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REVIEW ARTICLE



Review of epidemiology, clinical presentation, diagnosis, and treatment of common primary psychiatric causes of cutaneous disease

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ABSTRACT

Approximately half of all patients presenting to dermatologists exhibit signs and symptoms of psychiatric conditions that are either primary or secondary to cutaneous disease. Because patients typically resist psychiatric consult, dermatologists often are on the front line in evaluating and treating these patients. Accordingly, distinguishing the specific underlying or resulting psychiatric condition is essential for effective treatment. The etiology, epidemiology, clinical presentation, diagnosis, and first-line treatment of specific primary psychiatric causes of dermatologic conditions, including delusional infestation, Morgellons syndrome, olfactory reference syndrome, body dysmorphic disorder, excoriation disorder, trichotillomania, and dermatitis artefacta are discussed here, followed by a discussion of the recommended treatment approach with an overview of the different first-line therapies discussed in this review, specifically cognitive behavioral therapy, atypical antipsychotics, selective serotonin reuptake inhibitors, and tricyclic antidepressants. Included is a guide for dermatologists to use while prescribing these medications.

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Among dermatology patients, the incidence of psychiatric disorders, either primary or secondary to cutaneous disease, is 30–60% (1). Examples of primary cutaneous disease with secondary psychiatric conditions include atopic dermatitis, psoriasis, vitiligo, acne, urticaria, herpes virus, and alopecia areata (2,3). The most common primary psychiatric conditions with cutaneous manifestations include mood, anxiety, obsessive compulsive, and delusional disorders (1). Depending on the specific disease, patients with psychiatric causes of cutaneous disease typically present to infectious disease specialists, plastic surgeons, and dermatologists rather than psychiatrists (4–6). Despite the importance of a psychiatrist in diagnosing the underlying cause and providing treatment, direct psychiatric referral sometimes results in the patient seeking another dermatologist (7–10). For instance, Pavlovsky et al. reported that of 12 patients presenting with delusional infestation (DI), only one patient (8%) accepted psychiatric referral (11). Accordingly, dermatologists should feel comfortable prescribing psychiatric medication for these diagnoses if needed.

Delusional infestation

DI is classified as a delusional disorder in the DSM-5 (Table 1). Patients present with visual, auditory, and/or tactile (biting, crawling, burrowing, stinging, itching, buzzing) hallucinations and the false conviction of infection despite multiple physicians' assertions to the contrary (12–15). Recurrent safety behaviors include consulting multiple physicians and pest control and attempts to remove parasites with fingernails, teeth, knives, tweezers, razors, disinfectant, permethrin, and/or pesticides, resulting in multiple self-inflicted skin lesions (13,14,16). Typical lesions may include excoriations, ulcers, or prurigo nodularis, and presentation may be complicated by infection (17). Patients often bring 'specimens' of their skin or other material to show physicians; this presentation,

observed in 48–63% of cases, is referred to as the matchbox or specimen sign (7,16,18,19).

DI most commonly affects females older than 50 years, though younger and male patients may also be affected (21). Mean duration of disease is 3.0 ± 4.6 years (21). Trabert et al. calculated the prevalence to be 5.58 per million patients treated in hospitals and public health departments and 83.23 per million patients treated in private practice (22,23). Dermatologists surveyed in two large studies (216 and 134 dermatologists) had all seen at least one case (24,25).

Differential diagnoses include formication or DI secondary to schizophrenia, mood disorders, anxiety, or obsessive compulsive disorder (OCD) (13,14). Patients with formication present with similar hallucinations as those with DI, but the conviction of infection is absent (14). There are many possible etiologies of formication (Table 2).

The treatment of DI should be studied in future clinical trials, as studies have been limited to case series and case reports (17). Nevertheless, the current recommended treatment of DI patients is atypical antipsychotics. Of note, patients typically respond to lower dosages than those required for managing schizophrenia or other psychotic disorders (9,17,33–35). In a review of 63 cases reported in the literature, Freudenmann et al. found that risperidone and olanzapine have been the most frequently prescribed (72% of cases) and achieved full or partial remission in 69% and 72% of cases, respectively (36). Aripiprazole is a newer atypical antipsychotic with an even more favorable side effect profile that has been reported successful in treating DI in increasing numbers of case reports (35,37,38). Pimozide is no longer indicated as first-line therapy due to its significant induction of cardiotoxicity (primarily prolonged QT interval), extrapyramidal side effects, drug–drug interactions, and depression (39–46).

