

Infested with worms, but are they really there?

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How would you handle this case?

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Mr. H, age 51, abuses alcohol and methamphetamine. He presents to the ED for detoxification and believes he is infested with parasites. How can you best help him?

CASE Detoxification and preoccupation with parasites

Mr. H, age 51, has an extensive history of alcohol and methamphetamine use. He presents to the emergency department (ED) requesting inpatient detoxification. He says he had been drinking alcohol but is unable to say how much. His blood ethanol level is 61 mg/dL (unintoxicated level: <50 mg/dL), and a urine drug screen is positive for methamphetamine; Mr. H also admits to using fentanyl. The ED team treats Mr. H's electrolyte abnormalities, initiates thiamine supplementation, and transfers him to a unit for inpatient withdrawal management.

On the detoxification unit, Mr. H receives a total of 1,950 mg of phenobarbital for alcohol withdrawal and stabilizes on a buprenorphine/naloxone maintenance dose of 8 mg/2 mg twice daily for methamphetamine and fentanyl use. Though he was not taking any psychiatric medications prior to his arrival at the ED, Mr. H agrees to restart quetiapine—which he took when he was younger for suspected bipolar depression—50 mg/d at bedtime.

During Mr. H's 3-day detoxification, the psychiatry team evaluates him. Mr. H says he believes he is infested with worms. He describes a prior sensation of “meth mites,” or the feeling of bugs crawling under his skin, while using methamphetamines. However, Mr. H says his current infestation feels dis-

tinctively different, and he had continued to experience these sensations during prior periods of abstinence.

The psychiatry team expresses concern over his preoccupation with infestations, disheveled appearance, poor hygiene, and healed scars from excoriation. Mr. H also reports poor sleep and appetite and was observed writing an incomprehensible “experiment” on a paper towel. Due to his bizarre behavior, delusional thoughts, and concerns about his inability to care for himself, the team admits Mr. H to the acute inpatient psychiatric unit on a voluntary commitment.

HISTORY Long-standing drug use and repeated hospital visits

Mr. H reports a history of drug use. His first documented ED visit was >5 years before his current admission. He has a family history of substance abuse and reports previously using methamphetamine, heroin, and alcohol. Mr. H was never diagnosed with a



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Disclosures

The authors report no financial relationships with any companies whose products are mentioned in this article, or with manufacturers of competing products.

doi: 10.12788/cp.0376

psychiatric illness, but when he was younger, there were suspicions of bipolar depression, with no contributing family psychiatric history. Though he took quetiapine at an unspecified younger age, Mr. H did not follow through with any outpatient mental health services or medications.

Mr. H first reported infestation symptoms 6 months before his current inpatient admission, when he came to the ED with complaints of bumps on his arms and legs and reported seeing bugs in his carpet. He was prescribed permethrin 5% topical cream for suspected bedbug infestation.

In the 6 months prior to his current admission, Mr. H came to the hospital >20 times for various reasons, including methamphetamine abuse, alcohol withdrawal, opiate overdose, cellulitis, wound checks, and 3 visits for hallucinations for which he requested physical evaluation and medical care. His substance use was the suspected cause of his tactile and visual hallucinations of infestation because formication—the sensation of something crawling on your skin—is commonly associated with substance use. Although the etiology of Mr. H's hallucinations was unclear, his substance use may have either precipitated them, or, as the team suspects, masked an underlying pathology that eventually became more evident and required psychiatric treatment.

The authors' observations

Delusional parasitosis (DP), also known as delusional infestation or Ekbom Syndrome, is a condition characterized by the fixed, false belief of an infestation without any objective evidence. This condition was previously defined in DSM-IV, but was removed from DSM-5-TR. In DSM-5-TR, DP is most closely associated with delusional disorder—somatic type (Table 1,¹ page 50). It describes a patient with ≥1 month of delusions who does not meet the criteria for schizophrenia with a central theme of delusions involving

bodily functions or sensations such as infestation of insects or internal parasites.¹

DP is rare, affecting approximately 1.9 per 100,000 people. There has not been consistent data supporting differences in prevalence between sexes, but there is evidence for increasing incidence with age, with a mean age of diagnosis of 61.4.^{2,3} DP can be divided into 2 types based on the history and etiology of the symptoms: primary DP and secondary DP. Primary DP occurs when there is a failure to identify an organic cause for the occurrence of the symptoms. Therefore, primary DP requires an extensive investigation by a multidisciplinary team that commonly includes medical specialists for a nonpsychiatric workup. Secondary DP occurs when the patient has delusional symptoms associated with a primary diagnosis of schizophrenia, depression, stroke, diabetes, vitamin B12 deficiency, or substance use.⁴

Though Mr. H initially presented to the ED, patients with DP commonly present to a primary care physician or dermatologist with the complaint of itching or feelings of insects, worms, or unclear organisms inside them. Patients with DP may often develop poor working relationships with physicians while obtaining multiple negative results. They may seek opinions from multiple specialists; however, patients typically do not consider psychiatrists as a source of help. When patients seek psychiatric care, often after a recommendation from a primary care physician or dermatologist, mental health clinicians should listen to and evaluate the patient holistically, continuing to rule out other possible etiologies.

