Longitudinal Follow-Up of Naturalistic Treatment Outcome in Patients With Trichotillomania

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Background: Little is known about the longitudinal course of treatment outcome in patients with trichotillomania. The authors conducted a second follow-up assessment on a cohort of hair pullers previously studied.

Method: Forty-four subjects completed a hair-pulling questionnaire and paper-and-pencil measures of hair-pulling severity and impact, psychosocial functioning, depression, anxiety, and self-esteem. Mean time elapsed between the first and second follow-up assessment was 2.5 years (index evaluation to first follow-up = 3.5 years).

Results: Twenty-seven subjects (61.4%) had active treatment since the first follow-up. No significant changes in hair pulling, depression, anxiety, or psychosocial functioning were reported from first to second follow-up. Self-esteem scores significantly worsened during this period ($p = .000$). A trend toward worsening also existed for psychosocial impact scores. Comparison of scores at index evaluation with second follow-up still showed significant improvement over time for hair pulling ($p = .001$) but significant worsening in self-esteem ($p = .000$). Treatment and responder status were unrelated to clinical functioning, with the exception of depression and psychosocial impact.

Conclusion: Although hair pullers exhibit initial improvement with treatment, scale scores plateau or worsen by second follow-up. Significant worsening in self-esteem at second follow-up may be related to the absence of further improvements in hair-pulling severity. Future research should focus on the interrelationships among self-esteem, depression, and hair pulling during treatment for this disorder.

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Trichotillomania remains puzzling to mental health professionals from the perspectives of both theoretical conceptualization and clinical treatment. Few data exist regarding the naturalistic course of the disorder as well as long-term follow-up of treatment outcome.

Although originally viewed as a variant of obsessive-compulsive disorder (OCD), prevailing thought now classifies trichotillomania as an obsessive-compulsive "spectrum" disorder, with differences from as well as similarities to OCD.[1–3] The DSM-IV diagnosis of trichotillomania is currently classified within the category of impulse-control disorders not elsewhere classified given the subjective report of pleasure or gratification that accompanies hair pulling for many with the disorder. However, not all hair pullers report these consequences to their behavior, prompting the question as to whether it is impulsive in all cases. Some hair pullers report release of tension or anxiety accompanying the behavior, similar to what is reported in tics and OCD. It well may be the case that distinct subtypes of the disorder exist.[4]

In general, the treatment literature is extremely sparse. Both pharmacologic and cognitive-behavioral treatment approaches often have limited reported efficacy and questionable long-term maintenance of treatment gains. Treatment study sample sizes are often small, and different researchers frequently treat different patient samples (e.g., with or without comorbidity, with varying treatment motivation). No standard measure is utilized to assess treatment outcome, and some studies, in fact, use self-report as the sole outcome measure. As a result, conclusions cannot easily be compared across studies. Furthermore, few researchers have conducted follow-up outcome assessments.

The pharmacologic treatment literature is noteworthy for frequent failure to corroborate the successful outcomes of open medication trials with double-blind, placebo-controlled studies.[5] In general, few well-controlled, large-scale medication trials have been conducted. As stated above, a paucity of drug trials have included follow-up data on those patients who reportedly improved with treatment. One exception is the study by Christenson and colleagues[6] in which 3 of 4 subjects who improved with short-term fluvoxamine treatment subsequently entered long-term treatment. After a total of 6 months of treatment, all 3 subjects lost most of their clinical improvement in hair pulling.

In those pharmacologic studies with follow-up assessment, the results have been mixed. Benarroche[7,8] reported maintenance of treatment benefit for 10 patients following 1 year of treatment in an open-label fluoxetine trial. However, relapse was noted within 4 months of fluoxetine withdrawal. Swedo et al.[9] conducted naturalistic follow-up of their cohort of patients treated with clomipramine. Both in-person assessment interviews (2–3 years posttreatment) and phone follow-up (at a mean of 4.3 years posttreatment) documented continued benefit of clomipramine with each of their 3 outcome measures. In contrast, Pollard et al.[10] reported that 3 of 4 trichotillomania patients who had significant hair-pulling reductions with clomipramine treatment relapsed at 3-month follow-up despite maintenance of drug dosage. Iancu and colleagues[11] reported on a sample of 12 trichotillomania patients with open medication treatment. Nine patients initially had hair-pulling reductions (3 did not respond to treatment); however, for all 9 treatment responders, a relapse to "near pretreatment levels" occurred after 9 weeks.

