Trichotillomania and Skin-Picking Disorder: Different Kinds of OCD

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Trichotillomania (hair-pulling disorder) and skin-picking disorder are common neuropsychiatric disorders but are underrecognized by professionals. Affected individuals repeatedly pull out their own hair or pick at their skin, and these symptoms not only have a negative impact on the individual because of the time they occupy but also can lead to considerable physical disfigurement, with concomitant loss of self-esteem and avoidance of social activities and intimate relationships. The behaviors may also have potentially serious physical consequences. Trichotillomania and skin picking frequently co-occur, and both disorders commonly present with co-occurring depression or anxiety. Currently, behavioral therapy appears to be the most effective treatment of both disorders. Pharmacotherapy in the form of *N*-acetylcysteine or olanzapine may play a role in treatment as well.

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CLINICAL CONTEXT

Trichotillomania

Trichotillomania, also known as hair-pulling disorder, is characterized by the repetitive pulling out of one's own hair leading to hair loss and functional impairment (1) (see box for diagnostic criteria). The most common sites pulled include the scalp, eyebrows, and eyelashes, although any bodily site with hair can be affected (2, 3). Pulling from multiple sites is common, and pulling episodes can last from a few minutes to several hours (4). Nationwide epidemiological studies of trichotillomania are lacking, but small studies examining the prevalence of trichotillomania among college students in the United States, adolescents in Israel, and older adults within the community have found current rates ranging from 0.5% to 2.0% (5–7).

The onset of hair pulling occurs generally in late childhood or early adolescence, although the onset of pulling behaviors can occur at any age (4, 8). Trichotillomania appears to have a similar clinical presentation across cultures (6, 9). In adults, trichotillomania has a large female preponderance; however, in childhood, sex distribution has been found to be equal (10, 11). Trichotillomania is frequently associated with reduced self-esteem and avoidance of social situations because of shame and embarrassment from the pulling and its consequences (3, 12). Although trichotillomania interferes with a person's quality of life, the majority (approximately 65%) of individuals never seek treatment (3).

The clinical presentation of trichotillomania varies. Individuals may report one or many triggers for their pulling, and these include sensory triggers, such as feeling of the hair or the scalp; emotional triggers, such as feeling anxious, bored, or angry; and cognitive triggers, such as thinking about hair and appearance or rigid thinking (4). Many patients report not being fully aware of their pulling behaviors, also referred to as "automatic" pulling, whereas "focused" pulling generally occurs when the patient sees or feels a hair that is "not right" or feels that the hair is coarse, kinky, or "out of place" (4). Most patients pull with varying degrees of focused and automatic pulling, which can fluctuate across time.

Skin-Picking Disorder

Skin-picking disorder, which is also referred to as *pathological skin picking*, *neurotic excoriation*, *dermatillomania*, or *psychogenic excoriation*, is characterized by repetitive and compulsive picking of skin leading to tissue damage (1) (see box for diagnostic criteria). Although most individuals at some time pick at their skin, either to smooth out irregularities or to improve blemishes or acne, clinicians must differentiate between normal picking and more pathological forms. The diagnostic criteria for skin-picking disorder require that picking be recurrent and result in skin lesions, thereby reflecting the frequency and intensity of the picking (1). In addition, the clinical diagnosis requires that the picking result in the person feeling distressed or impaired.

Community prevalence studies in the United States have found that skin-picking disorder is relatively common. In a study of 354 adult participants, 19 (5.4%) reported significant picking with associated distress/impact (13). A second

study of 2,513 telephone interviews in a representative sample found that 1.4% of individuals picked to the point of having noticeable skin damage and reported distress or impairment because of the picking (14). Research suggests that the age of onset for skin-picking disorder varies substantially and may occur during childhood, adolescence, or adulthood (15, 16). The clinical characteristics of skin-picking disorder appear to be the same across age cohorts and cultures (16). Many individuals with excoriation disorder report that the behavior began with the onset of a dermatological condition such as acne but continued even after the condition cleared.

