residential treatment was predominantly male (58.7%). The patients had a mean age of 32.9 years, with a mean OCD onset of 15.6 years and a mean admission Yale-Brown Obsessive Compulsive Scale (YBOCS)[32,33] OCD severity score of 26.6.

The sample demonstrated a significant 30.1% reduction of OCD severity following a program integrating medication, intensive cognitive-behavioral therapy, and milieu treatment.[31] All intensive residential treatment participants receive 2 to 4 hours of exposure and response prevention daily and psychopharmacology assessments weekly by OCD expert psychiatrists to monitor medication efficacy and side effects. Further, those with HP may use a portion of daily cognitive-behavioral therapy time to conduct habit reversal training to address HP.

The current study sample also had a predominance of men (59.2%). Mean age at evaluation was 33.2 years (SD = 12.4; range, 16–68), and mean age at OCD onset was 15.1 years (SD = 15.1; range, 3–65 years). All subjects were diagnosed with DSM-IV OCD by psychiatrists with expertise in OCD and obsessive-compulsive spectrum disorders, and diagnoses were confirmed by several paper-and-pencil diagnostic measures. All study measures were collected at index evaluation, and several were repeated at discharge. This study was approved by the Institutional Review Board at McLean Hospital.

Measures

Preceding admission to intensive residential treatment, patients completed questionnaires that addressed demographics, psychosocial details, past treatment, and response history. Both clinician-rated and patient self-report scales were utilized.

Among the scales utilized was the YBOCS,[32,33] which is a 10-item OCD severity measure with acceptable psychometric properties and with item scores ranging from 0 (lowest severity) to 4 (highest severity). The HPS is a 7-item, self-rated, paper-and-pencil measure of TTM and HP severity. It has a test-retest reliability of 0.97 and convergent validity of 0.75 with the Clinical Global Impressions scale.[34] The Tic Symptom Checklist (25-item) is a self-report measure that identifies the presence of vocal and motor tics. The Beck Depression Inventory (BDI)[35] is a 21-item self-rated depression severity scale with a diag-

Table 1. Clinical Characteristics of Patients With Obsessive-Compulsive Disorder (OCD) With and Without Comorbid Moderate to Severe Hair Pulling[a]

Characteristic	OCD Without Moderate to Severe Hair Pulling (N = 130)	OCD With Moderate to Severe Hair Pulling (N = 24)	Test Statistic (p)
OCD			
Age at OCD onset, mean (SD), y	15.8 (9.3)	10.7 (4.3)	3.7 (.001)
OCD admission severity (YBOCS score), mean (SD)	26.1 (6.5)	24.7 (6.8)	0.94 (.35)
Family history of OCD, N (%)	30 (24.4)	9 (40.9)	2.59 (.11)
Contamination obsessions, N (%)	81 (77.9)	7 (50)	(.04)[b,c]
Checking compulsions, N (%)	61 (64.2)	6 (37.5)	4.08 (.04)[c]
Comorbidity			
Tics (> 1 motor or phonic), N (%)	56 (44.4)	16 (66.7)	3.99 (< .05)
> 1 Motor tic, N (%)	39 (31)	13 (54.2)	4.80 (.03)
Phonic tics, N (%)	48 (37.5)	11 (45.8)	0.59 (.44)
Depression severity (BDI score), mean (SD)	20.6 (10.8)	23.3 (9.1)	–1.2 (.24)
PTSD severity (PDS score), mean (SD)	13.7 (15.9)	22.2 (18.3)	–1.82 (.08)

[a]Due to missing values for some variables, not all denominators equal 130 or 24 for calculating percentages.
[b]Fisher exact test.
[c]YBOCS lifetime symptoms; only categories with significant differences are displayed.
Abbreviations: BDI = Beck Depression Inventory, PDS = Posttraumatic Diagnostic Scale, PTSD = posttraumatic stress disorder, YBOCS = Yale-Brown Obsessive Compulsive Scale.

nostic cutoff score of 16 for major depressive disorder.[36] The Posttraumatic Diagnostic Scale (PDS)[37] is a 19-item PTSD measure with item frequency rated between 0 (not at all) and 3 (almost always). Subjects were also given definitions and examples of motor and phonic tics and asked to endorse those present.

Statistical Analyses

Comorbidity rates were assessed for "any" HP, moderate to severe HP, and HP with severity equal to or greater than that reported for a subspecialty TTM clinic sample. Any HP was defined as a positive response on item 1 of the HPS (score > 0). Moderate to severe HP was defined by a positive response on item 1 and a total HPS score ≥ 10. A score of 10 was selected as a cutoff due to research convention established by 1 of the authors who created the scale (N.J.K.). Scale item wording suggests that scores greater than 1 reflect at least moderate HP.

Pearson χ^2 analysis, t test, the Fisher exact test, and the Mann-Whitney U test were used to assess differences between OCD groups with and without moderate to severe HP. Separate analyses of any comorbid tics, motor tics, and phonic tics were conducted. To account for the possibility that HP had been inappropriately defined as a tic, more than 1 type of motor tic was required for inclusion in the motor tic subgroup. To examine potentially confounding effects of comorbid tics on OCD onset, rates were calculated before and after removing those with comorbid tics from each group. SPSS 12.0 software[38] was used in the statistical analysis. Tests used were 2-tailed with statistical significance defined as $p \leq .05$.