In general, the cognitive-behavioral therapy (CBT) outcome literature is plagued by many of the same methodological problems as the pharmacologic studies. In the one large-scale, controlled CBT treatment trial,[12] habit reversal training was reported to be statistically more effective than negative practice. The 22-month follow-up data reveal maintenance of treatment improvement for those subjects in the habit reversal condition but not for those receiving negative practice. Unfortunately, the major outcome measure was self-report of hair-pulling episodes, with no other independent measures of hair-pulling improvement. This study has been methodologically critiqued on numerous grounds, including subject selection, failure to verify compliance with treatment recommendations, the absence of a control group to assess for effects of time alone and therapist attention, as well as the absence of more rigorous outcome measures.[13]

Other case series and small comparison studies have examined the efficacy of CBT for trichotillomania including follow-up symptom status. Mouton and Stanley,[14] in an investigation of group CBT for trichotillomania, reported that 4 of 5 patients exhibited symptom improvement at posttreatment. Only 3 of 5 hair pullers maintained treatment gains on all 3 outcome measures at 1-month follow-up, and only 2 of 5 did so at 6-month follow-up. Ninan et al.[15] compared CBT, clomipramine, and placebo in 14 patients with trichotillomania. At posttreatment, the clomipramine group showed less improvement than the CBT group, but more improvement than with placebo. At 3-month follow-up, the CBT group tended to maintain gains, in contrast to the clomipramine group, who tended to relapse.

In a recent uncontrolled evaluation, Lerner et al.[16] reported that 12 of 14 hair pullers who completed a CBT program were classified as responders. In contrast, at follow-up only 4 of 13 subjects (1 patient was lost to follow-up) were still considered treatment responders. In addition, at follow-up 4 of 10 treatment refusers or dropouts who were reached met criteria for symptom improvement. These authors concluded that a high risk for relapse may exist for many hair pullers with successful initial CBT outcomes.

Few researchers have studied naturalistic treatment outcome in this disorder. Cohen et al.[17] surveyed 123 self-identified hair pullers. No differences were reported between behavioral treatment, psychotherapy, fluoxetine, and clomipramine, with minimal benefit reported overall for all treatments.

A naturalistic treatment outcome investigation conducted by our group[18] assessed 63 patients professionally diagnosed with trichotillomania who received state-of-the-art behavioral and/or pharmacologic treatments. Statistically significant improvements in hair-pulling symptomatology as well as depression, anxiety, self-esteem, and psychosocial impact and functioning were documented using paper-and-pencil questionnaires. Furthermore, 33 subjects (52%) rated themselves as treatment responders. Twenty-five percent of the patients had behavioral treatment without medications. Forty-three percent of the subjects were not in treatment at the time of the study. Higher patient ratings of hair-pulling improvement were associated with both higher levels of pretreatment depression and greater posttreatment reductions in depression. Furthermore, patients who received both behavioral and medication treatment showed a greater reduction in hair-pulling scores than those receiving either treatment alone.[19] In addition, posttreatment scores for depression, anxiety, and psychosocial functioning in those patients with combined treatment were no longer significantly different than for those patients who had received monotherapy. Of note, comparison of those patients currently with and without active treatment revealed no significant differences.

