



# Emotional regulation, dissociation, and the self-induced dermatoses: Clinical features and implications for treatment with mood stabilizers

Madhulika A. Gupta, MD, FRCPC\*

Department of Psychiatry, Schulich School of Medicine and Dentistry, University of Western Ontario, 585 Springbank Dr, Suite 101, London, ON, N6J 1H3, Canada

**Abstract** The self-induced dermatoses (such as trichotillomania, pathologic skin picking or neurotic excoriations, dermatitis artefacta, onychophagia and onychotillomania), which are caused as a result of excessive manipulation of the skin, hair, and nails by the patient, can contribute to significant morbidity and can even complicate the course of a primary dermatologic condition such as acne (eg, in acne excoriée) and some pruritic dermatoses. Reports on the self-induced dermatoses in the past decade have tended to focus upon the specific motor behaviors involved in self-inducing the lesions (ie, skin picking or hair pulling) rather than address the common psychopathologic factors underlying the self-injurious behaviors. In the current psychiatric nosology (*Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision*) the self-induced dermatoses are classified as Impulse Control Disorders and Stereotypic Movement Disorders, and this classification does not adequately consider the fact that in most patients with self-induced dermatoses, the frequency and severity of the self-injurious behaviors are directly related to acute or chronic problems with emotional regulation and dissociation. This may be part of the reason that there is a relative paucity of effective treatments for these disorders. The skin and its appendages are well innervated with a dense network of afferent sensory nerves and efferent autonomic nerves, and the integumentary system is frequently the focus of tension-reducing and emotion-regulating behaviors, especially during states of autonomic nervous system hyperarousal. This factor is important in the pathogenesis of the self-induced dermatoses. Mood-stabilizing agents, such as lithium carbonate, that are used to treat disorders of emotional regulation have not been adequately studied in the management of the self-induced dermatoses and may prove to be very helpful in the management of these disorders.

© 2013 Elsevier Inc. All rights reserved.

## Introduction

The self-induced dermatoses (such as trichotillomania, pathologic skin picking or neurotic excoriations, dermatitis artefacta, onychophagia, and onychotillomania), which are caused as a result of excessive manipulation of the skin, hair, and nails by the patient,<sup>1,2</sup> can contribute to sig-

nificant morbidity in the dermatologic patient and can even complicate the course of a primary dermatologic condition such as acne (development of acne excoriée), psoriasis, and other pruritic dermatoses as a result of the Koebner phenomenon and perpetuation of the “itch-scratch cycle.” In the self-induced dermatoses,<sup>2</sup> the excessive manipulation of the skin and its appendages by the patient is typically associated with repetitive behaviors involving picking, scratching, peeling, plucking, or biting (typically in the case of onychophagia), or

\* Corresponding author. Tel.: +1 519 641 1001; fax: +1 519 641 1033.  
E-mail address: [magupta@uwo.ca](mailto:magupta@uwo.ca).

infliction of injury using a caustic substance or instrument (sometimes in dermatitis artefacta).

In the current psychiatric nosology<sup>3</sup> of the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM-IV-TR) trichotillomania (TTM) is classified as an “Impulse Control Disorder Not Elsewhere Classified” along with disorders such as kleptomania, pyromania, and pathologic gambling. It has been suggested<sup>4</sup> that like TTM, disorders involving skin picking should also be classified as Impulse Control Disorders under the miscellaneous category of an “Impulse Control Disorder Not Otherwise Specified.”

Secondly, recent reports<sup>5</sup> have commented on the repetitive and “automatic” nature of the behaviors in conditions like TTM and skin picking, because patients often report lack of awareness of having done the hair pulling or skin picking. These disorders have, therefore, been described as “stereotypic,” and pathologic skin picking has been classified under the DSM-IV-TR<sup>3</sup> category of “Stereotypic Movement Disorder.” “Stereotypic Movement Disorder” is listed in the DSM-IV-TR under “Disorders Usually First Diagnosed in Infancy, Childhood, or Adolescence,” and its essential feature<sup>3</sup> is “a motor behavior that is repetitive, often seemingly driven, and non-functional. This motor behavior markedly interferes with normal activities or results in self-inflicted bodily injury that is significant enough to require medical treatment (or would result in such injury if protective measures were not used),” and some examples<sup>3</sup> of such behaviors in the DSM-IV-TR include “rocking, twirling objects, head banging, self-biting or hitting various parts of one’s own body.”

