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Clinical Characteristics of Trichotillomania with Trichophagia

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Abstract

Objective—Little is known about trichophagia in individuals with trichotillomania. Although studies have mentioned the behaviour, no previous studies have examined clinical correlates of trichophagia.

Method—We examined the clinical correlates of trichophagia in 68 subjects with DSM-IV trichotillomania (85.3% females; mean age = 35.0 ± 12.5). Comorbidity data were obtained with the Structured Clinical Interview for DSM-IV. Trichotillomania severity was assessed with the Psychiatric Institute Trichotillomania Scale and the Massachusetts General Hospital Hairpulling Scale. Social/occupational functioning was examined using the Sheehan Disability Scale. All variables were compared in trichotillomania subjects without and without trichophagia.

Results—Of the 68 trichotillomania subjects, 14 (20.6%; 95% CI [12.7%-31.6%]) reported current trichophagia, and an additional 9 (13.2%) ate their hair or the root episodically. There were far more similarities than differences in trichotillomania subjects with current trichophagia and those without, although those with trichophagia were significantly more likely to be male ($p=.013$) and have more severe trichotillomania (according to the Massachusetts General Hospital Hairpulling Scale) ($p=.010$).

Conclusions—These preliminary results suggest that trichophagia is not uncommon in individuals with trichotillomania. Subjects with and without trichophagia were similar in most domains that were examined.

1. Introduction

Although the phenomenon of hair pulling has been a recognized medical problem since Hallopeau's description in 1889 (1), it was actually trichophagia, the eating of hair, which first captured the attention of medical texts. In the late 18th century, the French physician, Baudamant, described a trichobezoar in a 16 year-old boy (2). Even with this long history in medical literature, trichophagia has received little research attention except as a rare symptom of trichotillomania.

Trichotillomania is often characterized by repetitive rituals performed with hairs after they are pulled (3). These behaviors appear to resemble the ritualistic behaviors of obsessive compulsive disorder (OCD) (4-6). These rituals include biting on the hair, chewing it, playing with it and even swallowing it (7). Swallowing of the hair is the most physically hazardous of the behaviors as it can result in a trichobezoar (hair ball) which can block the intestinal tract

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and, if left untreated, can be a life-threatening emergency requiring surgery (8-14). Previous studies have suggested that approximately 5%-10% of individuals with trichotillomania engage in trichophagia (7,15). How many individuals with trichophagia develop trichbezoars is unclear. One study of 186 patients with trichotillomania found no cases of trichbezoars (16), while another study found a rate of 25% in 24 female trichotillomania subjects (17).

Although causes of trichophagia are unknown, early reports suggested that it was associated with iron deficiency (18). Psychoanalytic perspectives have suggested that eating the hair may have aggressive or destructive unconscious meanings (19). Neither of these perspectives on trichophagia, however, is supported by empirical evidence.

Are there differences between individuals with trichotillomania who eat their hair and those who do not? To answer this question, we examined the clinical characteristics of individuals with trichotillomania and trichophagia in the hopes of further defining the clinical characteristics of this complex behavior. The objective of the current study was to examine clinical features of trichotillomania with and without trichophagia and to examine whether the presence of trichophagia was associated with differences in clinical presentation.

2. Methods

2.1. Subjects

Sixty-eight male and female outpatients, aged 17-59, were recruited from an ongoing pharmacological treatment study for trichotillomania or from an ongoing outpatient study examining the longitudinal course of impulse control disorders. Subjects were recruited through newspapers and fliers advertising the studies as well as through therapist and physician referrals. Subjects were included in this database if they met the general inclusion criteria: 1) primary DSM-IV diagnosis of current (past 12 months) trichotillomania; 2) age 17 or older; and 3) able to be interviewed in person. The only exclusion criterion was the inability to understand and consent to the study. Subjects were recruited over a 2-year period (2006-2007). The investigation was carried out in accordance with the Declaration of Helsinki. The Institutional Review Board of the University of Minnesota approved the studies and the consent statements. All study participants provided voluntary written informed consent.

2.2. Assessments

At the intake interview, each subject was assessed using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) (20) and the Trichotillomania Diagnostic Interview, a valid and reliable diagnostic instrument (21).