The present study investigated severity of hair-pulling symptoms, comorbid depressive and anxiety symptomatology, psychosocial impact and functioning, and levels of self-esteem several years later for those hair pullers in our original study.[18] In light of existing evidence in the literature suggesting relapse after initial treatment benefit in some hair pullers, we hypothesized that subjects would exhibit no further improvement, or, possibly, relapses in functioning, since the time of our first follow-up. We also examined whether treatment status (with or without active treatment) and treatment response (improvement or no improvement) were related to comorbid depression or anxiety, self-esteem, severity or impact of hair pulling, and overall psychosocial functioning. We hypothesized that, similar to our earlier retrospective study, current treatment status would not differentiate hair pullers on any of the variables. We also predicted that higher levels

of pretreatment depressive symptoms and change in depressive symptoms over time would be related to treatment responder status.

METHOD

Subjects

Efforts were made to contact all 63 patients with trichotillomania (DSM-IV criteria) who participated in our original retrospective treatment outcome study in 1996. Initial attempts to contact subjects were made by telephone. Letters were sent to the last known address when phone contact was unsuccessful. We were unable to locate 9 (14.3%) of the original 63 subjects by phone or letter. Four subjects (6.3%) declined our requests for participation. Of the 50 patients who agreed to participate, 6 (12.0%) failed to complete our study packet despite reminders and offers of compensation. In summary, 44 patients (69.8% of the original study sample and 81.5% of subjects located from the initial study) returned completed study packets. The mean ± SD time elapsed between completion of the first and second follow-up questionnaires was 30.23 ± 4.23 months (range, 18–41 months). The mean ± SD time elapsed in our original study between index evaluation and first follow-up was 42.21 ± 33.41 months (range, 2–149 months).

All subjects provided written informed consent. The mean ± SD age of respondents was 35.95 ± 9.03 years (range, 17–63 years). Thirty-nine subjects (88.6%) were female. Nineteen subjects (43.2%) were married, 20 (45.5%) were single, 2 (4.5%) were separated, and 3 (6.8%) were divorced.

Measures

Subjects were asked to complete a paper-and-pencil survey that assessed the diagnostic criteria for trichotillomania, hair-pulling patterns, and treatment history. In addition, respondents were asked to complete the same 6 self-report measures of functioning utilized in the initial retrospective study. Among these were the Massachusetts General Hospital Hairpulling Scale (HPS)[20] and the Trichotillomania Impact Scale (TIS; R. L. O'Sullivan, M.D.; N.J.K.; J. N. Ricciardi, Psy.D.; et al., unpublished scale, 1994). The HPS consists of 7 individual items rated for severity from 0 to 4. The TIS is a 29-item scale with severity ratings from 0 to 5. Also included were the Beck Depression Inventory (BDI),[21] the Beck Anxiety Inventory (BAI),[22] the Rosenberg Self-Esteem Scale (SES),[23] and the Sickness Impact Profile (SIP).[24]

Patient self-ratings of improvement for both hair pulling and global functioning were assessed using the Patient Global Impressions scale (PGI), a 7-point scale (1 = very much improved to 7 = very much worse) modeled after the Clinical Global Impressions scale.[25] Patients were categorized as treatment responders if their self-ratings of improvement were 1 or 2 and nonresponders if their self-ratings were 3 or higher.

Data Analysis

Repeated-measures analyses of variance (ANOVAs) were used to study longitudinal differences in all clinical variables at 3 timepoints (i.e., index evaluation, first follow-up, second follow-up). Mixed-model ANOVAs were used to analyze main effects for subject group (i.e., responder vs. nonresponder; "in active treatment" vs. "not in active treatment") and time, as well as the interaction of group × time. Paired t tests were used for within-group comparisons, and independent t tests were used for between-group comparisons. The significance level was established at $p \leq .05$ for all hypotheses.

