

Amphetamine-Induced Delusional Infestation

Alec H. Fisher, B.A., Cornel N. Stanciu, M.D.

Delusional parasitosis is a rare syndrome characterized by a fixed, false belief that one is infested with parasites. Individuals with the disorder are preoccupied with this idea and sometimes interpret skin markings, such as veins, old scars, skin pigmentation, or hairs, as evidence (1). The perception of tactile hallucinations experienced as “insects crawling on the skin,” referred to as formication, may be endorsed. Individuals with the disorder often cause skin damage in attempts to extract the perceived organisms. In many cases, individuals will compulsively bring “evidence” and display it to medical professionals. This is referred to as the “baggie sign” (1). Patients tend to avoid contact with mental health professionals and prefer to bring themselves to primary care, dermatology, or the emergency department for medical treatment of the perceived parasites (1). The underlying ideology for this condition can be primary, seen in some cases of schizophrenia and neurocognitive disorders, or secondary to medical conditions and substance use (2). Some medical conditions in which this may be seen include endocrine, renal, hepatic, malignant, rheumatoid, and neurological disorders (2). Substances documented to cause delusional parasitosis include cocaine, amphetamines, cannabinoids, and any medication that enhances dopamine signaling, such as pridedil, ropinidrol, carbegoline, and paramipexol (2).

We present a case (below) of delusional infestation following initiation of methamphetamine use in a patient with a distant history of chronic cocaine use in sustained remission. The delusional belief of infestation remitted rapidly and completely after withdrawal of methamphetamine and administration of an antipsychotic agent.

Methamphetamine (also known as “meth,” “speed,” “crank,” and “ice”) is a

strong CNS stimulant that has become an increasingly popular illicit substance of abuse. It can be smoked, snorted, or injected. Use of the drug leads to experiences of prolonged euphoria, increased alertness and energy, and decreased food intake and sleep. The effects are long-lasting, especially when compared with other stimulants such as cocaine. Although the prevalence of amphetamine use has recently decreased, the most current reports reveal that 6.7% of 12th graders have used an amphetamine in the past year, with 0.8% endorsing crystal methamphetamine (3). The use of methamphetamine has also been shown to lead to psychiatric sequelae, such as anxiety, aggression, psychosis, insomnia, and hyperactivity (4).

CASE

“Mr. L” is a 55-year old man with a past medical history of hypertension. He has a psychiatric history of posttraumatic stress disorder and an extensive substance use history, going back to his late 20s, of cocaine. He presented to the emergency department with the complaint of having worms under his skin. He was agitated, and his hands were covered in multiple excoriations. The patient’s vital signs were unremarkable except for his blood pressure, which was 182 mmHg/121 mmHg, and pulse, which was 110 beats per minute. He was breathing at a rate of 22 breaths per minute, with an oxygen saturation of 97% on room air. His urine drug screen was positive for cocaine and amphetamines.

The patient carried a plastic bag containing blood, which he claimed was full of worms he picked out with a scalpel. He also brought the scalpel, two knives, and a methamphetamine pipe in his personal bag. Medical staff was unable to visualize worms in the plastic bag or on

the patient’s body. His physical examination was unremarkable except for excoriations on the dorsum of his hands. The patient was alert and oriented to person, place, and time, and he denied auditory, visual, and tactile hallucinations. Review of his medical record revealed that he had a presentation for a similar complaint 3 weeks prior and was prescribed pyrantal pamoate for a possible hookworm infestation. At that time, he related a history of having washed his dog in an inflatable pool, and the worms crawled from the dog and inside of him through his toenails, which were recently trimmed and bleeding. A psychiatric consult was ordered due to the ongoing questionable complaint, not validated by others, as well as his history of mental illness, his high level of distress and agitation, and his drug screen results. The patient was ultimately admitted to an involuntary inpatient unit.

On initial encounter with the team, the patient attempted to point out worms under his skin. He picked off pieces of skin and scabs and screamed, “See these are the worms, this isn’t skin, I know skin!” He angrily denied all psychiatric review of system questions, was not prescribed any home medications, and remained focused on his dermatological complaint.