The phenomenology of skin-picking disorder bears striking similarities to that of trichotillomania. Individuals with skin-picking disorder spend a significant amount of time each day picking their skin, with many reporting that the picking behavior occupies several hours each day (17). Although the face is the most commonly reported site of picking, the hands, fingers, arms, and legs are also common targets. Picking from more than one body area is normal, with one study finding that people picked at an average of 4.5 sites (17). The time spent picking and the consequences of picking (such as scarring) result in dysfunction related to work and social activities (18). Triggers to pick vary greatly among individuals, and multiple triggers are the norm. Stress, anxiety, time away from scheduled activities, boredom, and feeling tired or angry have all been reported as triggers (16).

CRITERIA FOR TRICHOTILLOMANIA[a]

- Pulling of hair that results in hair loss
- The person endorses trying to decrease or stop pulling
- Significant distress or impairment in some aspect of social, work, or other area of functioning results from pulling
- The pulling cannot be attributed to another medical condition
- The pulling cannot be better explained by another mental health condition (e.g., pulling to improve one's appearance or a perceived defect, as seen in body dysmorphic disorder)

[a]Adapted from APA (1).

CRITERIA FOR SKIN-PICKING DISORDER[a]

- Picking of skin that results in lesions
- The person endorses trying to decrease or stop picking
- Significant distress or impairment in some aspect of social, work, or other area of functioning results from picking
- The picking cannot be attributed to the physical effects of drug use (e.g., cocaine) or a medical condition
- The picking cannot be better explained by another mental health condition (e.g., picking to improve one's appearance or a perceived defect, as seen in body dysmorphic disorder)

[a]Adapted from APA (1).

Common Characteristics

Symptoms. Both trichotillomania and skin-picking disorder may result in unwanted medical consequences. Pulling of hair can lead to skin damage if sharp instruments such as tweezers or scissors are used to pull the hairs. More than 20% of patients eat their hair after pulling it out (trichophagia), which can result in gastrointestinal tract obstruction and the formation of intestinal hair balls (trichobezoars) requiring surgical intervention (19). In the case of skin picking, the behavior may result in significant tissue damage and often leads to medical complications such as localized infections and even septicemia (38% report needing some medical intervention because of picking) (20). The repetitive, excoriative nature of picking in severe cases may even warrant skin grafting or blood transfusions (16, 20).

Patients often perceive trichotillomania or skin-picking disorder as nothing more than "bad habits" rather than recognized psychiatric conditions, and the majority have never sought treatment or discussed their behaviors with health care professionals. In fact, less than 20% of patients with skin picking and approximately 40% with trichotillomania seek treatment (3, 18).

Neurobiology. Much remains unknown about the neurobiological underpinnings of these two disorders. Early research suggests that trichotillomania is familial, with heritability estimates ranging from 0.32 to 0.78 (21, 22). One study that examined 2,518 twins from the UK Adult Twin Registry found that clinically significant skin picking was endorsed by 1.2% of twins and that additive and nonadditive genetic factors accounted for slightly more than 40% of the variance in skin picking, with the remaining variance attributable to nonshared environmental factors (23).

Several brain structures and functions have been implicated in both trichotillomania and skin-picking disorder. Excess gray matter density has been found in patients with trichotillomania compared with control participants, in the striatum, amygdalohippocampal formation, frontal and cingulate cortices, and supplementary motor cortex (24). In a recent functional neuroimaging study, patients with trichotillomania exhibited dampening of nucleus accumbens responses to reward anticipation (but relative hypersensitivity to gain and loss outcomes) compared with control participants (25). Other neuroimaging studies have found disorganization of white matter tracts involved in motor generation and suppression (i.e., bilateral anterior cingulate and right orbitofrontal and inferior frontal cortices) in both disorders (26, 27). Neuropsychological studies have also shown that patients with trichotillomania and skin-picking disorder exhibit deficits in cognitive abilities that are linked to the functioning of the frontal lobe and its related frontosubcortical structures, such as executive functioning deficits,

TABLE 1. Some Common Misdiagnoses in Patients With Trichotillomania and Skin-Picking Disorder