RESULTS

Symptom Picture and Treatment History

At the time of second follow-up, self-report of hair-pulling symptoms on the HPS revealed that subjects experienced hair-pulling urges occasionally to often (mean ± SD score = 1.71 ± 1.11). (Frequency of urges is rated on the HPS from "no urges" to "constant urges.") Urges were mild to moderate in intensity (mean score = 1.75 ± 0.84), and subjects were able to distract themselves from urges some to most of the time (mean score = 1.64 ± 1.18). Subjects reported pulling hair occasionally to often (mean score = 1.41 ± 0.99), attempted to resist pulling some of the time (mean score = 1.82 ± 0.97), and were able to resist most of the time (mean score = 2.14 ± 1.50). Respondents reported feeling vaguely uncomfortable about their hair pulling (mean score = 1.36 ± 1.30). Scores on the BDI and BAI indicated mild disturbances in mood (mean score = 7.48 ± 7.13) and anxiety (mean score = 5.05 ± 5.84).

Twenty-seven subjects (61.4%) had active treatment (medications, behavioral treatment, and/or hypnosis) since the first follow-up evaluation in 1996. Sixteen subjects (36.4%) participated in no active treatment since that time. Treatment involvement was unknown for 1 (2.3%) participant. Of the 27 subjects who had active treatment since the first follow-up, 7 (25.9%) were in medication treatment alone, 6 (22.2%) were in behavioral treatment alone, and 2 (7.4%) were in hypnotherapy alone. Twelve (44.4%) of the 27 subjects had treatment in 2 or all 3 of these treatment modalities (i.e., behavioral treatment and medications: N = 7; behavioral treatment, medications, and hypnosis: N = 3; medications and hypnosis: N = 2). Seven (15.9%) of the 44 subjects reported involvement in support groups.

Since the time of the first follow-up, subjects had been prescribed medications for their hair pulling as follows: fluoxetine, N = 10; fluvoxamine, N = 6; clomipramine, N = 5; paroxetine, N = 4; and N = 3 each for venlafaxine,

Table 1. Rating Scale Scores for Responders (R), Nonresponders (NR), and Total Group (TOT) for Each Scale at Index Evaluation, First Follow-Up, and Second Follow-Up[a]

	Timepoint								
	Index Evaluation			First Follow-Up			Second Follow-Up		
Rating Scale	R	NR	TOT	R	NR	TOT	R	NR	TOT
HPS									
Mean	17.13	14.83	16.32	6.47	15.00	11.70[b]	4.80	16.75	11.66[c]
(SD)	(5.63)	(4.59)	(5.25)	(5.48)	(5.83)	(6.39)	(3.80)	(4.49)	(6.85)
TIS									
Mean	49.21	35.09	43.97	22.20	35.50	29.73[d]	16.40	42.92	38.82[e,f]
(SD)	(24.88)	(25.06)	(25.76)	(20.85)	(19.94)	(22.91)	(16.08)	(29.24)	(37.31)
BDI									
Mean	13.86	9.09	11.38	4.00	7.18	6.53[g]	4.00	9.50	7.48
(SD)	(9.43)	(8.23)	(9.09)	(6.57)	(5.17)	(6.83)	(5.20)	(6.83)	(7.13)
BAI									
Mean	7.54	9.13	8.91	3.33	5.67	4.61[h]	4.00	7.00	5.05
(SD)	(6.13)	(8.22)	(7.58)	(5.52)	(3.28)	(5.64)	(5.83)	(7.02)	(5.84)
SES									
Mean	27.38	28.10	28.10	32.21	32.18	32.24[i]	25.00	24.33	24.48[j,k]
(SD)	(7.70)	(5.17)	(6.78)	(6.18)	(5.23)	(5.65)	(2.20)	(2.64)	(2.33)
SIP									
Mean	60.73	68.11	54.51	26.12	55.05	28.14[l]	13.89	69.94	36.71
(SD)	(103.51)	(85.13)	(80.71)	(44.88)	(62.48)	(45.23)	(25.03)	(75.76)	(57.45)