A semi-structured rater-administered questionnaire was used to collect detailed information on demographic and clinical features of trichotillomania (e.g., areas of pulling, time spent pulling, triggers to pulling, social and occupational problems related to pulling) as well as treatment history.

Trichotillomania symptom severity was assessed with three measures:

Psychiatric Institute Trichotillomania Scale (PITS)—The PITS is a 6-item, clinician-administered scale, that rates hair pulling symptoms during the past week (22). The items assess number of hair pulling sites, time spent pulling and thinking about pulling, resistance to hair pulling urges, distress and interference with daily activities. Items are rated from 0 to 7, with higher scores reflecting greater severity, and total scores ranging from 0 to 42. Although the psychometric properties of the PITS have not been well established (23-24), as one of the few clinician-rated instruments for trichotillomania, it has shown strong correlation with the MGH Hairpulling Scale ($r=0.63$) (25).

Massachusetts General Hospital (MGH) Hairpulling Scale—The MGH Hairpulling Scale is a valid and reliable, 7-item, self-report instrument assessing baseline severity as well as change in symptom severity over time (26). Items are rated from 0 to 4 with higher scores indicating more severe trichotillomania symptoms. The MGH Hairpulling Scale has demonstrated excellent test-retest reliability, convergent and divergent validity, and sensitivity to change in hairpulling symptoms (25).

Clinical Global Impression-Severity scale (CGI)—The CGI Severity scale is a reliable and valid, 7-item scale assessing severity of trichotillomania symptoms at the intake visit. The scale ranges from 1 = “not ill at all” to 7 = “among the most severely ill” (27).

In order to assess the overall psychosocial interference due to pulling, the Sheehan Disability Scale (SDS) (28) was included. The SDS is a three-item, reliable and valid, self-report scale that assesses functioning in work, social or leisure activities, and home and family life. Each item uses an 11-point Likert scale with scores ranging from “no impairment” (=0) to “extreme impairment” (=10). Total scores therefore range from 0 to 30 with higher scores equivalent to greater impairment.

Subjects were asked about their history of both pharmacological and psychosocial treatments. Subjects were asked whether they sought the treatments for the symptoms of trichotillomania or for some other psychiatric issue. The percentages of subjects seeking treatments specifically for trichotillomania were recorded.

Family history assessment was performed using a semi-structured interview that asked trichotillomania probands about each first-degree relative's history of psychiatric disorders including trichotillomania, compulsive nail biting, and pathologic skin picking. No family members were interviewed.

2.3. Statistical Analysis

Subjects were identified as having current trichophagia if they ate their hair, mouthed their hair but did not swallow it, or bit or ate the hair root on a daily basis. Those who episodically ate their hair or hair root were not characterized as having trichophagia for purposes of this study.

The percentage of subjects, with 95% confidence intervals, who had trichophagia was determined, and subjects with and without trichophagia were compared on demographic and clinical variables. Differences between groups were tested using Pearson's chi-square or Fisher's exact test for dichotomous variables and t-tests for continuous variables. All comparison tests were two-tailed and an alpha level of .05 was used to determine statistical significance.

Effect sizes were also calculated. Effect sizes for the equality of sets of mean differences between groups are reported in terms of Cohen's effect size index “d” or based on tests of the equality of two or more distributions over a set of two or more categories (chi-square square tests) (“w”) (29). A d of .2 is considered a small effect size, .5 is medium, and .8 is large; a w of .1 is considered small, .3 is medium, and .5 is large (29).

3. Results

Sixty-eight male and female adults (58 [85.3%] females; mean age = 35.0 ± 12.5 [range 17-59]) with primary DSM-IV-TR trichotillomania participated in the study. All subjects currently met full DSM-IV criteria for trichotillomania. Thirty-three (48.5%) subjects were single, 30 (44.1%) were married, and 5 (7.4%) were divorced, separated, or widowed. Sixteen (23.5%) subjects had a high school diploma or less education, and 52 (76.5%) had at least some college

education. The vast majority of subjects were white, non-Hispanic (n=66; 97.1%) and employed (n=47; 69.1%). Mean age of trichotillomania onset was 13.6 ± 9.4 [range 2-49] years.