Misdiagnosis	Reasons for and Prevention of Misdiagnosis
Obsessive-compulsive disorder (OCD)	Trichotillomania and skin picking are often misdiagnosed as OCD because they involve compulsive behaviors. However, trichotillomania and skin picking generally lack significant obsessional thoughts and do not appear to respond to traditional OCD treatments.
Anxiety disorder	Many clinicians assume that trichotillomania and skin picking are merely manifestations of anxiety (i.e., nervous habits). Although anxiety may worsen pulling and picking, the behaviors persist even when no anxiety is present.
Stimulant addiction	It is not uncommon for individuals who use stimulants, whether illicitly or by prescription, to report skin picking or possibly worsening of hair pulling.
Body dysmorphic disorder (BDD)	BDD is characterized by obsessions about and preoccupation with a perceived defect of one's physical appearance. In BDD, individuals may pull hair with the aim of correcting a perceived defect of their appearance (e.g., "I know that my arms are too hairy and disgusting to people") or pick their skin to improve their appearance.
Self-injurious behavior	Hair pulling and skin picking are not the same as self-injury. Pulling and picking are often used as a means of correcting a problem with the hair or skin and are not generated from the complex psychological factors that give rise to self-injury, such as cutting behavior.

motor impulsivity, and insufficient cognitive-behavioral flexibility (28, 29).

Psychological theories of etiology. Because negative emotions such as anxiety, tension, and sadness often precede pulling and picking episodes, the question arises as to the role of these behaviors in regulating emotional states or stressful events (7, 30). Therefore, picking and pulling may function as a means for the person to escape from or avoid aversive experiences, and the temporary reduction in these negative emotions maintains the behavior through a negative reinforcement cycle (31). Studies that have measured emotional regulation in individuals with and without pulling and picking found that these individuals have greater difficulty regulating negative affective states than do control participants (32, 33). In a related fashion, boredom may also trigger picking and pulling in some individuals (11, 30). This has led some researchers to hypothesize that pulling and picking may similarly help to adjust negative emotions brought on by a feeling of perfectionism characterized by unwillingness to relax (34). This theory suggests that the perfectionism leads to feelings of frustration, impatience, and dissatisfaction when standards are not met and to boredom when productivity is impossible. Therefore, picking and pulling may function as a means of releasing tension generated by these emotions. Pulling and picking are perhaps positively reinforced by a feeling of "taking action" (31).

TREATMENT STRATEGIES AND EVIDENCE

Diagnosis

Treatment strategies are based on an accurate diagnosis. Unfortunately, misdiagnosis of trichotillomania and skin-picking disorder is common (Table 1). Individuals may be misdiagnosed with obsessive-compulsive disorder (OCD), an anxiety disorder, body dysmorphic disorder, or even drug addiction. Because treatments differ between these disorders and trichotillomania and skin-picking disorder, proper diagnosis is necessary.

Psychotherapy

The evidence base for psychotherapy for trichotillomania and skin-picking disorder is small but suggests the use of behavioral therapy for both disorders. Behavioral therapy for trichotillomania has generally used habit reversal therapy (HRT) and may have included components of acceptance and commitment therapy and dialectical behavioral therapy as well. There have been seven controlled studies of behavioral therapy, using HRT alone or with other components, for trichotillomania and two controlled psychosocial treatment studies for skin-picking disorder. The studies for skin-picking disorder involved the uses of HRT and cognitive-behavioral therapy. There are no controlled studies of other traditional therapies.

HRT was first developed approximately 40 years ago by Azrin and Nunn for the treatment of nervous habits and tics (35). Although used in multiple forms throughout the years, the core aspects of HRT include self-monitoring (i.e., asking the patient to track his or her hair pulling, picking, etc.), awareness training, competing response training, and stimulus control procedures (i.e., modifying the environment to reduce cues for hair pulling or skin picking). Self-monitoring may begin by using a self-monitoring form that the patient fills out on a daily basis and maintains throughout the therapy period. Awareness training consists of having the therapist ask the patient to describe in detail and even reenact the picking or pulling. The patient also needs to identify

triggers for the pulling and picking. In competing response training, patients are taught at the earliest sign of pulling or the urge to pull to engage in a behavior that is physically incompatible with pulling for a brief period until the urge subsides. For example, a woman who pulls her hair might clench her fists or place her hands underneath her legs upon identifying a warning sign for hair pulling. Competing responses must be opposite to those of the targeted behavior, they must be maintained for 1 minute or until the urge to pull or pick subsides, and they should be socially inconspicuous. Stimulus control consists of modifying the environment to reduce the triggers of pulling or picking. For example, if a man pulls his hair at work only when his office door is closed, then he needs to keep the door open during the work day. HRT is similar to many other types of behavioral therapy. HRT differs somewhat from standard cognitive-behavioral therapy in that the focus of HRT is on behavioral change and not generally on cognitive strategies to address dysfunctional thoughts that precipitate hair pulling.