[a]Abbreviations: BAI = Beck Anxiety Inventory, BDI = Beck Depression Inventory, HPS = Massachusetts General Hospital Hairpulling Scale, SES = Rosenberg Self-Esteem Scale, SIP = Sickness Impact Profile, TIS = Trichotillomania Impact Scale. Actual degrees of freedom reported differ in multiple comparisons with the same rating scale owing to unequal sample sizes used in various comparisons.
[b]t = 3.60, df = 27, p = .001 vs. index evaluation.
[c]t = 3.59, df = 27, p = .001 vs. index evaluation.
[d]t = 3.33, df = 29, p = .002 vs. index evaluation.
[e]t = 1.77, df = 43, p = .084 vs. first follow-up.
[f]t = 1.84, df = 29, p = .077 vs. index evaluation.
[g]t = 2.64, df = 24, p = .014 vs. index evaluation.
[h]t = 2.75, df = 21, p = .012 vs. index evaluation.
[i]t = 6.35, df = 36, p = .000 vs. index evaluation.
[j]t = 9.22, df = 41, p = .000 vs. first follow-up.
[k]t = 3.83, df = 38, p = .000 vs. index evaluation.
[l]t = 2.67, df = 29, p = .002 vs. index evaluation.

nefazodone, lithium, and sertraline. (Other medication had been prescribed for only 1 or 2 patients.) Subjects with a history of medication treatment for hair pulling (N = 38) were surveyed regarding loss of efficacy over time with medications. Thirteen subjects (34.2%) reported that their medications were initially effective but later lost their efficacy. Twenty-five subjects (65.8%) reported no loss of effectiveness with medication treatment.

Longitudinal Picture of Naturalistic Treatment Outcome

Repeated-measures ANOVAs were used to compare all clinical measures across the 3 timepoints: index evaluation, first follow-up, and second follow-up. Significant overall F values were reported for the HPS ($F = 10.73$, $df = 2,54$; $p = .000$), TIS ($F = 4.70$, $df = 2,58$; $p = .013$), BDI ($F = 4.24$, $df = 2,48$; $p = .020$), BAI ($F = 4.44$, $df = 2,42$; $p = .018$), and SES ($F = 37.37$, $df = 2,72$; $p = .000$). The overall F value for the SIP approached significance ($F = 2.56$, $df = 2,58$; $p = .086$). (Degrees of freedom vary since not all subjects completed all measures at each timepoint.)

Pairwise t test comparisons were subsequently used for further analyses (Table 1). On the HPS, significant improvement in reported hair-pulling symptoms occurred between index evaluation and the first follow-up. No further improvement occurred between the first and second follow-up periods, but the initial symptom reduction was maintained at the second follow-up. Comparison of HPS scores at index evaluation and second follow-up yielded 15 subjects (55.6%) with ≥ 25% improvement in HPS scores (responders) and 12 subjects (44.4%) with < 25% improvement (nonresponders). (HPS scores were missing for 17 subjects at index evaluation or follow-up.)

On the TIS, significant reduction in the psychosocial impact of hair pulling occurred between index evaluation and first follow-up. However, there was a trend toward worsening of psychosocial symptoms between first and second follow-up. By the second follow-up, psychosocial symptoms were still reduced from index evaluation, but the overall change was no longer significant at $p \leq .05$.

For the BDI, significant reduction in depressive symptomatology occurred between index evaluation and first follow-up. However, no further symptom reduction occurred between first and second follow-up. Furthermore, while self-rated symptoms of depression were lower at second follow-up than index evaluation, the difference was no longer statistically significant.

For the BAI as well, significant reductions in anxiety symptoms occurred between index evaluation and first follow-up. Again, no further symptom reduction occurred between first and second follow-up, and the self-rated anxiety symptoms at second follow-up were no longer significantly less than those at index evaluation.

Table 2. Beck Depression Inventory Scores (mean ± SD) at Index Evaluation, First Follow-Up, and Second Follow-Up for Hair Pullers as a Function of Treatment Status

	Treatment Status	
Timepoint	In Active Treatment	Not in Active Treatment
Index evaluation	12.61 ± 9.51	8.62 ± 7.91
First follow-up	7.08 ± 7.30	4.88 ± 5.28
Second follow-up	8.37 ± 7.30	6.06 ± 7.05

On the SES, significant improvements in self-rated self-esteem occurred between index evaluation and first follow-up. However, significant lowering of self-esteem occurred between first and second follow-up, with the self-rated self-esteem score at second follow-up statistically lower than the score at index evaluation.