The current psychiatric nosology (as evidenced by the classification of the self-induced dermatoses in the DSM-IV-TR) has tended to focus largely on the motoric aspects of the behavior of plucking or picking the integument. This is further supported by the emerging literature on the self-induced dermatoses during the past decade that has attempted to quantify<sup>5</sup> the picking and plucking behaviors with a wide range of specific rating scales rather than examine possible common psychophysiologic and psychosomatic factors underlying the excessive manipulation of the skin and its appendages. There has been a tendency to consider each of the self-induced dermatoses as individual disorders, even though a relatively high frequency of comorbidity<sup>4,6</sup> has been noted between the disorders. More than 38% of adults with skin picking<sup>4</sup> also had a lifetime diagnosis of TTM, and more than 20% of patients with hair pulling or skin picking<sup>6</sup> also experienced compulsive nail biting.

The literature recognizes the comorbidities of the self-induced dermatoses with mood and anxiety disorders, especially disorders in the obsessive-compulsive spectrum<sup>1</sup>; however, only a few studies have recognized the role of emotional dysregulation and dissociation in the self-induced dermatoses. Significantly higher dissociation scores, measured using the Dissociative Experiences Scale,<sup>7</sup> have been reported in lichen simplex chronicus<sup>8</sup> and cutaneous sensory

symptoms including unexplained pruritus and numbness.<sup>9</sup> TTM and dermatitis artefacta have been reported to occur in conjunction with significant trauma and in severely dissociated states, including multiple personality disorder,<sup>10–17</sup> and dissociative symptoms were more common in TTM than in pathologic skin picking.<sup>14</sup>

Dissociation is defined<sup>3</sup> as a disruption in the usually integrated functions of consciousness, memory, identity, or perception; this disturbance can be sudden or gradual, transient or chronic. Dissociation is a symptom of emotional dysregulation and typically occurs within the context of severe stress, when the emotions are at their extreme, and outside the range of the patient’s usual coping capacity or window of tolerance<sup>18</sup> (Table 1). Dissociation, which is typically a feature of stress syndromes<sup>3</sup> such as acute stress disorder and posttraumatic stress disorder (PTSD), is associated with increased threshold for pain perception<sup>19</sup> and numbness of the skin and is often a key factor in the self-induced dermatoses. Difficulties with emotional regulation and dissociation are possibly one of the most important

**Table 1** “Window of tolerance” model for autonomic nervous system reactivity and symptoms of the self-induced dermatoses<sup>18</sup>

- Rubbing, picking, scratching of skin, onychophagia, onychotillomania, and trichotillomania, which may be recurrent if the patient is in a sustained state of hyperarousal.
- High sympathetic tone may be associated with recurrent “idiopathic” urticaria, cholinergic urticaria, and high skin reactivity with dermatographism. This can predispose the patient to scratch the skin and perpetuate the “itch-scratch cycle.”
- With high levels of arousal, some patients may dissociate and have little or no recollection of having self-induced their lesions. This is often encountered in trichotillomania and dermatitis artefacta.
- High level of dissociation is associated with numbing and relative anesthesia of the skin. It is most likely a factor in dermatitis artefacta, where patients can self-induce extensive lesions with the aid of chemicals, sharp objects, etc and report no recollection of having self-induced the lesions.
- Skin conductance is increased secondary to elevated sweat gland activity with sympathetic nervous system arousal.

↑   ↑   ↑   ↑   ↑   ↑   ↑   ↑  
**STATE OF SYMPATHETIC HYPERAROUSAL**

“WINDOW OF TOLERANCE”—Patient is able to regulate stressful emotions within this range without engaging in *excessive* manipulation of the skin and its appendages. Upon cessation of a stressful situation autonomic nervous system returns to baseline levels and homeostasis is maintained.