HRT appears to be superior to wait list and minimal attention control groups based on controlled studies (36). In addition, HRT has shown benefit with the addition of components of acceptance and commitment therapy and dialectical behavior therapy (37, 38). HRT can be delivered in person, online with use of a self-help method, or in a group format (36, 39, 40). Acute treatment gains obtained from HRT have been generally maintained from 3 to 6 months.

Typically, HRT is conducted on a weekly basis, although higher severity of the disorder may necessitate more frequent sessions. HRT has shown benefit in many different frequency formats, and anywhere from 4 to 22 sessions (usually 60 minutes each) may be helpful. Although in practice many clinicians use a combination of HRT and more traditional cognitive therapy, the empirical data support HRT as a first-line psychotherapy treatment of these disorders.

Pharmacotherapy

Currently, no pharmacotherapies are universally accepted as first-line treatments of trichotillomania or skin-picking disorder. Eight double-blind studies have been published for the treatment of trichotillomania and four double-blind, placebo-controlled clinical trials have been published for skin-picking disorder. Generally, pharmacotherapy should be avoided in children. A recent Cochrane review concluded that although clomipramine has demonstrated some benefit for trichotillomania, there is no strong evidence of a treatment effect for selective serotonin reuptake inhibitors (SSRIs) (41).

Glutamatergic agents have shown some promise in trichotillomania and may have a useful role in the treatment of skin-picking disorder as well. One key example is *N*-acetylcysteine (NAC), which has demonstrated benefit in a double-blind, placebo-controlled study for trichotillomania and in case reports for skin-picking disorder (42, 43). On the basis of trichotillomania data, NAC may be useful for reducing the urge to pick. Previous research has used up to 1,200 mg twice a day as a target dose, with expected clinical benefits being observed after approximately 9 weeks. Side effects are generally mild and usually only involve some bloating and flatulence.

On the basis of data from their potential efficacy in OCD, antipsychotic medications have also been used for the treatment of trichotillomania. One small (N=23) double-blind, placebo-controlled study of olanzapine found the medication significantly beneficial in reducing the symptoms of trichotillomania after 12 weeks at a mean dose of 10.8 mg/day (44). Olanzapine has been associated with metabolic syndrome; therefore, the decision to use it in the treatment of trichotillomania and skin-picking disorder needs to be tempered by its adverse side effect profile.

Opioid antagonists (e.g., naltrexone), which reduce self-licking in dogs with acral lick dermatitis, may also represent a viable option for trichotillomania and skin-picking disorder, although such benefit has been limited to small samples (case reports of single patients, often with Prader-Willi syndrome) of individuals with excoriation disorder. However, according to an 8-week double-blind, placebo-controlled study of naltrexone (dosing of 50 mg/day up to 150 mg/day) in the treatment of 52 patients with trichotillomania, naltrexone may be useful for individuals with hair-pulling or skin-picking disorder who have a family history positive for alcohol use disorders (45).

Sequencing Treatment

Psychotherapeutic and pharmacological treatments have documented evidence as effective monotherapies as well as in a combined treatment strategy (46). Although the optimal sequence of treatments has not yet been identified, we recommend HRT monotherapy for individuals who are motivated to cooperate with therapy demands, do not have severe depressive symptoms, or prefer not to take medications. Medication treatment as monotherapy (e.g., NAC, olanzapine, clomipramine) is recommended for individuals who are not able to engage in HRT, report a previous response to a medication, or prefer medication treatments to psychotherapy.