On the SIP, significant improvements in functioning were noted between index evaluation and first follow-up. The SIP score at second follow-up was higher than, but not significantly different from, the score at first follow-up. Comparison of SIP scores at index evaluation and second follow-up failed to reveal significant score differences.

Participants also completed subjective self-ratings of improvement (using the PGI) from first to second follow-up for both hair pulling and global functioning. Ratings for hair pulling revealed that 16 subjects (36.4%) were responders (PGI score < 3) and 28 (63.6%) were nonresponders (PGI score ≥ 3). Similarly, ratings of improvement in global functioning on the PGI yielded 19 responders (43.2%) and 25 nonresponders (56.8%).

Relationship Between Treatment Status and Clinical Functioning

Mixed-model ANOVAs (with treatment status as the group factor and time as the repeated measure) were used to analyze scores on the HPS, TIS, BDI, BAI, SES, and SIP. The time factor was significant at $p \leq .05$ for the HPS ($F = 9.78$, $df = 2,52$; $p = .000$), TIS ($F = 5.80$, $df = 2,54$; $p = .005$), BDI ($F = 3.88$, $df = 2,46$; $p = .028$), BAI ($F = 3.56$, $df = 2,40$; $p = .038$), and SES ($F = 37.63$, $df = 2,68$; $p = .000$), indicating improvement over time on all variables. No significant group × time interaction, however, was reported. For the SIP, there was a trend toward significance for the time factor ($p = .096$), again with no significant group × time interaction. The group factor (active treatment vs. no active treatment) was significant only for the BDI ($F = 5.94$, $df = 1,23$; $p = .023$). Comparison of BDI scores at each timepoint reveals that those hair pullers still in active treatment had consistently higher depression scores over time than those hair pullers no longer in active treatment (Table 2).

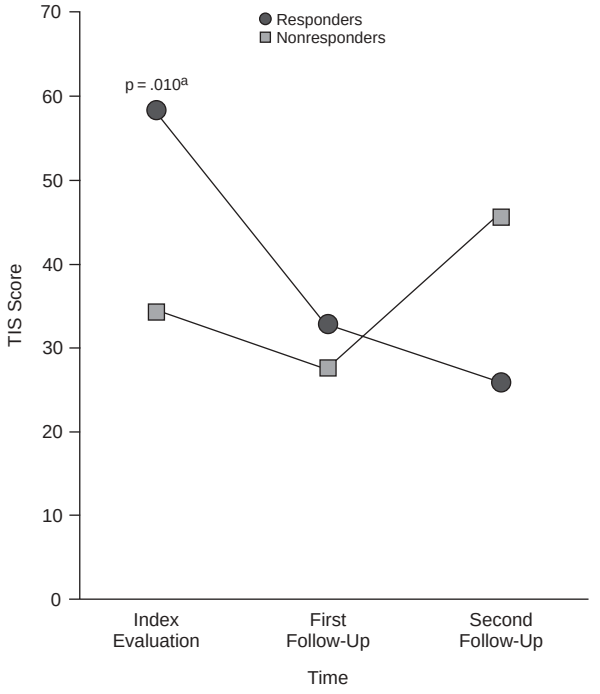
Relationship Between Treatment Response and Clinical Functioning

Mixed-model ANOVAs (with treatment response as the group factor and time as the repeated measure) were used to analyze scores on the HPS, TIS, BDI, BAI, SES, and SIP. Treatment responder status was defined alternately by PGI scores or change in HPS scores. Separate analyses were conducted using each measure of responder status.