↓   ↓   ↓   ↓   ↓   ↓   ↓   ↓  
**STATE OF PARASYMPATHETIC HYPOAROUSAL**

- Numbed “collapsed” state typically preceded by a high level of arousal where patient may chronically self-induce lesions (eg, dermatitis artefacta). Patient may develop medical complications (eg, infection) with their self-induced dermatoses because of lack of self-care and self-neglect.

factors in the pathogenesis of the self-induced dermatoses, and have significant clinical and treatment implications.

## Emotional regulation and the skin

During the course of normal development, the skin plays an important role in emotional regulation. Sufficient levels of tactile stimulation in the form of maternal contact comfort during infancy helps regulate aspects of the infant's physiology and behavior.<sup>20</sup> Adequate tactile stimulation during infancy consisting of secure holding and comforting experiences provided by the mother has been shown to induce modifications of the hypothalamic corticotropin-releasing factor levels,<sup>20</sup> a hormone that is important in the stress response.

The reaction of the skin to stress results in increased sweat gland activity and increased skin conductance; change in skin conductance is considered to be a near-direct measure of general sympathetic nervous system activity<sup>21</sup> in humans. The skin reacts after traumatic stress experiences where the individual's capacity to cope is overwhelmed. After traumatic stress experiences, when the traumatic stressor is prolonged or repetitive in nature, individuals may remain in a prolonged state of hyperarousal with a high sympathetic tone, as if the trauma were ongoing.<sup>22</sup> The skin and its appendages are well innervated with a dense network of afferent sensory nerves and efferent autonomic nerves, and in the self-induced dermatoses, the integumentary system is frequently the focus of tension-reducing behaviors, especially during states of hyperarousal (Table 1). The afferent sensory nerves in the skin convey sensations for touch, pain, itch, temperature, and other physical stimuli. The efferent autonomic, mainly sympathetic nerves help to maintain cutaneous homeostasis by regulating vasomotor and pilomotor functions and the activity of the apocrine and eccrine sweat glands. It is quite conceivable, therefore, that stimulation and manipulation of the skin and its appendages, which are richly innervated and have bilateral communication with the central nervous system, serve as a means of regulating affect and coping with intense emotional states.

States of hyperarousal resulting from traumatic stress and increased sympathetic tone can have a direct physical effect on the skin and render the skin more vulnerable to injury.<sup>1</sup> Acute psychologic stress, which is associated with increased glucocorticoid levels, adversely affects skin barrier function recovery induced by tape stripping,<sup>23,24</sup> which, for example, could predispose the skin to being injured more easily as a result of self-manipulation. Acute stress is associated with increased mast cell activation and degranulation with release of histamine, which in turn can make the skin more vulnerable to itching and scratching by the patient. Chronic stress can suppress cutaneous immunity and slow wound healing. Therefore, the severely emotionally stressed individual is more likely to stimulate

and manipulate the skin that is already more vulnerable to physical injury—factors that could contribute toward the pathogenesis of the self-induced dermatoses.

## Autonomic nervous system dysregulation in the self-induced dermatoses and the "Window of Tolerance" model

Traumatic stress stimulates the autonomic nervous system, resulting in sympathetic hyperarousal (fight-or-flight responses) and parasympathetic hypoarousal (submission and "freezing" responses), which are both animal defence survival responses. After the cessation of a stressor, under normal situations, homeostasis is achieved and the activity of the autonomic nervous system reaches baseline levels. In stress syndromes such as PTSD, the autonomic nervous system is not able to reestablish homeostasis<sup>22</sup> after the cessation of a traumatic experience and may enter into a prolonged state of autonomic hyperarousal<sup>22</sup> or a dysregulated state<sup>18</sup> that cannot react to psychologic stress without entering states of physiologic hyperarousal or hypoarousal (Table 1).