Table 1. DSM-5 diagnostic criteria: Delusional disorder*.

- A. The presence of one (or more) delusions with a duration of 1 month or longer.
- B. Criterion A for schizophrenia has never been met (*See below*). Hallucinations, if present, are not prominent and are related to the delusional theme (e.g. the sensation of being infested with insects associated with delusions of infestation).
- C. Apart from the impact of the delusion(s) or its ramifications, functioning is not markedly impaired, and behavior is not obviously bizarre or odd.
- D. If manic or major depressive episodes have occurred, these have been brief relative to the duration of the delusional periods.
- E. The disturbance is not attributable to the psychological effects of a substance or another medical condition and is not better explained by another mental disorder, such as body dysmorphic disorder or obsessive-compulsive disorder.
- Note:* Classified into the following subtypes: erotomanic, grandiose, jealous, persecutory, somatic, mixed, and unspecified. Somatic delusions, which involve bodily functions and/or sensations, are of particular relevance to dermatologists; these include convictions pertaining to odor, the appearance of body parts, and infestation.
- Diagnostic criterion A for schizophrenia:* Two (or more) of the following, each present for a significant portion of time during a 1 month period (or less if successfully treated). At least one of these must be (1), (2), or (3):
1. Delusions.
 2. Hallucinations.
 3. Disorganized speech.
 4. Grossly disorganized or catatonic behavior.
 5. Negative symptoms.

*Data from the American Psychiatric Association (20).

Table 2. Causes of formication*.

Endocrine	Menopause, diabetes, hyperthyroidism, panhypopituitarism
Immune	Sjögren's syndrome, rheumatoid arthritis, multiple sclerosis
Pulmonary disease	Sarcoidosis, asthma, tuberculosis
Infection	Herpes virus, syphilis, Lyme disease, osteomyelitis
Neurologic	CNS infection, stroke, head trauma, dementia, mental retardation, delirium, vascular encephalopathy
Drugs	Alcohol, benzodiazepine, or heroin withdrawal or side effect of Adderall, cocaine, opioids, crystal meth, THC, methamphetamine, Keppra, Lunesta, Ritalin, Wellbutrin, antibiotics, steroids, NSAIDs, dopamine agonists
Vitamin deficiency	B12, folate, thiamin
Hematologic	Anemia, leukemia
Cardiac	Hypertension, CHF
Other	Hepatitis, visual or hearing loss, kidney disease, neoplasm

*Data from multiple sources (7,13,16,26–32).

Seventy-five percent of patients with primary DI respond to treatment (47). Clinical improvement is typically observed after 1.5 weeks, and maximal effect is observed after 10 weeks (36). Due to the chronic nature of the disease, attempts to discontinue treatment often result in relapse (>25%) (7,47). Unfortunately, compliance is typically poor (15) and 80% are lost to follow-up (15).

It is essential to eliminate formication or secondary causes of DI before prescribing antipsychotics (48). In these patients, treatment should address the underlying medical or psychiatric cause (17).

Morgellons syndrome

Patients with Morgellons syndrome (MS) report fibers embedded in or projecting from the skin and with complaints of burning, stinging, and crawling sensations, which they attribute to an infection. Skin lesions from self-mutilation, chronic fatigue and/or insomnia, and mood disorders (>50%) are common findings.

Table 3. DSM-5 diagnostic criteria: Somatic symptom disorder*.

- A. One or more somatic symptoms that are distressing or result in significant disruption of daily life.
- B. Excessive thoughts, feelings, or behaviors related to the somatic symptoms or associated health concerns as manifested by at least one of the following:
- 1) Disproportionate and persistent thoughts about the seriousness of one's symptoms.
 - 2) Persistently high level of anxiety about health or symptoms.
 - 3) Excessive time and energy devoted to these symptoms or health concerns.
- C. Although any one somatic symptom may not be continuously present, the state of being symptomatic is persistent (typically more than 6 months).

*Data from the American Psychiatric Association (20).

Patients are typically educated females in their 40s and 50s who have learned about the disease from friends or the internet (33,48,49). The Centers for Disease Control and Prevention has failed to identify an infectious or medical cause (50).