Fourteen (20.6%) [95% CI: 12.7%-31.6%] of the 68 subjects with trichotillomania had current trichophagia. Nineteen (27.9%) had lifetime trichophagia (this includes the 14 subjects with current trichophagia). An additional 9 (13.2%) currently ate their hair or the root episodically. Of the 14 with current trichophagia, 5 (35.7%) had previously sought treatment for hair pulling, but only 1 (20% of those seeking treatment) had been asked about eating hair by a previous clinician.

Physical examination and routine laboratory work revealed no physical problems indicative of a trichobezoar and no anemia in any of the 14 subjects. Only 1 of the 14 subjects (7.1%) had ever undergone an abdominal x-ray (due to weight loss and constipation), and there was no finding of a trichobezoar.

Although trichotillomania subjects with trichophagia did not differ from those without trichophagia with respect to most demographic variables (Table 1), those with trichophagia were significantly more likely to be male (35.7% compared to 9.3%; $\chi^2=6.203$; df=1; p=.013).

Subjects with trichophagia reported significantly more severe trichotillomania symptoms using the MGH Hairpulling Scale (mean score of 21.7 ± 7.6 compared to 15.8 ± 5.2 ; t=2.666; df=66; p=.010), but clinician-rated severity of trichotillomania did not significantly differ between groups using the PITS or the CGI Severity scale (Table 2). Psychosocial functioning did not significantly differ between groups with both groups reporting mild to moderate impairment.

Although the trichophagia group had greater numerical rates of co-occurring compulsive nail biting, the groups did not significantly differ with respect to any co-occurring disorder. Similarly, family history data revealed no significant group differences.

4. Discussion

In this study, we determined the rate of trichophagia in 68 individuals with DSM-IV-TR trichotillomania. Approximately one in five (20.6%) individuals with trichotillomania in this study had trichophagia, and those with trichophagia had no known histories of trichobezoars. The rate of trichophagia found in this study is higher than the rate reported in a previous sample of trichotillomania subjects (5%-10%) (7,15). The reasons for this are unclear. One previous study had a small sample (n=22)(15), and our finding is most similar to that in the larger previous study (n=60) (7). Given the embarrassment surrounding discussions of eating hair, many who engage in the behavior may not feel comfortable disclosing this information and so all of these studies may under-estimate the prevalence of this behavior. Additionally, we defined trichophagia as any eating of the hair or root or mouthing the hair even if the hair is not ingested. Previous studies did not clearly define trichophagia, and it is possible that our broad definition of trichophagia may explain the higher rates of trichophagia in this study.

In addition, this study determined the clinical correlates associated with trichophagia in individuals with trichotillomania. Subjects with trichophagia were similar to those without with respect to a majority of demographic and clinical variables assessed. This study demonstrated, however, that individuals with trichophagia were more likely to be male and arguably had more severe hair pulling symptoms. These findings support the view that trichophagia may be an important clinical factor when assessing and treating trichotillomania.

One significant finding from this study was that trichotillomania subjects with trichophagia were more likely to be males. Males were in the minority of recruits in this study, and it has been suggested that males with trichotillomania are less likely to present for treatment (30). It

is possible, therefore, that there are more never-treated males with trichotillomania in the community than we are currently aware of, and therefore, trichophagia may be more common than previously thought. Alternatively, trichophagia may occur only in the most severe cases of trichotillomania, and men may only come for treatment when the behavior becomes severe. Because the men in this study had a narrower range of trichotillomania severity than the women, it may not be possible to extrapolate these gender results to a broader population of individuals with trichophagia.

Our second finding was that trichotillomania subjects with trichophagia were more severely ill than subjects without trichophagia. Although not all trichotillomania severity measures supported this finding, the MGH Hairpulling Scale, the measure with the greatest reliability and validity data, reflected significantly more severe hair pulling symptoms for those with trichophagia. This finding suggests that clinicians should carefully screen trichotillomania patients for eating hair as the presence of this behavior may have treatment implications. Further research is needed to explore how the relationship between trichotillomania and trichophagia may affect treatment outcome. In addition, research is needed to clarify the extent to which trichophagia may contribute to the maintenance or exacerbation of trichotillomania.