Which of the following would you consider using to treat a patient with suspected primary DP?

- Lithium
- Olanzapine
- Valproic acid
- Sertraline
- Hydroxyzine

Clinical Point

Delusional parasitosis is characterized by the fixed, false belief of an infestation without any objective evidence

Clinical Point

Patients with DP often collect samples of what they believe to be infected tissue or organisms in a container and ask to have it examined

Table 1

DSM-5-TR criteria for delusional disorder—somatic type

Presence of ≥1 delusions with a duration of ≥1 months
Rule out other causes of delusions ^a
Not better explained by another medical condition or mental disorder ^a
Aside from the delusion, behaviors are not bizarre/odd and functioning is not markedly impaired
Central theme of delusion involves bodily functions or sensations
^a Keep in mind the following differential diagnoses when ruling out other diseases: obsessive-compulsive disorder; delirium; major neurocognitive impairment; substance-induced delusions; schizophrenia or schizoaffective disorder; and mood disorder with psychotic features
Source: Adapted from reference 1

TREATMENT Finding the right antipsychotic

In the psychiatric unit, Mr. H says he believes worms are exiting his ears, mouth, toenail, and self-inflicted scratch wounds. He believes he has been dealing with the parasites for >1 year and they are slowly draining his energy. Mr. H insists he contracted the “infection” from his home carpet, which was wet due to a flood in his house, and after he had fallen asleep following drug use. He also believes he acquired the parasites while walking barefoot along the beach and collecting rocks, and that there are multiple species living inside him, all intelligent enough to hide, making it difficult to prove their existence. He notes they vary in size, and some have red eyes.

During admission, Mr. H voices his frustration that clinicians had not found the worms he has been seeing. He continuously requests to review imaging performed during his visit and wants a multidisciplinary team to evaluate his case. He demands to test a cup with spit-up “samples,” believing the parasites would be visible under a microscope. Throughout his admission, Mr. H continues to take buprenorphine/naloxone and does not experience with-

drawal symptoms. The treatment team titrates his quetiapine to 400 mg/d. Due to the lack of improvement, the team initiates olanzapine 5 mg/d at bedtime. However, Mr. H reports significant tinnitus and requests a medication change. He is started on haloperidol 5 mg twice daily.

Mr. H begins to see improvements on Day 7 of taking haloperidol. He no longer brings up infestation but still acknowledges having worms inside him when directly asked. He says the worms cause him less distress than before and he is hopeful to live without discomfort. He also demonstrates an ability to conduct activities of daily living. Because Mr. H is being monitored on an acute inpatient psychiatric basis, he is deemed appropriate for discharge even though his symptoms have not yet fully resolved. After a 19-day hospital stay, Mr. H is discharged on haloperidol 15 mg/d and quetiapine 200 mg/d.

Which of the following about patents with DP is not true?

- a) The condition can be triggered by stressful life events
- b) Patients often provide samples of the organism they believe is causing the infestation
- c) Confronting patients about the delusional nature of the infestation is an effective approach to treatment
- d) Patients may present with self-inflicted bruises, cuts, and/or erosions
- e) Symptoms of DP can persist for months to years

The authors’ observations

Mr. H asked to have his sputum examined. The “specimen sign,” also called “match-box sign” or “Ziploc bag sign,” in which patients collect what they believe to be infected tissue or organisms in a container, is a well-studied part of DP.⁵ Such samples should be considered during initial encounters and can be examined for formal evaluation, but cautiously. Overtesting may incur

a financial burden or reinforce deleterious beliefs and behaviors.

It can be difficult to identify triggers of DP. Research shows DP may arise from nonorganic and stressful life events, home floods, or contact with people infected with parasites.^{6,7} Organic causes have also been found, such as patients taking multiple medications for Parkinson disease who developed delusional symptoms.⁸ Buscarino et al⁹ reported the case of a woman who started to develop symptoms of delusions and hallucinations after being on high-dose amphetamines for attention-deficit/hyperactivity disorder. Research shows that stopping the suspected medication commonly improves such symptoms.^{9,10} Although methamphetamine can remain detectable in urine for up to 4 days after use and potentially a few days longer for chronic users due to circulating levels,¹¹ Mr. H's symptoms continued for weeks after all substances of abuse should have been cleared from his system. This suggests he was experiencing a psychiatric illness and was accurate in distinguishing methamphetamine-induced from psychiatric-induced sensations. Regardless, polysubstance use has been shown to potentially increase the risk and play a role in the onset and progression of delusional illness, as seen in prior cases as well as in this case.⁹