Situations that are not threatening to the organism's survival often activate the sympathetic nervous system, whereas more dangerous situations that are perceived as a threat to the survival of the organism (such situations are far less frequent) are more likely to elicit parasympathetic nonresponsiveness or submission-compliance responses.<sup>18</sup> States of parasympathetic nonresponsiveness, or a "freeze" response, can also follow states of very high arousal.<sup>18</sup> Between the extremes of sympathetic hyperarousal and parasympathetic hypoarousal, there is a window or range of arousal states<sup>18</sup> in which emotions can be experienced as tolerable. This "window of tolerance," or range of emotional experience, within which a person can maintain homeostatic balance, can be quite narrow in chronically severely stressed individuals and have a wider range in the nonclinical situation where an individual is able to cope with and modulate a wider range of emotions, without exceeding his or her window of tolerance (Table 1).

The following cases illustrate the relation between difficulties with emotional regulation, dissociation, and the development of self-induced dermatoses, using the window of tolerance model.<sup>18</sup>

### Illustrative patients

#### Patient 1

A 23-year-old woman with a history of bulimia nervosa started to gorge herself with easily ingestible fast food after breaking up with her boyfriend and, at the same time, started to pick at her facial acne lesions. She stopped binging when she was painfully full—she remembers lying down in her bed because she was feeling too full to move. She had a previous history of binge eating when she was



stressed in her romantic relationships. She was not aware that she was picking at her acne until the following day, when she noted some blood on her bedsheets and saw her face in the mirror.

This is an example of a situation where the emotional reaction to the breakup with the boyfriend exceeded the “window of tolerance,” resulting in hyperarousal that caused the patient to binge eat and pick her acne. The acne-picking behavior occurred in a state of hyperarousal with dissociation, because the patient had almost no recollection of picking her acne (Figure 1).

### Patient 2

A 12-year-old girl developed a patch of alopecia affecting her right temporal scalp, which was diagnosed as TTM. This was noted a few days after she had moved into a townhouse with her mother after her parents’ marriage breakup. The patient denied plucking her hair. At school, she was noted to be forgetful and daydreaming.

This is an example of an acute state of emotional dysregulation with dissociation in a child whose emotional reaction to the breakup of her parents’ marriage exceeded her “window of tolerance” (Table 1). The TTM was associated with increased arousal and dissociation, as evidenced by the fact that she did not recall self-inducing the alopecia (Figure 2).

### Patient 3

This 52-year-old single woman with chronic PTSD, secondary to severe childhood sexual abuse and neglect,



**Fig. 1** Acne excoriée. This patient believed that picking at the lesions would make them disappear. (Photo courtesy of Lawrence Charles Parish, MD, MD (Hon), Philadelphia, PA.)



**Fig. 2** Trichotillomania. This young woman would not admit that she was plucking and breaking her hair. (Photo courtesy of Lawrence Charles Parish, MD, MD (Hon), Philadelphia, PA.)

presented with chronic recurring ulcers on her shins that required regular visits to her family doctor and occasional visits to the emergency department because of secondary infection. During the previous 13 years, the patient had supported herself on social assistance because she was unable to work due to severe anxiety associated with her chronic PTSD and her chronic recurrent ulcers. The skin ulcers were diagnosed as dermatitis artefacta. The patient acknowledged that she had on occasion picked at the skin surrounding the ulcers but denied self-inducing her ulcers. She spent most of her time in bed alone in her apartment, usually watching television. The patient was taking multiple psychotropic medications, including two benzodiazepines that she had been prescribed by various doctors, because of her longstanding difficulties with managing stress. The patient also reported chronic body image problems and would frequently go on restrictive diets to lose weight, which would be followed by binge eating for a few days; however, the patient was able to maintain a low normal body weight. Several attempts at psychotherapy had failed and the patient insisted that she required all of her medications to be able to function (Figure 3).

