



An Approach to the Evaluation of Delusional Infestation

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The term *delusional infestation* describes patients who present with a fixed false belief that their skin is infested with inanimate or animate objects, most commonly parasites. These patients clinically present with skin findings that are entirely self-induced, including diffuse excoriations, prurigo nodularis, lichenification, and ulceration. Patients often report multiple experiences with other physicians who have failed to cure them. Most characteristically, these patients tend to bring a collection of debris in a small container as “proof” of their infestation, often referred to as the matchbox sign. These items typically contain lint, threads, excoriated skin, and unrelated insects or insect parts, and rarely contradict the suspected diagnosis of a delusional disorder.

Delusional infestation encompasses delusions of parasitosis as well as inanimate infestations with materials such as fibers or specks, sometimes referred to as Morgellons disease. The symptoms of Morgellons disease can be nearly identical to delusions of parasitosis, but the former is characterized by a delusion of fibers or other materials extruding from the skin. Recently, there has been increased interest in Morgellons disease following a study conducted by the Centers for Disease Control and Prevention that aimed to explore potential etiologies of the condition.¹ This study of 115 patients involved extensive clinical and laboratory testing, including examination of skin biopsies, patient-provided specimens, and blood work. The study ultimately found no consistent causative infectious or environmental factor that could explain the presentation, suggesting an underlying delusional process.¹ Although many affected patients refuse to accept these findings and even suspect “[t]here’s something being hidden,” according to one

news report,² the study provides reliable evidence that Morgellons disease is a delusional state.

In this mental state, a delusional patient may be difficult to treat and may trigger a strong emotional response by the dermatologist including frustration and even anger. In the absence of primary skin lesions or a convincing history, it may be tempting to limit the evaluation and time spent with these patients. However, as stressed in a recent review by Schairer et al,³ the diagnosis of a delusional infestation is one of exclusion, and underlying psychiatric and medical conditions should be thoroughly evaluated before diagnosing this condition. Furthermore, although it is unlikely to alter the working diagnosis, pursuing further evaluation shows that you are taking the patient’s concerns seriously, which may build trust and lead to better patient compliance with treatment or referral recommendations. Accordingly, I will review possible underlying conditions to consider in these patients, suggest an approach to the evaluation, and stress the importance of the interpersonal and psychologic aspects of the patient encounter.

Underlying Conditions and Evaluation

Possible secondary causes of delusional infestation include underlying psychiatric and medical conditions, certain prescribed medications, illicit drug use, or recent psychosocial stressors. Evaluating these patients begins with a detailed history to clarify the delusional beliefs and to find clues to any of these underlying causes. Psychiatric conditions to consider include schizophrenia, bipolar disorder, depression, anxiety disorders, and obsessive disorders, all of which could cause or could be associated with a delusional disorder. Hylwa et al⁴ reported that of 54 patients with a diagnosis of delusional infestation who accepted psychiatric referral, 74% (40/54) were found to have a concomitant psychiatric diagnosis, most commonly depression, highlighting the importance of evaluating for comorbid conditions. Although rarely confirmed

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to cause delusions, underlying medical conditions to consider include anemia, hypercalcemia, hyperthyroidism, end-stage renal disease, liver disease, fibromyalgia, seizure disorders, Alzheimer disease, Parkinson disease, cervical spine disease, and carcinoid tumor, among others (Table 1).^{5,6} Certain prescribed medications that have been found to cause a delusional state include those used for attention-deficit/hyperactivity disorder such as dextroamphetamine, amphetamine, and methylphenidate hydrochloride, as well as antibiotics (eg, ciprofloxacin hydrochloride), dopaminergic drugs (eg, levodopa), and narcotics. Accordingly, a thorough medication review is important.⁵ Furthermore, illicit drug use has been shown to be associated with delusional infestation, and a history of drug use, particularly methamphetamines and cocaine, should be sought. Further lines of questioning are provided in Table 2, as summarized from a recent retrospective review.⁵

When a diagnosis of delusional infestation is suspected, the physical examination should include a complete skin and lymph node examination, specifically searching for signs of other dermatologic or systemic diseases that could explain the patient's symptoms. Laboratory investigations should focus on looking for underlying causes of pruritus and should start with a complete blood cell count, comprehensive metabolic panel, thyroid function test, and drug screen. Although studies have shown that skin biopsies and examination of patient-provided specimens rarely change the dermatologist's diagnosis, they still play an important role in the workup.^{3,4} In addition to confirming the suspected diagnosis and ruling out other conditions, these measures show the patient that you are taking his/her condition seriously and that your ultimate treatment recommendations are the most appropriate choice based on your findings. Furthermore, rapport can be seriously compromised when dermatologists refuse to perform a skin biopsy or examine patient-provided specimens, which can lead to a power struggle that will diminish chances of appropriate treatment and future psychiatric referral.⁷

Throughout the evaluation, it is important for residents to use carefully selected language and recognize the importance of psychologic aspects of the patient encounter.⁷ For example, Schairer et al³ emphasized that when discussing laboratory tests with patients, dermatologists should stress that these tests are being performed to clarify the cause of the patient's symptoms, not to look for parasites, which may validate the delusion. Furthermore, dermatologists also should try to avoid contradicting patient beliefs, which could make the patient feel discredited and lose trust in the physician, as often has occurred in prior evaluations with other physicians. According to Schairer et al,³

Table 1.