The etiology of MS is still debated. MS may be considered a subtype of DI and would therefore also be categorized as a delusional disorder (Table 1). Alternatively, following a retrospective study in 47 patients, Reichenberg et al. suggested that the symptoms reported by patients with MS are more consistent with somatic symptom disorder (Table 3) (51). Reichenberg et al. observed that patients presenting with the chief complaints of infection or fibers were significantly more likely to be diagnosed with DI or somatic symptom disorder, respectively. Patients with somatic symptom disorder presented with multiple somatic symptoms disproportionate to physical exam findings and reported a higher number of anxiety, post-traumatic stress disorder (PTSD), and depression symptoms on a Modified Mini Screen for psychiatric disease.

Larger studies are needed in order to distinguish the symptoms of patients with MS as more consistent with those of patients with delusional or somatic symptom disorder, or to determine whether this distinction must be made on an individual basis. Categorization is essential to determine first-line treatment, as atypical antipsychotics would be recommended in patients presenting with delusional disorder, whereas antidepressants (i.e. selective serotonin reuptake inhibitors, (SSRI's)) would be first-line in addressing the underlying anxiety, depression, and/or PTSD contributing to the somatoform disorder (51).

OCD and obsessive compulsive related disorders

The DSM-5 groups OCD and obsessive-compulsive-related disorders (OCDs) into the same chapter due to their overlap in diagnostic symptoms and comorbidity (20). Indeed, due to their comorbidity, clinicians should screen for other disorders in this category in patients already diagnosed with one or more related conditions (Table 4) (20). Specific disorders include OCD, body dysmorphic disorder (BDD), hoarding disorder, body-focused repetitive behavior disorders (BFRBDs), substance/medication-induced OCD, OCD due to another medical condition, and other specified OCD and unspecified OCD (20). Disorders in this category that most commonly present to dermatologists include olfactory reference syndrome (ORS); BDD; and BFRBD's, particularly excoriation disorder (ExD), and trichotillomania (TTM).

Olfactory reference syndrome

Patients with ORS present with the false belief that they have body odor, most often an odor reminiscent of stool, garbage, and/or ammonia reported from the armpits, feet, and breasts. Halitosis is also a common complaint (75%). Patients typically engage in repetitive behaviors to eliminate the alleged odor

Table 4. Screening tests and symptom severity scales for obsessive compulsive related disorders.

Disorders	Assessment
Olfactory reference syndrome	Keio self-rating questionnaire (52).
Body dysmorphic disorder	Body Dysmorphic Disorder Questionnaire- Dermatology Version (53), Dysmorphic Concern Questionnaire (54), Body Dysmorphic Symptoms Scale (55), Yale Brown Obsessive Compulsive Scale Modified for Body Dysmorphic Disorder (56).
Excoriation disorder	The Skin Picking Impact Project (57), Skin Picking Scale-Revised (58), Milwaukee Inventory for the Dimensions of Adult Skin Picking (59), Yale-Brown Obsessive Compulsive Scale Modified for Neurotic Excoriation (60).
Trichotillomania	The Trichotillomania Diagnostic Interview (61), Massachusetts General Hospital Hair Pulling Scale (62), Milwaukee Inventory for Subtypes of Trichotillomania—adult and children version (63,64), National Institute of Mental Health—Trichotillomania Symptom Severity Scale (65), Trichotillomania Impact Project in young children (0–10), children and adolescents (10–17), and adults (66–68), Yale–Brown Obsessive Compulsive Scale-Trichotillomania (69).

(95%) and avoid social situations due to shame and embarrassment regarding their perceived odor (~75%). The syndrome is also typically accompanied by referential thinking (64%) and significant distress and functional impairment. The average age of onset is 21 years. Chronic course is reported in 54% of patients (5,70,71).

Patients often have severe psychiatric sequelae attributed to ORS symptoms, including high rates of suicidal ideation (68%), suicide attempt (32%), and psychiatric hospitalization (53%) (71). Major depressive disorder, social phobia, substance abuse, OCD, and BDD are common comorbid conditions (71).