This is an example of a chronically emotionally dysregulated patient with PTSD secondary to severe deprivation and childhood sexual abuse, with a very narrow “window of tolerance,” because she had difficulty coping with even her activities of daily living. Her chronic eating disorder is also a feature of her underlying emotional dysregulation. Her clinical presentation suggests that she spends a lot of her time in a state of hypoarousal. The



**Fig. 3** Dermatitis artefacta. This man used a lit cigarette to create this geometrical ulcer on his cheek, something that he previously had done several times. (Photo courtesy of Lawrence Charles Parish, MD, MD (Hon), Philadelphia, PA.)

dermatitis artefacta is most likely a culmination of several factors, including her dissociated state and her chronic PTSD.

### Implications for psychopharmacologic treatment

The current guidelines for the management of the self-induced dermatoses<sup>1</sup> indicate an overall paucity of effective therapies.<sup>25</sup> TTM is the most widely studied self-induced dermatosis both for symptoms and treatments. The three major treatments studied in TTM include:

- habit-reversal therapy,
- selective serotonin reuptake inhibitor antidepressants, and
- the tricyclic antidepressant clomipramine.<sup>26</sup>

A systematic review<sup>26</sup> of these interventions in seven blinded, randomized clinical trials, where the primary outcome measure was mean change in TTM severity revealed that habit reversal therapy was superior to selective serotonin reuptake inhibitors and clomipramine; and clomipramine, but not selective serotonin reuptake inhibitors, was more effective<sup>26</sup> than placebo. Several small trials<sup>1,25</sup> suggest the efficacy of clomipramine and selective serotonin reuptake inhibitors in cutaneous or neurotic excoriation (skin picking); there have also been case reports of the efficacy of doxepin, olanzapine, and aripiprazole augmentation. No standard psychopharmacologic treatment recommendations<sup>1,25</sup> have been published for the treatment of dermatitis artefacta. Some of the main recommendations in dermatitis artefacta include a supportive, nonjudgemental approach by the clinician that does not challenge the fact that patients are self-inducing their lesions in conjunction with a course of anti-anxiety or antidepressant medications if indicated.

### Mood stabilizing agents in the treatment of the self-induced dermatoses

Despite the central role of emotional dysregulation and dissociation in the pathogenesis of the self-induced dermatoses, there is surprisingly little literature<sup>25</sup> on the use of mood-stabilizing agents, including lithium carbonate and the antiepileptic drugs such as lamotrigine, divalproex, topiramate, and carbamazepine, in the treatment of these disorders. To my knowledge, two reports have been published<sup>27,28</sup> on the use of lamotrigine in pathologic skin picking. The patients with pathologic skin picking in both studies were recruited if they met the DSM-IV-TR criteria for Impulse Control Disorder,<sup>3</sup> and the main outcome measure of skin picking was assessed with the Yale-Brown Obsessive-Compulsive Scale modified for Neurotic Excoriations. The first study<sup>27</sup> was a 12-week open-label study involving 24 subjects with pathologic skin picking, who were treated with lamotrigine, ranging in dosage from 25 mg every other day to 300 mg daily. A significant improvement in pathologic skin picking was noted among two-thirds of the patients; however, in a subsequent placebo-controlled study<sup>28</sup> of 32 individuals with pathologic skin picking who were treated in a 12-week randomized, double-blind, placebo-controlled trial of lamotrigine as monotherapy (dose range, 12.5–300 mg/d), the beneficial effect of lamotrigine in reducing skin picking behaviors was not significantly better than placebo.

The studies<sup>27,28</sup> have focused primarily upon the behavioral aspect of pathologic skin picking rather than considering the underlying emotional regulation issues that can be exacerbated by life stresses and can take longer than 12 weeks to respond to a mood stabilizer, which may be a reason for the negative results in the 12-week placebo controlled trial involving only 32 patients.

Examples of this are illustrated in the case reports described earlier. In Patient 1, for example, her emotions tend to be reactive to specific stressors, such as stresses in her romantic relationships. She is, therefore, likely to experience exacerbations and remissions in her skin-picking behavior, depending on the stresses in her relationships, and her skin-picking behavior is likely to vary from week to week over a specified period of time. Patient 2 experienced TTM within the context of acute emotional dysregulation and dissociation in reaction to a specific major life event and she may not experience any further relapse of TTM after she adjusts to her parents' marital breakup. Patient 3 is chronically emotionally dysregulated and is likely to have chronic problems with her dermatitis artefacta.