Treatment of Comorbidities

Co-occurring anxiety and depression are common among individuals with trichotillomania and skin-picking disorder. If possible, assessment should be designed to identify the temporal relationship of these comorbidities with trichotillomania and skin-picking disorder—for example, is the depression or anxiety secondary to the effects of the hair pulling or skin picking? If so, then focusing on the hair pulling or skin picking would be the recommended initial approach. If such a temporal relationship is unclear, however, then expanding the behavioral therapy to also include cognitive approaches could be beneficial for both disorders. In terms of pharmacotherapy, many individuals may need an antidepressant for comorbid diagnoses, even when the data suggest that antidepressants are largely ineffective for trichotillomania and skin-picking disorder.

Prognosis

If trichotillomania and skin-picking disorder are left untreated, the course is usually chronic, often with waxing and waning symptoms. Without treatment, response rates in adults are low (approximately 14%) (3). When diagnosed early and treated appropriately, however, up to 50% of individuals may experience symptom reduction, at least in the short term (47). Therefore, accurate and early diagnosis followed by evidence-based treatment is needed to prevent associated disability.

QUESTIONS AND CONTROVERSY

Clinical treatment trials for trichotillomania and skin-picking disorder have been largely short-term and have predominantly involved young or middle-aged adults. Data are lacking regarding the long-term benefit and risks among both children and the elderly population. More research is also needed to identify predictors of poor outcomes.

Although HRT has demonstrated some benefit for trichotillomania and skin-picking disorder, no data exist regarding how well HRT is performed in the community and HRT outcomes when HRT is not performed by expert clinicians.

HRT has shown some promise, but few if any data exist on whether more traditional therapies such as cognitive therapy or supportive therapy might also be beneficial for trichotillomania and skin-picking disorder.

The genetic features of trichotillomania and skin-picking disorder remain incompletely understood. Genes that confer susceptibility to these disorders have not yet been identified. Studies are needed to identify childhood and adolescent risk factors for trichotillomania and skin-picking disorder and to determine how these variables interact with genetic factors. This may allow for the identification of children at risk and the development of early intervention strategies.

Clinical trial data have largely focused on the core symptoms of trichotillomania and skin-picking disorder, but effective treatments are also needed for associated cognitive impairment and social dysfunction.

Although a range of etiological theories have been proposed, there is still a paucity of data examining this important area.

Improved dissemination of information about psychotherapy and medication shown to be effective for these disorders is warranted because information about treatment availability remains limited.

RECOMMENDATIONS

- If untreated, trichotillomania and skin-picking disorder are often chronic illnesses that may result in substantial psychosocial dysfunction and may even lead to life-threatening medical problems.
- The evaluation for trichotillomania and skin-picking disorder must begin with a thorough psychiatric assessment to establish an accurate diagnosis, assess for co-occurring psychiatric disorders, and rule out other disorders in the differential diagnosis.
- In the case of skin-picking disorder, a thorough evaluation from a dermatologist with knowledge about the disorder may be necessary to identify any underlying dermatological conditions that may cause or worsen skin picking.
- HRT has demonstrated benefit for both trichotillomania and skin-picking disorder, but finding someone trained in this type of therapy is essential for appropriate treatment outcomes.
- In terms of pharmacotherapy, there is little evidence that SSRIs are beneficial. On the basis of our clinical experience, however, we find that NAC in doses of 1,200 mg twice a day has been quite helpful in reducing urges to pick and pull and probably should be considered as an initial pharmacotherapy treatment.
- Because treatment response is often only partial, attending to quality of life and long-term functioning is critical.

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REFERENCES

1. Diagnostic and Statistical Manual of Mental Disorders, 5th ed. Arlington, Va, American Psychiatric Association, 2013
2. Cohen LJ, Stein DJ, Simeon D, et al: Clinical profile, comorbidity, and treatment history in 123 hair pullers: a survey study. J Clin Psychiatry 1995; 56:319–326
3. Woods DW, Flessner CA, Franklin ME, et al; Trichotillomania Learning Center-Scientific Advisory Board: The Trichotillomania Impact Project (TIP): exploring phenomenology, functional impairment, and treatment utilization. J Clin Psychiatry 2006; 67:1877–1888
4. Christenson GA, Mansueto CS: Trichotillomania: Descriptive characteristics and phenomenology, in Trichotillomania. Edited by Stein DJ, Christianson GA, Hollander E. Washington, DC, American Psychiatric Press, 1999, pp 1–41
5. Christenson GA, Pyle RL, Mitchell JE: Estimated lifetime prevalence of trichotillomania in college students. J Clin Psychiatry 1991; 52:415–417
6. King RA, Zohar AH, Ratzoni G, et al: An epidemiological study of trichotillomania in Israeli adolescents. J Am Acad Child Adolesc Psychiatry 1995; 34:1212–1215