When responder status was defined using the PGI, significant effects were reported for time on all variables except the SIP. The results were as follows: HPS: $F = 10.53$, $df = 2,52$; $p = .000$; TIS: $F = 7.18$, $df = 2,56$; $p = .002$; BDI: $F = 4.44$, $df = 2,46$; $p = .017$; BAI: $F = 4.13$, $df = 2,40$; $p = .023$; and SES: $F = 38.21$, $df = 2,70$; $p = .000$. No significant group effect was reported for any of the variables. A significant group × time interaction was reported for the TIS ($F = 6.33$, $df = 2,56$; $p = .003$). Unpaired t tests comparing TIS scores for treatment responders and nonresponders at each timepoint reveal a significant difference at index evaluation ($t = 2.74$, $df = 28$, $p = .010$) and a trend toward significance at second follow-up ($t = 1.73$, $df = 42$, $p = .091$) (Figure 1).

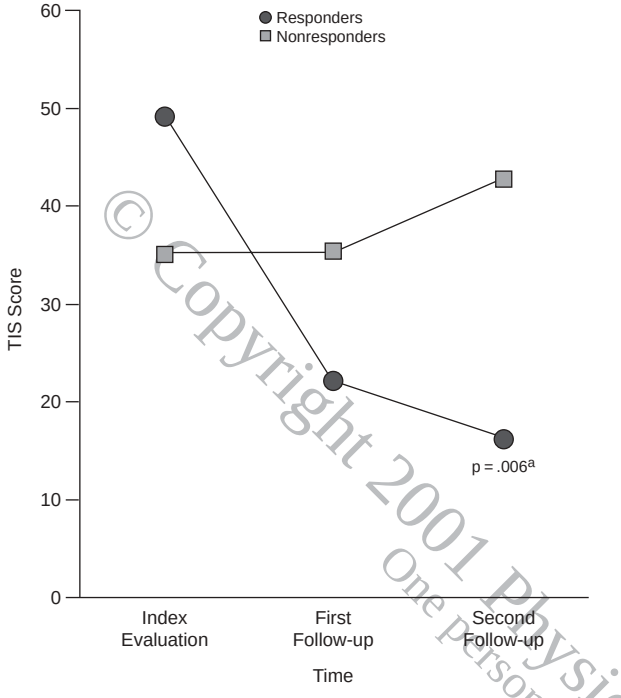
When responder status was defined using the HPS, significant effects were reported for time on the HPS ($F = 9.92$, $df = 2,50$; $p = .000$), TIS ($F = 5.66$, $df = 2,46$; $p = .006$), BDI ($F = 7.98$, $df = 2,44$; $p = .001$), and SES ($F = 23.68$, $df = 2,38$; $p = .000$). Trends toward significance were reported for the BAI ($p = .077$) and the SIP ($p = .090$). Similar results were obtained on the TIS (as

Figure 1. Trichotillomania Impact Scale (TIS) Scores at 3 Timepoints for Responders and Nonresponders (defined using Patient Global Impressions scale criteria)



[a]Responders vs. nonresponders, unpaired t test.

Figure 2. Trichotillomania Impact Scale (TIS) Scores at 3 Timepoints for Responders and Nonresponders (defined using Massachusetts General Hospital Hairpulling Scale criteria)



[a]Responders vs. nonresponders, unpaired t test.

when PGI scores were used to determine responder status), with a significant group × time interaction ($F = 5.60$, $df = 2,46$; $p = .007$) (Figure 2). Unpaired t tests comparing TIS scores for treatment responders and nonresponders at each timepoint reveal a significant difference only at second follow-up ($t = 3.00$, $df = 25$, $p = .006$).

Furthermore, a significant group × time interaction was reported for the BDI ($F = 3.79$, $df = 2,44$; $p = .030$) in the absence of a significant main effect for group. Unpaired t tests comparing responders and nonresponders at each of the 3 timepoints revealed significant group differences only at second follow-up ($t = 2.38$, $df = 25$, $p = .025$), with lower BDI scores for responders (mean ± SD = 4.87 ± 5.11) than nonresponders (mean ± SD = 8.96 ± 7.76).