### Additional patients

The following cases describe the response of patients with self-induced dermatoses to low doses of the classic mood stabilizer lithium carbonate (300–900 mg daily), which is used to treat disorders of emotional regulation and



is approved by the U.S. Food and Drug Administration for the treatment of bipolar disorder. All of the patients also received psychotherapy, which has not been elaborated on in the case reports.

#### Patient 4

This 44-year-old woman presented with moderately severe acne excoriée that had been present since her early 20s. The patient presented with bleeding crusted lesions on her face and reported that she tended to pick her face mainly during the evening while sitting in front of the television. She was usually not aware of her picking until she felt blood under her nails. During these times, she usually had little recollection of the programs that she had watched and was aware that she was more dissociated because she would be more absent minded around the house. The patient gave a history of severe emotional abuse and neglect by her mother during her childhood and described prominent symptoms of dissociation. Lately, her picking had been markedly exacerbated because she was experiencing conflicts with her mother regarding her entering a retirement home (Figure 4).

A full clinical assessment revealed longstanding, moderate levels of emotional dysregulation. After discussing the rationale for using a mood stabilizer (ie, for emotional regulation) and the side effect profile of lithium, which includes possible exacerbation of acne, the patient was started on lithium carbonate 300 mg at bedtime, which was gradually increased by 300 mg every 2 weeks to 900 mg



**Fig. 4** Acne excoriée. This woman was a compulsive face picker. (Photo courtesy of Lawrence Charles Parish, MD, MD (Hon), Philadelphia, PA.)

daily after about 6 weeks. After the first 3 to 4 weeks on lithium, the patient reported feeling more composed and less reactive; for example, she was able to disagree with her mother and not pick her face afterwards. After 3 months of low-dose lithium therapy (lithium blood levels of  $\sim 0.4$  mmol/L), the patient reported less self-excoriation, as evidenced by no acutely excoriated lesions on her face. The patient has continued to experience improvement in her capacity for emotional regulation after 6 months of lithium (900 mg/day) and maintained improvement in her skin picking and acne excoriée.

#### Patient 5

This 35-year-old woman presented with TTM involving her eyebrows and eyelashes. She also had a history of binge eating disorder wherein she tended to binge eat during times of moderate stress and reported that she could eat a 2-liter tub of ice cream and have almost no recollection of the binging—she would usually stop binging when she felt pain in her stomach as a result of the binging. The TTM was typically exacerbated in conjunction with her binge eating.

A typical episode of TTM would consist of the patient plucking most of her eyebrows and eyelashes during one evening—she would be in a highly dissociated state during these times and have little recollection of self-inducing the lesions. After this, she would wear a baseball hat for months to hide her plucked eyebrows and protect her eyelids. The patient was started on low-dose lithium at 600 mg daily (lithium blood levels  $\sim 0.5$  mmol/L), which appeared to have a regulating effect on her emotion, and the dosage was increased to 900 mg daily (blood levels  $\sim 0.7$  mmol/L). After an 8-week course of lithium carbonate (900 mg daily), the patient reported a significant improvement in her TTM, even though her binge eating disorder remained unchanged. For the subsequent 18 months, the patient has not experienced a significant relapse of her TTM and continues to use lithium carbonate (900 mg daily).