Both groups reported having previously received treatment for trichotillomania, but interestingly, cognitive behavioral therapy (CBT) was rarely received. Reasons why people had not received CBT are unclear. Because this study did not examine the previous treatments in detail, it is unclear whether those who reported having received CBT actually received adequate trials (31-32). To our knowledge, however, no research has been done on whether trichophagia has any effect on response to CBT in individuals with trichotillomania.

One health concern with these subjects is that the longitudinal course of trichophagia remains unknown. Although, to our knowledge, no one in this study had developed a trichobezoar, the possibility exists that they may do so in the future. In fact, many of the subjects reported that their eating of hairs had initially been less frequent but that the frequency of their behavior had increased over time. In such a small sample, however, a thorough understanding of the course of trichophagia is not possible. These findings emphasize the importance of studying the course of trichophagia in order to optimize prevention and treatment strategies.

This study found that although co-occurring disorders were largely similar between groups, compulsive nail biting was more common in trichotillomania subjects with trichophagia. This study, however, did not assess the rates of nail ingestion among those with nail biting, and this information may provide even greater clues to understanding the possible relationship of these two behaviors. Although no one in this study appeared to have mental retardation or a pervasive developmental disorder, ingestion of hair and nails shares some clinical similarities to pica, a feeding disorder of childhood (33). Given that poverty, neglect, and a lack of parental supervision may be risk factors for pica (34-36), a more detailed developmental history of individuals with trichophagia may provide greater understanding of possible shared neurobiological correlates in at least some individuals with these behaviors.

This study has several limitations. First, because trichophagia is often denied, the rate found in this study may underestimate the actual rate of trichophagia in subjects with trichotillomania. In addition, the number of subjects with trichophagia was too small for a more detailed examination of gender correlates with specific trichotillomania symptoms. Second, this sample was comprised only of individuals seeking treatment (either therapy or medication). In addition, lack of diversity in our sample may suggest that these findings will not generalize to members of different ethnic and cultural groups. The extent to which these results generalize to the larger population of people with trichotillomania and trichophagia warrants future study. Third, although subjects were asked extensively about family history, no interviews were

conducted with family members and no control groups were used. Fourth, examination of mental retardation and pervasive developmental disorders was performed using only a detailed clinical evaluation. Future studies should evaluate individuals with trichophagia according to a more complete battery of tests examining intelligence, language and communication skills, and social interactions. Finally, the analyses did not account for family-wise error. Adjusting the alpha level using a more conservative statistical approach, such as a Bonferroni correction, would have resulted in fewer statistically significant findings. Because this is the first study of this topic and is therefore exploratory, and because the Bonferroni correction tends to be overly conservative (37), we did not adjust the alpha level to reflect all statistical comparisons. Several of the findings that may not have reached statistical significance at an adjusted alpha level may nonetheless be clinically significant. Despite these limitations, our sample may generalize better than previous trichotillomania studies in that the study inclusion/exclusion criteria were very broad. The study also used both self-report and interviewer-administered measures with established psychometric properties.

In conclusion, these results suggest that trichophagia is not uncommon in subjects with trichotillomania. Additional research on this topic is needed, including larger studies, studies of clinical correlates of trichophagia in trichotillomania, and studies of etiology and pathophysiology. Also greatly needed are studies examining whether trichophagia is associated with response to particular treatments for trichotillomania. Just as research has provided greater information on the neurobiology and treatment of other psychiatric disorders, neuroimaging, genetics and clinical trials will be needed to identify the pathophysiology of and treatment for trichotillomania with trichophagia.

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Table 1
Demographics of Trichotillomania Subjects with and without Trichophagia