On further interview, the patient revealed an extensive substance use history, particularly cocaine (smoked) and, most recently, methamphetamine (smoked). He reported that his first cocaine use was 26 years ago, with intermittent episodes of use, in much smaller amounts, throughout the years. A month prior to admission, he started smoking methamphetamine, an illicit substance he had not used in several years. He reported smoking, on average, 2 grams of methamphetamine every other day, with his most recent use on the day of his admission.

The patient was initially very distressed and would not cooperate with treatment until his dermatological condition was addressed. He was amenable to taking one dose of albendazole (400 mg) and initiating treatment with risperidone (2 mg twice daily). The following day, he was irritable and drowsy but maintained compliance with risperidone. The morning of the second day, he displayed complete resolution of his worm preoccupation. He was discharged on risperidone, with a plan to taper off while being monitored for recurrence of symptoms. At discharge, the patient was calm, cooperative, and free of obsessional preoccupations. He was diagnosed with stimulant-induced perceptual disorder, with onset during intoxication.

DISCUSSION

Delusions of infestation involve preoccupations with the existence of organisms under the skin, which can result in self-inflicted excoriations, distress, and potential infection. Pathogenesis of delusional parasitosis involves dysregulation of striatal dopamine systems, which normally regulate attention, reward, and motor coordination (5). Amphetamine compounds increase levels of dopamine in these circuits and thus have the potential to precipitate symptoms. Psychotic symptoms in general are common with repeated use of amphetamines, as well as cocaine. With repeated use of cocaine, sensitization to amphetamine can occur, making the psychotic symptoms more likely, as in the above case. Most reported cases of delusional parasitosis are primary, in which the delusions present without an associated medical or substance use disorder (6). However, there is some literature supporting the existence of secondary causes (such as in the above case) induced by stimulants (7).

Historically, pimozide was a first-line treatment for delusional parasitosis. Due to concerns about QTc prolongation and extrapyramidal side effects, second-generation antipsychotics, such as olanzapine, quetiapine, and risperidone, have replaced pimozide, with good side-effect profile and efficacy (8, 9). Among these second-generation antipsychotics, the greatest body of support lies with risperidone (8, 10). Beyond the use of antipsychotic medications, building a therapeutic alliance with the patient and avoiding confrontation about the existence of organisms are two techniques proven to be beneficial in the treatment of delusional parasitosis (9). In our discussion with the patient in the above case, we began with the following statement, "Although we cannot see the worms, we are willing to try an antiworm medication." Following that discussion, the patient was amenable to taking risperidone, along with albendazole. Albendazole is a relatively safe medication with a low side-effect profile in patients without cirrhosis. It was a medication critical to building a therapeutic alliance with our patient in order to promote medication compliance.

KEY POINTS/CLINICAL PEARLS

- Delusional parasitosis can occur as a consequence of psychostimulant use.
- A previous history of cocaine use can predispose individuals to delusional parasitosis due to dopamine receptor desensitization.
- Low-dose, short-term antipsychotics can lead to rapid resolution of symptoms.
- Conjunctive use of low-risk antihelminthic agents can help establish a therapeutic alliance.

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CONCLUSIONS

This case demonstrates delusional parasitosis following psychostimulant use. Similar to a recent case report describing mixed amphetamine-induced delusional parasitosis, our patient had a rapid dissolution of perceived infection and distress (10). A short-term course of risperidone was effective in complete remission of his delusions. Given that methamphetamine continues to be a widely abused drug, clinicians should be mindful that there is potential for the drug to induce delusions of infestation in some users. Individuals with previous exposure to stimulant compounds are especially predisposed. In our patient, discontinuation of use and a low-dose, short-term antipsychotic led to rapid and complete remission.

Alec H. Fisher is a third-year medical student at the Geisel School of Medicine, Dartmouth-Hitchcock Medical Center, Lebanon, N.H. Dr. Stanciu is an Addiction Psychiatry Fellow in the Department of Psychiatric Medicine, Geisel School of

Medicine, Dartmouth-Hitchcock Medical Center. He is also the Guest Editor for this issue of the *Residents' Journal*.

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