There are no established treatment guidelines in part because studies have been limited to case reports and case series (70). Also, there is still considerable controversy regarding how ORS should be classified. In the DSM-IV and ICD-10, patients without insight were categorized under delusional disorders (70). Nevertheless, current findings indicate that only 18% of patients present with delusional insight (5). Accordingly, in the DSM-5, ORS is categorized under *other specified OCD's* (Table 5) (20).

Because the etiology of the disease has until recently been unclear, multiple treatments have been tested, including treatment with antipsychotics and antidepressants either together or in isolation and psychotherapy (70). Begum and McKenna reviewed 84 cases of ORS and reported a better response to antidepressants (55%) as compared to antipsychotics (33%) (72). These findings are consistent with the shift in the DSM's categorization of ORS from a delusional to an OCD disorder. The authors also report improvement with psychotherapy (78%) (72). Case reports have demonstrated efficacy of cognitive behavioral therapy (CBT) both in isolation and in combination with pharmacotherapy (73–75).

Body dysmorphic disorder

BDD is an OCD (Table 6) that most commonly presents in patients between 15 and 30 years with overwhelming concern of perceived somatic defects that appear slight or nonexistent to other people. Preoccupation with the defect, typically accompanied by time-consuming behavior such as analysis in mirrors and futile attempts to 'remedy' the defect (i.e. a history of multiple cosmetic procedures), leads to significant distress and impairment. Social isolation, unemployment, comorbid depression, anxiety, and/or other OCDs, and increased suicide risk are prevalent findings (4,14,76). Of note, most dermatologic patients committing suicide have either acne or BDD (77).

Dermatologists are the physicians most frequently sought by patients with BDD (4), as the skin is the most prevalent preoccupation in both men and women, followed by hair (78). One study has estimated that of the population of patients presenting to dermatologists overall, 12% have BDD (4). BDD is significantly

Table 5. DSM-5 diagnostic criteria: Other specified obsessive-compulsive and related disorders*.

- Symptoms of obsessive-compulsive and related disorders that cause clinically significant distress and/or impairment.
 - Does not meet full criteria of another disorder in this category.
- Examples that may present to dermatologists:
- Body dysmorphic-like disorder with actual flaws: Similar to body dysmorphic disorder, but actual flaws in physical appearance are more noticeable than 'slight' others. The preoccupation with these flaws is clearly excessive and causes significant impairment or distress.
 - Body dysmorphic-like disorder without repetitive behaviors: Similar to body dysmorphic disorder, but the individual has not performed repetitive behaviors.
 - Body-focused repetitive behavior disorder: Recurrent body-focused repetitive behaviors (e.g. nail biting, lip biting, and cheek chewing) and repeated attempts to decrease or stop the behaviors. Symptoms cause clinically significant distress and/or impairment and are not better explained by trichotillomania, excoriation disorder, stereotypic movement disorder, or nonsuicidal self-injury.
 - *Shubo-kyofu*: Characterized by excessive fear of having a bodily deformity.
 - *Jikoshu-kyofu*: Characterized by excessive fear of having an offensive body odor (also termed *olfactory reference syndrome*).

*Data from the American Psychiatric Association (20).

Table 6. DSM-5 diagnostic criteria: Body dysmorphic disorder*.

- A. Preoccupation with one or more perceived defects or flaws in physical appearance that are not observable or appear slight to others.
- B. At some point during the course of the disorder, the individual has performed repetitive behaviors (e.g. mirror checking, excessive grooming, skin picking, and reassurance seeking) or mental acts (e.g. comparing his or her appearance with that of others) in response to the appearance concerns.
- C. The preoccupation causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.
- D. The appearance preoccupation is not better explained by concerns with body fat or weight in an individual whose symptoms meet diagnostic criteria for an eating disorder.

Note: Degree of insight ranges from good (recognizes beliefs are not true) to absent/delusional (completely convinced that beliefs are true).

*Data from the American Psychiatric Association (20).

more prevalent among cosmetic dermatology patients (14%) than general dermatology patients (7%) (79).

There is not a significant difference in gender distribution, though differences in presentation are reflective of cultural norms. Specifically, while preoccupation with hips and weight and utilization of make-up as camouflage are prevalent in women, preoccupation with lack of muscularity, genitalia, and hair thinning, and utilization of a hat as camouflage are more common in men (78).

BDD has a chronic course. Phillips et al. reported full remission in 20% of patients over 4 years (80).