	Trichophagia (n=14)	No Trichophagia (n=54)	Statistic*	df	p-value	Effect Size	Power
Age, Mean ($\pm$ SD), [range], years	33.6 (13.3) [20-59]	35.4 (12.4) [17-58]	.483t	66	.631	d=.070	.076
Gender , n (%)							
Female	9 (64.3)	49 (90.7)					
Male	5 (35.7)	5 (9.3)	6.203c	1	.013	w=.302	.702
Race , n (%)							
Caucasian	14 (100.0)	52 (96.3)					
Other	0 (0.0)	2 (3.7)	f	n/a	1.00	n/a	n/a
Marital , n (%)							
Single/Living Together	7 (50.0)	26 (48.1)					
Married	7 (50.0)	23 (42.6)	1.442c	2	.486	w=.146	.173
Divorced/Separated/Widowed	0 (0.0)	5 (9.3)					
Education , n (%)							
High School or less	2 (14.3)	14 (25.9)					
Any college	12 (85.7)	40 (74.1)	.837c	1	.360	w=.111	.150
Employment , n (%)							
Employed	8 (57.1)	39 (72.2)					
Unemployed	6 (42.9)	15 (27.8)	.581c	1	.446	w=.116	.119

For tests of the equality of two or more distributions over a set of two of more categories, Cohen (1988) uses the effect size w, where w=.10 is small, w=.30 is medium, and w=.50 is large. For tests of the equality of sets of mean differences between groups, Cohen uses the effect size d, where d=.20 is small, d=.50 is medium, and d=.80 is large.

* Statistic: c = Chi-square f = Fisher's Exact test t = t-test

Table 2
Clinical Characteristics of Trichotillomania Subjects with and without Trichophagia

	Trichophagia (n=14)	No Trichophagia (n=54)	Statistic*	df	p-value	Effect Size	Power
Age of onset, years Mean ($\pm$ SD), [range]	12.5 (5.9) [5-27]	13.9 (10.2) [2-49]	.497t	66	.621	d=.168	.078
Psychiatric Institute Trichotillomania Scale Mean ($\pm$ SD), [range]	22.6 (5.9) [9-33]	22.6 (4.3) [16-34]	.034t	66	.973	d=.004	.050
MGH Hairpulling Scale Mean ($\pm$ SD), [range]	21.7 (7.6) [8-41]	15.8 (5.2) [4-24]	2.666t	66	.010	d=.906	.743
Clinical Global Impression (Severity) Scale Mean ($\pm$ SD), [range]	4.7 (1.1) [3-7]	4.8 (0.9) [3-7]	.310t	66	.758	d=.100	.52
Sheehan Disability Scale Mean ($\pm$ SD), [range]	9.4 (6.7) [0-25]	10.8 (6.2) [0-28]	.694t	66	.491	d=.217	.105
History of Psychiatric Hospitalizations, n (%)	0 (0.0)	3 (5.6)	f	n/a	1.00	n/a	n/a
Proxy Puller, n (%)	0 (0.0)	6 (11.1)	1.706c	1	.191	w=.158	.257
Compulsive nail biting, n (%)	6 (42.9)	16 (29.6)	.889c	1	.346	w=.114	.156
Pathologic skin picking, n (%)	7 (50.0)	28 (51.9)	.015c	1	.902	w=.015	.052
Current Comorbidity, n (%)							
Any mood disorder	5 (35.7)	18 (33.3)	.028c	1	.867	w=.020	.053
Any anxiety disorder	2 (14.3)	12 (22.2)	.428c	1	.513	w=.079	.100
Any substance use disorder	0 (0.0)	2 (3.7)	f	n/a	1.00	n/a	n/a
Any first-degree family members with history of In (%):							
Any mood disorder	5 (35.7)	12 (22.2)	1.079 c	1	.299	w=.126	.180
Any anxiety disorder	1 (7.1)	10 (18.5)	1.061c	1	.303	w=.125	.178
Any substance use disorder	2 (14.3)	12 (22.2)	.428c	1	.513	w=.079	.100
Any grooming disorder	2 (14.3)	20 (37.0)	2.629c	1	.105	w=.197	.368
Lifetime treatments received for trichotillomania, n (%)							
Medication	5 (35.7)	41 (75.9)	2.953c	1	.172	w=.014	.382
Cognitive behavioral therapy	2 (14.3)	10 (18.5)	.150c	1	.699	w=.117	.051
For tests of the equality of two or more distributions over a set of two of more categories, Cohen (1988) uses the effect size w, where w=.10 is small, w=.30 is medium, and w=.50 is large.							
For tests of the equality of sets of mean differences between groups, Cohen uses the effect size d, where d=.20 is small, d=.50 is medium, and d=.80 is large.							

* Statistic: c = Chi-square f = Fisher's Exact test t = t-test