RESULTS

Of the study sample, 18.8% (N = 29) reported any HP, and 15.6% (N = 24) had moderate to severe HP. Nearly 8% (7.8%, N = 12) had a minimum HPS total score of 16, which was the mean baseline evaluation score reported for patients at a subspecialty TTM clinic.[39]

No demographic differences were reported between groups except for fewer men in the OCD + HP (25.0%, N = 6) group versus the OCD – HP (65.5%, N = 84) group ($\chi^2 = 13.8$, $p < .001$). Table 1 summarizes OCD characteristics and comorbidities for groups with and without moderate to severe HP. OCD inpatients with comorbid moderate to severe HP had an earlier OCD onset and fewer lifetime contamination obsessions and checking compulsions than those without HP. Reported lifetime OCD symptoms from all other categories of the YBOCS symptom checklist and family rates of OCD were not significantly different between groups. Those patients from the OCD + HP group were more likely to have > 1 motor or phonic tic, or > 1 motor tic. Mean PDS scores were nearly significantly higher in the OCD + HP group ($p = .08$). There were no significant group differences in OCD severity or depression severity at baseline evaluation.

Table 2 compares the treatment history, medications at admission, and response to intensive residential treatment between those patients with and without HP. No group differences were reported in treatment history or posttreatment OCD or depression severity scores. However, the groups had different medication profiles, as the OCD + HP group had significantly higher rates of venlafaxine and stimulant use.

DISCUSSION

A high prevalence of HP was identified among those patients with severe OCD. As hypothesized, the prevalence rates of 18.8% for any HP and of 15.6% for moderate to severe HP exceed the previously reported range for TTM and HP in OCD.[2,7–10] Further, the 7.8% prevalence of

Table 2. Treatment Characteristics of Patients With Obsessive-Compulsive Disorder (OCD) With and Without Comorbid Moderate to Severe Hair Pulling[a]

Characteristic	OCD Without Moderate to Severe Hair Pulling (N = 130)	OCD With Moderate to Severe Hair Pulling (N = 24)	Test Statistic (p)
Treatment history			
Psychiatric admission history, N (%)	74 (58.7)	12 (52.2)	0.34 (.56)
Taking medications, N (%)	93 (79.3)	20 (95.2)	(.12)[b]
Medications at admission			
No. of psychotropics, mean (SD), range	2.6 (2.2), 0–8	3.3 (1.7), 0–8	–0.73 (.47)
Taking selective serotonin reuptake inhibitors, N (%)	65 (50)	13 (54.2)	0.14 (.71)
Taking venlafaxine, N (%)	4 (3.1)	4 (16.7)	(.02)[b]
Taking tricyclic antidepressants, N (%)	22 (16.9)	4 (16.7)	(1.0)[b]
Taking stimulants, N (%)	2 (1.5)	4 (16.7)	(.006)[b]
Taking benzodiazepines, N (%)	43 (33.1)	8 (33.3)	0.001 (.98)
Treatment response			
YBOCS score at discharge, mean (SD)	18.3 (7.8)	16.7 (7.7)	0.95 (.35)
% YBOCS score decrease, mean (SD)	28.9 (27.4)	30.2 (27.5)	–0.21 (.83)
BDI score at discharge, mean (SD)	14.5 (12.4)	15.1 (10.1)	–0.27 (.79)
% BDI score decrease, mean (SD)	28.2 (47.7)	36.4 (38.6)	–0.81 (.43)

[a]Due to missing values for some variables, not all denominators equal 130 or 24 for calculating percentages.
[b]Fisher exact test displayed.
Abbreviations: BDI = Beck Depression Inventory, YBOCS = Yale-Brown Obsessive Compulsive Scale.

HP at severity levels consistent with TTM clinics (HPS score ≥ 16) is also higher than general population rates.[7] These rates are consistent with the hypothesis that HP is a similar, less severe, and more common syndrome lying on the same spectrum with TTM.[9]

The current study reports on the presence of HP rather than TTM due to the repeated assertion that TTM criteria are overly restrictive[5,9,40] and that differences between HP and TTM reflect symptom severity rather than the presence of 2 discrete illnesses.[9] Attempts to differentiate HP and TTM are diagnostically challenging and not necessarily clinically meaningful.[9]

Results from this study indicate that OCD subgroups with and without HP differ in 4 important ways. These include distinct demographic, comorbidity, and OCD characteristics and treatment profiles. Clinical awareness of HP as a common OCD comorbidity is imperative to prevent underdiagnosis and to appreciate distinct OCD characteristics associated with this subgroup.

First, demographically, this study identified that significantly more women were in the OCD + HP group. This was not a surprising finding due to the well-known fact that TTM is a pathologic grooming condition that is female predominant.[41] Screening for comorbid HP should be conducted for all OCD patients, but especially among OCD-affected women.