In 2005, the National Institute for Health and Clinical Excellence published guidelines for treating BDD. Patient choice between a selective serotonin reuptake inhibitors (SSRI) or CBT is indicated for adults with BDD and moderate functional impairment. Children should receive CBT. SSRIs are indicated if there is

moderate to severe functional impairment and no response to CBT (81). When SSRIs are utilized, prolonged therapy, considering BDDs chronic course, reduces relapse and disease severity (82). CBT has been efficacious in randomized control trials regardless of mechanism of delivery (individual, group, or internet), age, and specific CBT technique (83,84). Studies of antipsychotic use in BDD have been limited. In a placebo-controlled study, augmentation of fluoxetine treatment with pimozide was not more effective than placebo, even in patients with delusional beliefs (85).

Body-focused repetitive behavior disorders

ExD and TTM are the most common manifestations of BFRBDs (Tables 7 and 8) that result in skin lesions and hair loss, respectively. Despite attempts to decrease or stop behavior, patients are unable to do so (86). Higher rates of ExD and TTM among family members and high comorbidity are reflective of a possible genetic etiology (87,88).

Patients with ExD repetitively rub, bite, scratch, squeeze, or dig into their skin with their fingers, fingernails, and/or small instruments (i.e. tweezers). Duration of episodes range from 5 min to 12 h per day. In addition to skin picking, typically patients obsessively inspect, check, and conceal areas involved (89–91). The severity varies; sequelae may include disfigurement, scarring, ulceration, and infection (92,93). Hospitalization is rare (3.3%) (94). While healthy regions of skin may also be involved, pimples and scabs (87%) are the most typical sites of involvement. ExD affects approximately 1–5% of the population and is more prevalent in women (>75%) (57,89), with a mean age of onset of 15 years (90).

Patients with TTM recurrently pull out their hair, resulting in prominent hair loss and significant distress and/or functional impairment (95). The median time spent engaging in behavior is 45 min/day (range 15–240 min) (96). Patients predominantly pull hair from the scalp (83%) (97). Other regions implicated include eyelashes, eyebrows, and pubic, face, and body hair (98). Trichophagia (swallowing hair after pulling it out) is observed in over 20% of patients and may result in a life-threatening trichobezoar (hairball) that may block the intestine and require emergency surgery (99). Patients may present with abdominal or chest pain,

change in bowels, unexplained weight loss, and/or vomiting. Abdominal CT scan is diagnostic in 97% of cases (95). Typical age at onset is 10–13 years. There is a 4:1 adult women: male prevalence and an equal gender distribution in children (95). Prior studies have reported a prevalence of 0.6%; however, the prevalence is likely higher considering patients' reluctance to reveal behavior and updated, less stringent diagnostic criteria (95).

BFRBDs are typically preceded and reinforced by negative affective states, such as boredom, anger, frustration, anxiety, and embarrassment. In these patients, the behavior is purposeful and temporarily leads to feelings of relief. Alternatively, the BFRD may be an unconscious habit or a purposeful component of a daily grooming regimen (92,100,101). Most patients have a significant current and/or past psychiatric history (90,100). Additionally, sequelae include academic, occupational, and psychosocial impairment and increased levels of sadness, anxiety, anger, and guilt (90,94,101,102).

Patients with BFRBDs typically avoid treatment due to embarrassment and the belief that their behaviors are bad habits rather than treatable medical conditions (94,95). Nevertheless, without treatment, BFRBDs are chronic conditions. Typically, symptoms wax and wane in intensity (90,95,97). Diagnosis requires exclusion of medical, dermatologic, and psychiatric causes (91,95).

Multiple randomized control trials have reported that CBT has the most significant treatment effect; thus, CBT is indicated as first-line therapy (89,103,104). There is a significant benefit of CBT whether practiced by experienced clinicians, through self-help methods, and/or online (89,103–105). SSRIs are the most common pharmacotherapy prescribed; however, their efficacy is limited (89,91,103,104,106).

Preliminary randomized control trials have reported on the efficacy and tolerability of *N*-acetylcysteine in treating both ExD and TTM (107,108). A randomized control trial has also reported on the efficacy of olanzapine in treating TTM (109); however, reports on the efficacy of olanzapine in treating ExD have been limited to case series (110,111). More research is needed to validate these preliminary results. While CBT is typically the first-line initial treatment, the appropriate psychiatric medication may be indicated depending on whether there is an underlying psychiatric condition (91).