It has been hypothesized that the pathophysiology of DP is associated with the deterioration of the striatal dopaminergic pathway, leading to an increase in extracellular dopamine levels. The striatum is responsible for most dopamine reuptake in the brain; therefore, certain drugs such as cocaine, methamphetamine, and methylphenidate may precipitate symptoms of DP due to their blockade of presynaptic dopamine reuptake.¹² Additionally, conditions that decrease the functioning of striatal dopamine transporters, such as schizophrenia or depression, may be underlying causes of DP.¹³

Table 2

Delusional parasitosis: Treatment recommendations

Obtain a careful history of the patient's distress

Carefully examine and work up cutaneous infections; treat wounds if the patient has an actual infection from scratching behaviors

Build rapport with the patient, keeping in mind their symptoms are real and distressing to them, by listening carefully and allowing them to express their emotions

Inform the patient that the problem can be treated but may take time

Prescribe medications for symptom relief (pruritus, pain, infections); avoid antiparasitics, including using them as a placebo

Weigh the risks/benefits of utilizing antipsychotics and use as necessary

Source: Reference 17

Treatment of DP remains a topic of debate. Most current recommendations appear to be based on a small, nonrandomized placebo-controlled trial.¹⁴ The first-generation antipsychotic pimozide had been a first-line treatment for DP, but its adverse effect profile, which includes QTc prolongation and extrapyramidal symptoms, led to the exploration of second-generation antipsychotics such as olanzapine and risperidone.^{15,16} There is a dearth of literature about the use of haloperidol, quetiapine, or a combination of both as treatment options for DP, though the combination of these 2 medications proved effective for Mr. H. Further research is necessary to justify changes to current treatment standards, but this finding highlights a successful symptom reduction achieved with this combination.

Patients may experience genuine symptoms despite the delusional nature of DP, and it is important for clinicians to recognize the potential burden and anxiety these individuals face. Patients may present with self-inflicted bruises, cuts, and erosions to gain access to infected

Clinical Point

Drugs such as cocaine and methamphetamine may cause symptoms of DP due to blockade of presynaptic dopamine reuptake

Clinical Point

Although minimal data support using antipsychotics to treat DP, haloperidol plus quetiapine helped Mr. H

Related Resources

- Sellman D, Phan SV, Inyang M. Bugs on her skin—but nobody else sees them. *Current Psychiatry*. 2018;17(8):48,50-53.
- Campbell EH, Elston DM, Hawthorne JD, et al. Diagnosis and management of delusional parasitosis. *J Am Acad Dermatol*. 2019;80(5):1428-1434. doi:10.1016/j.jaad.2018.12.012

Drug Brand Names

Buprenorphine/ naloxone • Suboxone	Phenobarbital • Solfoton, Tedral, Luminal
Haloperidol • Haldol	Pimozide • Orap
Hydroxyzine • Vistaril	Quetiapine • Seroquel
Lithium • Eskalith, Lithobid	Risperidone • Risperdal
Methylphenidate • Concerta	Sertraline • Zoloft
Olanzapine • Zyprexa	Valproic acid • Depakote
Permethrin • Elimite	

areas, which may be confused with skin picking disorder. Excessive cleansing or use of irritant products can also cause skin damage, leading to other dermatological conditions that reinforce the patient's belief that something is medically wrong. During treatment, consider medications for relief of pruritus or pain. Focus on offering patients the opportunity to express their concerns, treat them with empathy, avoid stigmatizing language such as “delusions” or “psychosis,” and refrain from contradicting them until a strong rapport has been established (*Table 2*,¹⁷ *page 51*).

Symptoms of DP can persist for months to years. Patients who fully recovered experienced a median duration of 0.5 years until symptom resolution, compared to incompletely recovered patients, who took approximately 1 year.¹⁸ Primary DP has slower improvement rates compared to secondary DP, with the median onset

of effects occurring at Week 1.5 and peak improvements occurring at Week 6.¹⁶

OUTCOME Continued ED visits

Unfortunately, Mr. H does not follow through with his outpatient psychiatry appointments. In the 7 months following discharge, he visits the ED 8 times for alcohol intoxication, alcohol withdrawal, and methamphetamine abuse, in addition to 2 admissions for inpatient detoxification, during which he was still receiving the same scheduled medications (haloperidol 15 mg/d and quetiapine 200 mg/d). At each of his ED visits, there was no documentation of DP symptoms, which suggests his symptoms may have resolved.

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Bottom Line

Because delusional parasitosis symptoms feel real to patients, it is crucial to build rapport to recommend and successfully initiate treatment. After ruling out nonpsychiatric etiologies, consider traditional treatment with antipsychotics, and consider medications for relief of pruritus or pain.

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Clinical Point

Treat patients with empathy and offer them a chance to express their concerns