7. Duke DC, Bodzin DK, Tavares P, et al: The phenomenology of hairpulling in a community sample. J Anxiety Disord 2009; 23:1118–1125
8. Lewin AB, Piacentini J, Flessner CA, et al; TLC-SAB: Depression, anxiety, and functional impairment in children with trichotillomania. Depress Anxiety 2009; 26:521–527
9. Szepietowski JC, Salomon J, Pacan P, et al: Frequency and treatment of trichotillomania in Poland. Acta Derm Venereol 2009; 89:267–270
10. Christenson GA: Trichotillomania - from prevalence to comorbidity. Psychiatric Times 1995; 12:44–48
11. Duke DC, Keeley ML, Geffken GR, et al: Trichotillomania: A current review. Clin Psychol Rev 2010; 30:181–193
12. Diefenbach GJ, Tolin DF, Hannan S, et al: Trichotillomania: impact on psychosocial functioning and quality of life. Behav Res Ther 2005; 43:869–884
13. Hayes SL, Storch EA, Berlanga L: Skin picking behaviors: An examination of the prevalence and severity in a community sample. J Anxiety Disord 2009; 23:314–319
14. Keuthen NJ, Koran LM, Aboujaoude E, et al: The prevalence of pathologic skin picking in US adults. Compr Psychiatry 2010; 51: 183–186
15. Odlaug BL, Grant JE: Pathologic skin picking, in Trichotillomania, Skin Picking and Other Body-Focused Repetitive Behaviors. Edited by Grant JE, Stein DJ, Woods DW, Keuthen NJ. Washington, DC, American Psychiatric Publishing, Inc, 2012, pp 21–41
16. Grant JE, Odlaug BL, Chamberlain SR, et al: Skin picking disorder. Am J Psychiatry 2012; 169:1143–1149
17. Tucker BT, Woods DW, Flessner CA, et al: The Skin Picking Impact Project: phenomenology, interference, and treatment utilization of pathological skin picking in a population-based sample. J Anxiety Disord 2011; 25:88–95
18. Flessner CA, Woods DW: Phenomenological characteristics, social problems, and the economic impact associated with chronic skin picking. Behav Modif 2006; 30:944–963
19. Grant JE, Odlaug BL: Clinical characteristics of trichotillomania with trichophagia. Compr Psychiatry 2008; 49:579–584
20. Odlaug BL, Grant JE: Clinical characteristics and medical complications of pathologic skin picking. Gen Hosp Psychiatry 2008; 30:61–66
21. Novak CE, Keuthen NJ, Stewart SE, et al: A twin concordance study of trichotillomania. Am J Med Genet B Neuropsychiatr Genet 2009; 150B:944–949
22. Monzani B, Rijsdijk F, Harris J, et al: The structure of genetic and environmental risk factors for dimensional representations of DSM-5 obsessive-compulsive spectrum disorders. JAMA Psychiatry 2014; 71:182–189
23. Monzani B, Rijsdijk F, Cherkas L, et al: Prevalence and heritability of skin picking in an adult community sample: a twin study. Am J Med Genet B Neuropsychiatr Genet 2012; 159B:605–610
24. Chamberlain SR, Odlaug BL, Boulougouris V, et al: Trichotillomania: neurobiology and treatment. Neurosci Biobehav Rev 2009; 33:831–842
25. White MP, Shirer WR, Molfino MJ, et al: Disordered reward processing and functional connectivity in trichotillomania: a pilot study. J Psychiatr Res 2013; 47:1264–1272
26. Chamberlain SR, Hampshire A, Menzies LA, et al: Reduced brain white matter integrity in trichotillomania: a diffusion tensor imaging study. Arch Gen Psychiatry 2010; 67:965–971
27. Grant JE, Odlaug BL, Hampshire A, et al: White matter abnormalities in skin picking disorder: a diffusion tensor imaging study. Neuropsychopharmacology 2013; 38:763–769