Table 7. DSM-5 diagnostic criteria: Excoriation disorder*.

- A. ecurrent skin picking resulting in skin lesions.
- B. Repeated attempts to decrease or stop skin picking.
- C. The skin picking causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.
- D. The skin picking is not attributable to the physiological effects of a substance (e.g. cocaine) or another medical condition (e.g. scabies).
- E. The skin picking is not better explained by symptoms of another mental disorder (e.g. delusions or tactile hallucinations in a psychotic disorder, attempts to improve a perceived defect or flaw in appearance in body dysmorphic disorder, stereotypes in stereotypic movement disorder, or intention to harm oneself in nonsuicidal self-injury).

*Data from the American Psychiatric Association (20).

Table 8. DSM-5 diagnostic criteria: Trichotillomania*.

- A. Recurrent pulling out of one's hair, resulting in hair loss.
- B. Repeated attempts to decrease or stop hair pulling.
- C. The hair pulling causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.
- D. The hair pulling or hair loss is not attributable to another medical condition (e.g. a dermatological condition).
- E. The hair pulling is not better explained by the symptoms of another mental disorder (e.g. attempts to improve a perceived defect or flaw in appearance in body dysmorphic disorder).

*Data from the American Psychiatric Association (20).

Dermatitis artefacta

Dermatitis artefacta (DA) is a factitious disorder (Table 9) in which patients deliberately produce skin lesions to fulfill an unconscious desire to assume the sick role. Patients deny inflicting the lesions and present a history that is inconsistent with physical exam findings. The lesions are typically multiple and have a bizarre morphology. They recur in areas of skin unmasked by clothing or make-up (112–114). The specific presentation depends on the instrument used to inflict the lesion. Ulcers are the most commonly reported lesion; however, blisters, panniculitis, factitious cheilitis, eczema, edema, purpura, and bruises are also observed (115). Pain (59%) and itching (37%) are the most common complaints. The most common explanations for the lesions include unknown (49%); trauma (18%); and allergy (16%) (114). The patient's demeanor is typically relaxed and indifferent. Further history is likely to reveal numerous physician consultations and medications (10).

Of patients presenting to dermatologists with primary psychiatric conditions, 23% have DA (116). DA is most prevalent in teenage and young adult women and in patients belonging to a lower socio-economic status. The patients or one or more of their family members typically work in health-related fields (6,115,117). The

etiology is not well understood, and multiple factors have been implicated. DA is often associated with childhood psychiatric disorders and abuse. Common comorbid conditions include dissociative disorder, OCD, depression, and borderline personality disorder (112,113). DA may be a cry for help following triggers ranging from isolated anxiety and interpersonal conflict to a severe psychiatric disorder (6).

Diagnosis is one of exclusions and requires a high index of suspicion. Typically, patients are otherwise healthy with normal lab values (113). Psychiatric differential diagnosis includes psychosis,

Table 9. DSM-5 diagnostic criteria: Factitious disorder*.

Factitious disorder imposed on self	
A.	Falsification of physical or psychological signs or symptoms, or induction of injury or disease, associated with identified deception.
B.	The individual presents himself or herself to others as ill, impaired, or injured.
C.	The deceptive behavior is evident even in the absence of obvious external rewards.
D.	The behavior is not better explained by another mental disorder, such as delusional disorder or another psychotic disorder.
Factitious disorder imposed on another	
A.	Falsification of physical or psychological signs or symptoms, or induction of injury or disease, in another, associated with identified deception.
B.	The individual presents another individual (victim) to others as ill, impaired, or injured.
C.	The deceptive behavior is evident even in the absence of obvious external rewards.
D.	The behavior is not better explained by another mental disorder, such as delusional disorder or another psychotic disorder.

*Data from the American Psychiatric Association (20).

BFRBD, Munchausen's syndrome, and malingering (Table 10) (115,117).

Many patients suffer a poor prognosis. Of 33 patients followed for 22 years, Sneddon and Sneddon report that 13 (39%) either continued to present with skin lesions or with dysfunction due to another psychiatric disorder. They report waxing and waning of symptoms dependent on life circumstances (120). Indeed, life circumstances typically dictate the outcome even more than psychiatric treatment (6). Complications of DA are typically infection related. Chronic ulcers have also been reported to develop into Marjolin ulcers, a type of squamous cell carcinoma (115).