Nondermatologic Causes of Delusional Infestation

	Secondary Causes
Psychiatric	Schizophrenia spectrum disorders; affective disorders with psychotic features; anxiety disorders
Hematologic/oncologic	Severe anemia; lymphoproliferative disorders; myeloproliferative disorders; breast cancer
Metabolic	Uremia; cholestasis; carcinoid syndrome
Endocrine	Diabetes mellitus; thyroid disease; hyperparathyroidism or hypoparathyroidism
Substance abuse	Cocaine; amphetamines; alcohol withdrawal
Infectious	AIDS; hepatitis; syphilis; tuberculosis; meningitis or encephalitis
Neurologic	Neuropathies; Parkinson disease; Huntington disease; multiple sclerosis; cerebrovascular accident; traumatic brain injury; dementia

Data from Bury and Bostwick.⁶

dermatologists should examine specimens with the patient, look at each item carefully, and label each one with a name, avoiding phrases such as "There is no evidence of parasites here," which may be viewed as a challenge to the patient's delusion. The ultimate goal during these interactions is to express concern and compassion for the patient's concerns without reinforcing his/her delusional beliefs.

Personal Experience

An interesting case of suspected delusional infestation was seen in our clinic this past summer. The patient

Table 2.

Evaluation of Patients With Delusional Infestation

Evaluation	Considerations
Patient history	History of present illness; review of systems: other symptoms that could suggest an underlying medical or psychiatric cause; medical history: special attention to any history of neurologic or psychiatric disease; family history: family members with similar concerns or psychiatric disorders; social history: current or prior illicit drug use, especially methamphetamines, cocaine, marijuana, or narcotics; medications: special attention to use of any medications associated with delusional infestation, including medications for attention-deficit/hyperactivity disorder, dopaminergic drugs, antibiotics, or narcotics
Physical examination	Complete dermatologic examination: look for evidence of scabies or other primary dermatologic diseases, and look for physical signs of other systemic diseases associated with pruritus; include a lymph node examination and check for organomegaly and abdominal masses
Investigations/referrals	Focus on looking for underlying causes of pruritus: complete blood cell count, comprehensive metabolic panel (ie, sodium, potassium, calcium, phosphate, AST, ALT, alkaline phosphatase, BUN, creatinine), thyroid function test, blood or urine drug screen; consider further studies if abnormalities are found; examine patient-provided specimens if present; skin biopsy; refer to psychiatric department

Abbreviations: AST, aspartate aminotransferase; ALT, alanine aminotransferase; BUN, blood urea nitrogen.

Data from Foster et al.⁵

had reported having a chronic pruritic rash that she attributed to a parasitic infection, but a thorough evaluation in our office was essentially unremarkable, and she was being treated symptomatically for delusional infestation. Recently, she returned to our clinic without an appointment with a sealed test tube that she stated contained one of the parasites she had been describing to us. Although skeptical, the residents in clinic examined the material and surprisingly found a tiny mobile organism that was later identified as *Lipeurus caponis*, a common louse found in poultry (Figure). The patient was treated with ivermectin and permethrin with initial improvement, though recently she reported return of her symptoms. It will take time to determine if her symptoms were entirely due to the louse infestation or if a delusional disorder remains, but this patient reinforces the importance of a thorough evaluation even when an underlying cause is unlikely to be revealed.

Treatment

The treatment of delusional infestations is beyond the scope of this article. Successful treatment often requires a multidisciplinary approach, utilizing various dermatologic, psychological, and pharmacologic tools



Small elongated insect with 6 legs that terminate into claws, which is most consistent with *Lipeurus caponis*, a common louse found in poultry.

as described elsewhere in the literature.⁸ Residents should first focus on identifying and treating any underlying medical or psychiatric conditions that may be contributing to, causing, or exacerbating the delusional symptoms. Furthermore, part of initiating the optimal treatment strategy may involve psychiatric

referral, but patients often will refuse it given their lack of insight into the underlying psychologic cause of their condition. The best strategy may be to describe the referral as an adjunct to dermatologic care, not as a replacement for it.³ Additionally, dermatologists should ask patients about any recent psychologic stressors that may be accompanying their symptoms, and if present, the subject of a psychologic evaluation to discuss these mental health stressors can be more easily addressed. This evaluation is important given the high prevalence of comorbid psychiatric diseases and the possible amelioration of delusional symptoms with treatment of these conditions.⁹

Conclusion

Many patients with a delusional infestation often will not accept the diagnosis, will remain dissatisfied, and will present to yet another physician with the hope of a different diagnosis and cure. Nonetheless, I believe the approach described here gives residents the best chance at identifying any underlying contributing conditions and establishing good therapeutic rapport, which ultimately is the most important step toward initiating appropriate dermatologic and psychiatric treatment.

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