#### Patient 6

A 58-year-old twice-widowed woman had a recurring ulcerated lesion in the region of her left shoulder that was diagnosed as dermatitis artefacta. The patient had a diagnosis of PTSD, secondary to severe emotional abuse and neglect during her childhood. The patient reported patchy recollection of picking at her lesion when her boyfriend, a truck driver, would be away for days and not telephone her. The patient would worry a great deal about her boyfriend's safety. During a typical episode, the patient would be watching TV, note bleeding from her lesion, and then realize that she had been picking at it. During such episodes, she usually had little recall of the TV program that she was watching and "basically was sitting there staring at the TV." The patient was started on low-dose lithium at 300 mg daily (lithium blood levels  $\sim 0.2$  mmol/L), and within 1 month, reported feeling significantly more composed. She reported that she did not worry as much about her boyfriend, and the



**Fig. 5** Dermatitis artefacta. This diagnosis can have many presentations, as in this woman who created embarrassing situations by excoriating the inflammatory lesions on her buttocks. (Photo courtesy of Lawrence Charles Parish, MD, MD (Hon), Philadelphia, PA.)

lesion on her left shoulder was beginning to heal. The patient eventually decided to end the relationship with her boyfriend. She continues to use lithium carbonate (300 mg daily) and has maintained improvement in her dermatitis artefacta for almost 1 year (Figure 5).

## Conclusions

The self-induced dermatoses, which are caused as a result of excessive manipulation of the skin, hair, and nails by the patient, can contribute to significant morbidity in the dermatologic patient and can even complicate the course of a primary dermatologic condition such as acne and some pruritic dermatoses. During the past decade, the emerging literature on the self-induced dermatoses has tended to focus on and quantify the specific motor behaviors associated with the production of the lesions, such as skin picking or hair pulling, and in the current psychiatric nosology (DSM-IV-TR), these disorders have been classified under the Impulse Control Disorders (with disorders such as pyromania and kleptomania) and the Stereotypic Movement Disorders (with disorders such as rocking, head-banging, and self-biting).

In most patients with self-induced dermatoses, the frequency and severity of the self-injurious behavior are significantly related to acute or chronic problems with emotional regulation and high levels of dissociation. These clinical factors have not been adequately addressed in the current nosology for these disorders. This may be the basis for a relative paucity of effective therapies for the self-induced dermatoses. The skin and its appendages are well innervated with a dense network of afferent

sensory nerves and efferent autonomic nerves, and the integumentary system is frequently the focus of tension-reducing behaviors in the self-induced dermatoses, especially during states of autonomic nervous system hyperarousal. Mood-stabilizing agents, such as lithium carbonate, that are used to treat disorders of emotional regulation have not been adequately studied in the management of the self-induced dermatoses with controlled clinical trials, and may prove to be very helpful in the management of these disorders.