Inpatient treatment may be necessary (10). Occlusive bandages and dressings are therapeutic and diagnostic if rapid healing, despite prior refractoriness to treatment, is observed (115). Depending on the lesion(s), baths, emollients, and antibiotics may be indicated (121). In addition to treatment of skin lesions, patients require psychiatric care. The psychiatric medication indicated varies depending on the underlying psychiatric cause (118).

Treatment approach

Patients may insist on antimicrobials (DI) or multiple cosmetic procedures (BDD); however, such treatment is typically ineffective and should be avoided, as it only reinforces the patients' disorder (122,31). In order to build a therapeutic relationship, direct confrontation should be avoided. When prescribing psychiatric

Table 10. Dermatitis artefacta differential diagnosis*.

Differential diagnosis	Distinction(s)
Psychosis or BFRBD Munchausen's syndrome	DA patients actively attempt to conceal their role in producing the lesions. While DA is more common in young women with a pleasant demeanor who stay near home and is typically limited to a single organ system, Munchausen's syndrome typically presents in older men with a history of sociopathic behavior, extensive travel, and surgical procedures that may involve multiple different organ systems.
Malingering	DA patients lack rational motive and present with recurrent treatment failure. In contrast, symptoms associated with malingering typically disappear when the external motivation is achieved.

*Data from multiple sources (6,10,118,119).

Table 11. Atypical antipsychotics.

Primary pharmacological effect	• Dopamine blockade with variable effect on serotonin receptors
Class warnings and side effects	• Possible increased mortality in elderly patients with dementia • Extrapyramidal symptoms (dystonia, akathisia, parkinsonism, bradykinesia, tremor, and tardive dyskinesia) • Neuroleptic malignant syndrome • Metabolic syndrome • Orthostatic hypotension • Prolonged QT • Hyperprolactinemia • Sedation • Small risk of increasing suicidality. Patients and/or responsible family members should be made aware and monitor. • Note that many side effects fade away over the first 1 to 2 weeks.
Monitor	• Weight • Blood sugar • Blood pressure • Lipid profile • EKG • Yearly liver function tests
Drugs mentioned in text	
Risperidone	• Start 0.25 mg daily, increase by 0.25 mg per day every 7 days to a target dose of 0.5–5 mg per day. • Rapid taper or abrupt discontinuation is okay.
Olanzapine	• Start 2.5 mg daily, increase by 2.5 mg–5.0 mg every few days up to a maximum dose of 20 mg per day. • Weight gain and sedation are common side effects. • Rapid taper or abrupt discontinuation are okay.
Aripiprazole	• Start 2–5 mg daily. Increase up to 5 mg/day every week. Target dose is 20 mg daily. • Less sedating and less weight gain than others in this class. • Rapid taper or abrupt discontinuation is okay.

medications, clinicians should emphasize the medications' ability to reduce symptoms. Clinicians may also note that anxiety and depression may worsen, or be caused by, the disease's symptoms. Dermatologic treatment failure and recurrence is common and may be minimized by a follow-up plan consisting of frequent short appointments and a caring environment.

Due to the high comorbidity of other psychiatric disorders in patients presenting with the conditions discussed in this paper and the potential implications they have on treatment and prognosis, it is essential for dermatologists to recognize these conditions, as well. Furthermore, assessment for depression, anxiety, delusional, somatization, etc., is essential for the diagnosis and differential diagnosis of these conditions. Nevertheless, mental illness is typically under-recognized by dermatologists. For instance, one study reported that the sensitivity of dermatologists recognizing depression and anxiety in patients identified by two separate screening measures was a mere 33% (123). Accordingly, it may help dermatologists to administer screening measures for mental

illness in patients presenting with these conditions. Two such quick, self-administered tests to assess for non-psychotic mental illness include the Patient Health Questionnaire and General Health Questionnaire. Self-administered screening tests for psychosis include the Community Assessment of Psychic Experiences, Prevention through Risk Identification, Management, and Education Screen, Prodromal Questionnaire-B, Psychosis Screening Questionnaire, and Self-screen Prodrome. The Brown Assessment of Beliefs Scale can be used to assess delusional in various psychiatric disorders (124).