28. Grant JE, Odlaug BL, Chamberlain SR: A cognitive comparison of pathological skin picking and trichotillomania. J Psychiatr Res 2011; 45:1634–1638
29. Chamberlain SR, Fineberg NA, Blackwell AD, et al: Motor inhibition and cognitive flexibility in obsessive-compulsive disorder and trichotillomania. Am J Psychiatry 2006; 163:1282–1284
30. Bohne A, Wilhelm S, Keuthen NJ, et al: Skin picking in German students. Prevalence, phenomenology, and associated characteristics. Behav Modif 2002; 26:320–339
31. Roberts S, O'Connor K, Bélanger C: Emotion regulation and other psychological models for body-focused repetitive behaviors. Clin Psychol Rev 2013; 33:745–762
32. Shusterman A, Feld L, Baer L, et al: Affective regulation in trichotillomania: evidence from a large-scale internet survey. Behav Res Ther 2009; 47:637–644
33. Snorrason I, Smári J, Olafsson RP: Emotion regulation in pathological skin picking: findings from a non-treatment seeking sample. J Behav Ther Exp Psychiatry 2010; 41:238–245
34. O'Connor K, Brisebois H, Brault M, et al: Behavioral activity associated with onset in chronic tic and habit disorder. Behav Res Ther 2003; 41:241–249
35. Azrin NH, Nunn RG: Habit-reversal: a method of eliminating nervous habits and tics. Behav Res Ther 1973; 11:619–628
36. McGuire JF, Ung D, Selles RR, et al: Treating trichotillomania: a meta-analysis of treatment effects and moderators for behavior therapy and serotonin reuptake inhibitors. J Psychiatr Res 2014; 58:76–83
37. Woods DW, Wetterneck CT, Flessner CA: A controlled evaluation of acceptance and commitment therapy plus habit reversal for trichotillomania. Behav Res Ther 2006; 44:639–656
38. Keuthen NJ, Rothbaum BO, Fama J, et al: DBT-enhanced cognitive-behavioral treatment for trichotillomania: a randomized controlled trial. J Behav Addict 2012; 1:106–114
39. Rogers K, Banis M, Falkenstein MJ, et al: Stepped care in the treatment of trichotillomania. J Consult Clin Psychol 2014; 82:361–367
40. Toledo EL, De Togni Muniz E, Brito AM, et al: Group treatment for trichotillomania: cognitive-behavioral therapy versus supportive therapy. J Clin Psychiatry (Epub ahead of print, Sep 16, 2014)
41. Rothbart R, Amos T, Siegfried N, et al: Pharmacotherapy for trichotillomania. Cochrane Database Syst Rev 2013; 11:CD007662
42. Grant JE, Odlaug BL, Kim SW: N-acetylcysteine, a glutamate modulator, in the treatment of trichotillomania: a double-blind, placebo-controlled study. Arch Gen Psychiatry 2009; 66:756–763
43. Odlaug BL, Grant JE: N-acetyl cysteine in the treatment of grooming disorders. J Clin Psychopharmacol 2007; 27:227–229
44. Van Ameringen M, Mancini C, Patterson B, et al: A randomized, double-blind, placebo-controlled trial of olanzapine in the treatment of trichotillomania. J Clin Psychiatry 2010; 71:1336–1343
45. Grant JE, Odlaug BL, Schreiber LR, et al: The opiate antagonist, naltrexone, in the treatment of trichotillomania: results of a double-blind, placebo-controlled study. J Clin Psychopharmacol 2014; 34: 134–138
46. Dougherty DD, Loh R, Jenike MA, et al: Single modality versus dual modality treatment for trichotillomania: sertraline, behavioral therapy, or both? J Clin Psychiatry 2006; 67:1086–1092
47. Keuthen NJ, O'Sullivan RL, Goodchild P, et al: Retrospective review of treatment outcome for 63 patients with trichotillomania. Am J Psychiatry 1998; 155:560–561