## References

1. Gupta MA, Levenson JL. Dermatology. In: Levenson JL, editor. The American Psychiatric Publishing textbook of psychosomatic medicine: psychiatric care of the medically ill. 2nd ed. Washington DC: American Psychiatric Publishing Inc; 2011. p. 667-90.
2. Gupta MA, Gupta AK, Haberman HF. The self-inflicted dermatoses: a critical review. *Gen Hosp Psychiatry* 1987;9:45-52.
3. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th ed., text revision. Washington, DC: American Psychiatric Association; 2000.
4. Flessner CA. Diagnosis and comorbidity. In: Grant JE, Stein DJ, Woods DW, et al, editors. Trichotillomania, skin picking & other body-focused repetitive behaviors. Arlington, VA: American Psychiatric Publishing, Inc.; 2012. p. 83-96.
5. Keuthen NJ, Siev JS, Reese H. Assessment of trichotillomania, pathologic skin picking, and Stereotypic Movement Disorder. In: Grant JE, Stein DJ, Woods DW, et al, editors. Trichotillomania, skin picking & other body-focused repetitive behaviors. Arlington, VA: American Psychiatric Publishing, Inc.; 2012. p. 129-50.
6. Odlaug BL, Grant JE. Clinical characteristics and medical complications of pathological skin picking. *Gen Hosp Psychiatry* 2008;30:61-6.
7. Bernstein EM, Putnam FW. Development, reliability, and validity of a dissociation scale. *J Nerv Ment Dis* 1986;174:727-35.
8. Konuk N, Koca R, Atik L, et al. Psychopathology, depression and dissociative experiences in patients with lichen simplex chronicus. *Gen Hosp Psychiatry* 2007;29:232-5.
9. Gupta MA, Gupta AK. Medically unexplained cutaneous sensory symptoms may represent somatoform dissociation: an empirical study. *J Psychosom Res* 2006;60:131-6.
10. Fabisch W. Psychiatric aspects of dermatitis artefacta. *Br J Dermatol* 1980;102:29-34.
11. Shelley WB. Dermatitis artefacta induced in a patient by one of her multiple personalities. *Br J Dermatol* 1981;105:587-9.
12. Singh AN, Maguire J. Trichotillomania and incest. *Br J Psychiatry* 1989;155:108-10.
13. Lochner C, Seedat S, Hemmings SM, et al. Dissociative experiences in obsessive-compulsive disorder and trichotillomania: clinical and genetic findings. *Compr Psychiatry* 2004;45:384-91.
14. Lochner C, Simeon D, Niehaus DJ, et al. Trichotillomania and skin picking: a phenomenological comparison. *Depress Anxiety* 2002;15: 83-6.
15. Ozmen M, Erdogan A, Aydemir EH, et al. Dissociative identity disorder presenting as dermatitis artefacta. *Int J Dermatol* 2006;45:770-1.
16. Gupta MA, Gupta AK. Dermatitis artefacta and sexual abuse. *Int J Dermatol* 1993;32:825-6.
17. Gattu S, Rashid RM, Khachemoune A. Self-induced skin lesions: a review of dermatitis artefacta. *Cutis* 2009;84:247-51.
18. Corrigan FM, Fisher JJ, Nutt DJ. Autonomic dysregulation and the Window of Tolerance model of the effects of complex emotional trauma. *J Psychopharmacol* 2011;25:17-25.

19. Van der Kolk BA, Greenberg MS, Orr SP, et al. Endogenous opioids, stress induced analgesia, and post-traumatic stress disorder. *Psychopharmacology Bull* 1989;25:417-21.
20. Schore AN. *Affect dysregulation and disorders of the self*. New York: W.W. Norton & Company; 2003. p. 128-77.
21. Orr SP, Metzger LJ, Miller MW, et al. Psychophysiological assessment of PTSD. In: Wilson JP, Keane TM, editors. *Assessing psychological trauma and PTSD*. 2nd ed. New York: The Guilford Press; 2004. p. 289-343.
22. Wilson JP. PTSD and complex PTSD. Symptoms, syndromes and diagnoses. In: Wilson JP, Keane TM, editors. *Assessing psychological trauma and PTSD*. 2nd ed. New York: The Guilford Press; 2004. p. 7-44.
23. Garg A, Chren MM, Sands LP, et al. Psychological stress perturbs epidermal permeability barrier homeostasis: implications for the pathogenesis of stress-associated skin disorders. *Arch Dermatol* 2001; 137:53-9.
24. Choi EH, Brown BE, Crumrine D, et al. Mechanisms by which psychologic stress alters cutaneous permeability barrier homeostasis and stratum corneum integrity. *J Invest Dermatol* 2005;124:587-95.
25. Gupta MA, Levenson JL. Dermatological disorders. In: Ferrando SJ, Levenson JL, Owen JA, editors. *Clinical manual of psychopharmacology in the medically ill*. Washington, DC: American Psychiatric Publishing Inc.; 2010. p. 405-29.
26. Bloch MH, Landeros-Weisenberger A, Dombrowski P, et al. Systematic review: pharmacological and behavioral treatment for trichotillomania. *Biol Psychiatry* 2007;62:839-46.
27. Grant JE, Odlaug BL, Kim SW. Lamotrigine treatment of pathologic skin picking: an open label study. *J Clin Psychiatry* 2007;68:1384-91.
28. Grant JE, Odlaug BL, Chamberlain SR, et al. A double-blind, placebo-controlled trial of lamotrigine for pathological skin picking. Treatment efficacy and neurocognitive predictors of response. *J Clin Psychopharmacol* 2010;30:396-403.