Behavioral therapy

The most commonly utilized evidence-based treatment is CBT (125). The premise of CBT is that disordered effect and behavior are direct results of illogical, maladaptive thinking (126–128). Treatment therefore addresses maladaptive thinking in order to improve behavior. Patients work collaboratively with professionals

Table 12. Selective serotonin reuptake inhibitors (SSRI antidepressants).

Primary pharmacological effect	<ul style="list-style-type: none"> • Reuptake blockade of serotonin at the presynaptic neuron enhances serotonin transmission. • Delayed response—often taking 4–6 weeks, after achieving target dose, to begin to see improvements. • Even though they are structurally similar to each other, drug efficacy and tolerability can be very individual.
Class warnings and side effects	<ul style="list-style-type: none"> • Generally, very well tolerated and much safer in overdose than other antidepressant classes. • Many side effects lessen with time. • Rare, but potentially serious serotonin syndrome may occur, especially if 2 or more serotonergic drugs are prescribed simultaneously. • Possibility of increased suicidality. Patients, and/or responsible family members should be told to report any increase in suicidal thinking. • Weight gain • Sexual dysfunction • G.I. upset • Increased anxiety
Drugs mentioned in text	
Fluoxetine	<ul style="list-style-type: none"> • Start at 10 mg daily and titrate weekly up to target dose of 20 mg daily. • Maximum dose is 80 mg daily. • Has long half-life. • May be tapered quickly over a few days and then discontinued.
Escitalopram	<ul style="list-style-type: none"> • Start at 5 or 10 mg daily. Target dose is 10 mg daily. • Maximum dose 20 mg daily (10 mg daily in elderly patients). • For discontinuation, taper gradually (reduced dose by 50% every 1 to 2 weeks) • Abrupt withdrawal can trigger an uncomfortable, but 'safe' discontinuation reaction characterized by significant increases in anxiety and insomnia.
Fluvoxamine	<ul style="list-style-type: none"> • Start at 100 mg every evening, may increase by 50 mg daily every week to target dose 200–300 mg daily. • Maximum dose 300 mg daily. • Titrate more slowly in elderly patients. • Gradual taper (reduce dose by 50% every 1 to 2 weeks). Some patients may require an especially slow taper lasting 6 to 8 weeks. • G.I. side effects (nausea and vomiting) more common than with other SSRIs. • Check drug interactions related to cytochrome P450 inhibition.

Table 13. Tricyclic Antidepressants (TCAs).

Primary pharmacological effect	<ul style="list-style-type: none"> • Affect many neurotransmitter systems. • It is thought their primary therapeutic effects are mediated by increasing levels of norepinephrine and serotonin. • TCAs are also anticholinergic and antihistaminic.
Class warnings and side effects	<ul style="list-style-type: none"> • Sedation • Sexual dysfunction • Orthostatic hypotension • Require significant dose titration to achieve the optimal therapeutic effect and are lethal in overdose. • Small risk of increasing suicidality. Patients and/or responsible family members need to be made aware and monitor.
Drugs mentioned in text	
Clomipramine	<ul style="list-style-type: none"> • Start with 25 mg daily and increase dose by 25 mg/day every 4 to 7 days. • Maximum dose 100 mg/day in the 1st 2 weeks. • Target dose 150 mg per day. • Maximum dose 300 mg daily. • For discontinuation: Gradual taper, reducing dose by 50% every 1 to 2 weeks.
Amitriptyline	<ul style="list-style-type: none"> • Start at 10–25 mg daily. Titrate by increasing dose slowly over several weeks to a target dose of 150 mg daily. • Maximum dose 300 mg daily. • For discontinuation: Gradual taper, reducing dose by 50% every 1 to 2 weeks.

in order to establish treatment goals and strategies to achieve these goals, such as through the development of positive coping skills. Sessions are typically structured, with homework assignments given between sessions. Online sessions are helpful for some highly motivated patients.

Pharmacotherapy

Dermatologists should feel comfortable in prescribing psychiatric medications, as patients are often resistant to psychiatric referral. Included is a guide for prescribing atypical antipsychotics (Table 11), selective serotonin reuptake inhibitors (Table 12), and tricyclic antidepressants (Table 13).

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