DISCUSSION

These data indicate that nearly two thirds (61.4%) of our sample were in active treatment many years after the initial evaluation, with 44.4% pursuing multiple treatment modalities. Approximately one third (34.2%) reported loss over time of a beneficial medication effect.

At the time of the second follow-up, nearly half (55.6%) of our trichotillomania patients were classified as treatment responders using the criteria of change in HPS scores (from index evaluation to second follow-up), and 36.4% were responders using PGI scores (comparing first and second follow-up). It is difficult to know how to interpret the difference in percentage ratings between these 2 methods for evaluating treatment response. First of all, different time frames were utilized for the HPS and the PGI. The higher response rate reported using the HPS is not surprising since most of the reduction in HPS scores occurred between index evaluation and first follow-up. However, it may well be the case that lowered subjective ratings of improvement reflect the fact that patients are not satisfied with what would statistically indicate improvement. Although 25% reduction in scale scores has historically been used to indicate improvement with other disorders, such as OCD, it may not be the best index for improvement in trichotillomania.

Longitudinal analyses across the 3 timepoints indicate overall improvement in hair-pulling severity and impact, depression, anxiety, and self-esteem. On the HPS, the significant improvement in hair-pulling severity between index evaluation and first follow-up was maintained at second follow-up. For the BDI, BAI, and SIP, the significant improvement in scores between index evaluation and first follow-up was not maintained, so that scores at second follow-up were no longer significantly better than at index clinic evaluation. For the TIS, there was a trend toward worsening of scores at second follow-up when compared with index evaluation. Furthermore, on the SES, significant improvement between index evaluation and first follow-up was in contrast to lowering of self-esteem scores between first and second follow-up. By second follow-up, self-esteem scores had dropped to the extent that they were significantly lower than self-esteem scores reported at the index evaluation.

These results are consistent with our own anecdotal experience that, for many patients, trichotillomania initially responds to treatment followed by a plateau in hair-pulling improvement. It is interesting that initial improvements in mood, anxiety, and psychosocial impact and functioning were subsequently lost between first and second follow-up. Furthermore, initial improvement in self-esteem from index evaluation to first follow-up was lost to the extent that by second follow-up self-esteem was significantly lower than at index evaluation. One could postulate that the failure to further reduce hair-pulling severity from first to second follow-up could result in the lowering of self-esteem. Alternatively, changes in other variables, such as self-esteem, may have resulted in inability to further reduce hair-pulling severity and its impact. Given our study design, our data do not allow us to determine the directionality of these results.

Current involvement in active treatment did not appear to be related to any of our clinical variables with the exception of depression. Those hair pullers still in active treatment at our second follow-up had consistently higher

depression scores at all 3 timepoints than those hair pullers no longer in active treatment. Thus, higher levels of depression are related to ongoing involvement in treatment for hair pulling, as opposed to greater severity of hair-pulling symptoms.

Lastly, status of treatment response had few significant relationships with other clinical variables. As our group found in our earlier study,[18] those hair pullers who responded to treatment had lower levels of depression at follow-up (in this study, at second follow-up). It is unclear whether the depression impacts the hair pulling or vice versa. It is important that the role of depression in hair-pulling treatment be further examined in future studies. It may be the case that interventions targeting mood symptoms should be recommended in some cases in conjunction with techniques for management of hair-pulling symptoms.

Significant group × time interactions were reported for the TIS using both criteria for responder status. Using the HPS criteria, treatment responders had significantly lowered impact scores at second follow-up than nonresponders. Using the PGI criteria, treatment responders had significantly worse impact scores at index evaluation than nonresponders and a trend toward improved impact scores at second follow-up when compared with nonresponders. Again, it is unclear whether psychosocial impact lessened in response to decreases in hair-pulling symptoms or whether lowered impact resulted in hair-pulling symptom improvement.

Drug names: clomipramine (Anafranil and others), fluoxetine (Prozac), fluvoxamine (Luvox), nefazodone (Serzone), paroxetine (Paxil), sertraline (Zoloft), venlafaxine (Effexor).

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