The second difference was the distinct comorbidity profiles of the groups. Those with HP were significantly more likely to have tics than the OCD subgroup without HP. This is particularly interesting given the postulation that TTM subtypes may be phenotypic variants of tic disorders,[42] and that TTM may even be more closely related to tics than to OCD.[21] Specifically, the increased presence of motor but not vocal tics in the OCD + HP sample suggests that HP may in fact be akin to an atypical motor tic. Reported neuroimaging findings between TTM and tic groups have been more similar than those between TTM and OCD groups.[43–47] Comorbidity patterns between OCD, HP, and tic disorders also reflect the close relationship between these 3 disorders. In a TTM sample, those with comorbid tics (8.5%) had increased OCD symptom rates.[9] In the current study, those with OCD and tics were more likely (N = 19, 26.4%) to have HP than those with OCD and no tics (N = 9, 11.5%, p = .02), replicating an earlier study.[34] Thus, the presence of tics among OCD-affected individuals indicates an elevated risk for HP and vice versa.

Another comorbidity-related finding was the nearly statistically significant elevation of PDS scores in the OCD + HP group. In the context of past reports of increased childhood trauma in those with OCD and TTM,[22,23] this finding warrants future investigation using more extensive measures.

The third difference between subgroups pertained to OCD clinical characteristics and phenomenology. Earlier OCD onset and distinct OCD symptom profiles occurred among those with comorbid HP. The significantly earlier OCD onset among the comorbid group replicates previously reported findings.[10] Efforts were taken to control for the potentially confounding effect of tics on OCD onset in the OCD + HP group (which had significantly more tics), as it has been reported that earlier OCD onset is associated with the presence of comorbid tics.[13] Thus, individuals with tics were removed from both the OCD + HP and the OCD – HP subgroups, and mean ages at OCD onset were recalculated to be 9.7 years (SD = 5.0) and 18.0 years (SD = 10.2), respectively. This continues to reflect a significant difference in OCD onset (Fisher exact test, p = .002). The earlier onset of OCD is clinically relevant given the fact that childhood-onset OCD may represent a

developmental subtype of the disorder with unique etiology and outcome.[36,38,48]

Contamination obsessions and checking compulsions were less prevalent in the subgroup with HP, whereas no OCD symptom categories were reported more frequently. The decreased rate of contamination obsessions is particularly of interest given past findings in both adult and child samples of fewer cleaning compulsions among those with OCD + tics versus OCD – tics.[49,50] The current study identifies a distinct symptom and clinical profile of OCD itself when HP is present. In combination with findings from past studies, it also suggests the possibility of a more homogeneous early-onset OCD subtype characterized by comorbid tics and HP and decreased contamination/cleaning symptomatology.

The fourth difference identified between groups was the reported medication profile at admission to the intensive residential treatment OCD program. Those with comorbid HP were more likely to be taking venlafaxine and stimulant medications. Reasons for this distinction are unclear. Potentially related are the fact that stimulants treat disorders characterized by impulsivity (e.g., attention-deficit/hyperactivity disorder) and the postulation that HP and TTM are closer to the impulsive end of the obsessive-compulsive spectrum disorders than OCD.[41] Alternatively, this may reflect clinical use of adjunctive agents to treat either HP or OCD symptoms that have been partially responsive or nonresponsive to traditional OCD medications. In contrast to our hypothesis, no differences in treatment outcome were determined when comparing these groups.

Limitations of this study should be acknowledged. Although diagnoses were carefully conducted by experts in OCD and related disorders, structured instruments were not used to identify obsessive-compulsive spectrum disorders. Berkson's bias should be considered, which results in disproportionately more patients with comorbidities in clinical versus epidemiologic samples.[51] This bias may have potentially inflated rates of HP in this sample with severe OCD. In the future, it would be of interest to examine whether the presence of "not just right" OCD or "OCD without feared consequences" is increased in OCD + HP using a measure such as the Brown Assessment of Beliefs Scale.[52] Unfortunately, the YBOCS symptom checklist in this study does not address this symptom type, such that we were unable to determine whether not just right OCD, HP, and tics represent a taxon in OCD subtyping. Although the current study design did not permit, it would have also been of interest to determine the function of HP in those with OCD and whether this action is more compulsive than in normal TTM samples. Further, this study only examines groups with and without HP with respect to treatment response. Both groups had other comorbidities that may confound treatment outcome. However, given the absence of differences in treatment outcome per se, this issue is of less relevance.

As a putative obsessive-compulsive spectrum disorder, HP is a common OCD comorbidity. In this inpatient OCD population, nearly 1 in every 5 individuals (18.8%) reported HP, and 7.8% reported a severity level equivalent to that found in TTM subspecialty clinics. These findings represent higher rates than previously reported in outpatient OCD populations.[2,9] OCD-affected individuals with HP had distinct characteristics including female predominance, higher rates of comorbid tics, earlier onset of OCD, and a distinct OCD symptom profile.

Drug name: venlafaxine (Effexor).

Disclosure of off-label usage: The authors have determined that, to the best of their knowledge, venlafaxine is not approved by the U.S. Food and Drug Administration for the treatment of hair pulling.

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