

Delusions of Parasitosis

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The most common monosymptomatic hypochondriacal psychosis encountered by a dermatologist is delusions of parasitosis. In this condition, patients have an “encapsulated” fixed, false belief that they are infested with parasites or have foreign objects extruding from their skin. The patient will often experience feelings of biting, crawling and stinging related to the delusion. Most patients do not have other major psychiatric problems outside of their encapsulated delusion. The patient usually presents with a long history of symptoms and multiple visits to physicians in more than one specialty. Without an informed approach to these patients that focuses on the development of therapeutic alliance, clinical interactions can become very unpleasant. However, when treated with pimozide, risperidone, or other antipsychotic medications, patients have a very high response rate. Therefore, it is important for dermatologists to be able to handle these cases and know that the development of the therapeutic alliance is the key step to successful management.

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First described by Thibierge in 1894, delusions of parasitosis is a psychiatric condition characterized by a fixed, false belief that one is infested with parasites and is often accompanied by hallucinatory experiences compatible with this delusion.¹ For example, patients frequently complain of formication, which are feelings of biting, crawling, and stinging under the skin.² The delusion is often “encapsulated” meaning the patients are otherwise fully functional. Although rare, delusions of parasitosis is important for dermatologists to understand. Without an informed approach to these patients, clinical interactions can become very unpleasant. However, when treated with the appropriate antipsychotic medication, patients have a very high response rate.

Delusions of parasitosis is a type of monosymptomatic hypochondriacal psychosis (MHP). MHP is characterized by a monosymptomatic delusional ideation focused on a single concern that the patient perceives to be the cause of a serious medical condition.³ It is important to distinguish MHP from

schizophrenia, which is a multifunctional deficit involving more than just delusional ideation. In addition, patients with schizophrenia have visual or auditory hallucinations as well as deterioration in social, occupational, and personal function as shown by a “flat” or “inappropriate” affect. This is in contrast to MHP, where delusions are typically “encapsulated”, and the patient generally does not have any other major psychological disturbance. Delusions of parasitosis is the most common MHP, however there are other types of encapsulated delusional disorders that are seen by dermatologists including delusions of bromosis and delusions of dysmorphosis.³

In delusions of bromosis, patients are convinced they emit offensive odors and think this is why others avoid them.⁴ However, those around the patient do not smell anything bad. Delusions of dysmorphosis refers to the belief that one is physically misshapen and unattractive, oftentimes involving a specific facial feature or small part of the body.³ This delusion represents the extreme end of the spectrum of body dysmorphic disorder.

Historically, these 3 types of MHP were described as “phobias”, as in parasitophobia, bromophobia or dysmorphobia.³ However, these conditions are now more appropriately classified as delusional disorders.^{5,6} Patients with phobias usually have some insight that their fear is irrational or extraordinary whereas patients with MHP do not have any insight that their fixed beliefs are false.

Delusions of parasitosis can be classified into 2 different categories, primary and secondary. Primary delusions of

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parasitosis is an idiopathic disorder that meets the International Classification of Diseases 10th revision criteria for persistent delusional disorder and the Diagnostic and Statistical Manual of Mental Disorders, revision IV for delusional disorder, somatic type.⁷ Secondary delusions of parasitosis, or conditions that mimic delusions of parasitosis, arise from another medical condition affecting the central nervous system. These conditions include cerebrovascular accidents, cardiovascular disease, B12 deficiency, diabetes, schizophrenia, depression and others.^{7,8} Toxic ingestion of substances such as cocaine and amphetamines can also lead to secondary delusions of parasitosis. Conditions that mimic delusions of parasitosis usually are not treated with antipsychotics. Rather, the underlying cause is treated.

Epidemiology

Even though delusions of parasitosis is the most common MHP encountered by dermatologists, the overall prevalence of the disorder is low. In a study by Pearson et al that surveyed Northern California residents, the prevalence of delusions of parasitosis was reported as 3.65 cases per 100,000 respondents.⁹

Although delusions of parasitosis is infrequently encountered, it does tend to affect specific age groups. The average age of onset is in the 5th or 6th decade of life and is at least twice as common in women than in men.^{9,10} These patients tend to be from higher socioeconomic classes. Delusions of parasitosis can also affect young patients and the number of men and women are equally affected in this population. The younger patients are often from lower socioeconomic classes and have increased likelihood of substance abuse.¹¹

People that cohabit with someone with delusions of parasitosis can share the same delusion. This is known as “folie a deux” and occurs in 5%-15% of cases. The person who first develops the delusion is known as the inducer and persuades others in the household to share in the delusional belief. Treatment of the inducer usually results in the spontaneous recovery of the other affected person(s).⁷

Pathogenesis

There are 2 hypotheses to explain the development of delusions of parasitosis in primary disease:

- The patient has a hallucinatory perception, such as a biting or stinging feeling, which leads to a fixed false belief about the origin of the perception (ie, from insects).
- The patient is primarily delusional, which causes the patient to perceive feelings associated with the delusion. For example, the patient believes that he or she is infested with insects and as a result perceives feelings of biting or stinging.¹²

Secondary delusions of parasitosis arise from another medical condition that affects the central nervous system, such as a cerebrovascular accident or diabetes. How the primary disease process actually leads to the development of delusions of

parasitosis is unknown. However, one study shows an association between secondary delusions of parasitosis and brain lesions located in the putamen.^{8,13} In this retrospective study, of the 8 patients with secondary delusions of parasitosis (except for those with another psychiatric disorder), 8 had macroscopic brain lesions as seen on cranial magnetic resonance imaging or computed tomography imaging. The lesions were most commonly found in the putamen of the basal ganglia. The investigators did not see any brain lesions in the other 9 patients, 5 of which had primary delusions of parasitosis and 4 who had secondary delusions of parasitosis from another psychiatric condition.⁸

Clinical Presentation

The clinical presentation of delusions of parasitosis commonly includes a long history of symptoms with multiple visits to physicians in more than one specialty.¹⁴ In many cases, the patient will have made an attempt at getting rid of the parasites with antiparasitic agents, hiring exterminators, or even moving to a different home.¹⁵ Oftentimes the infestation is blamed on a particular inciting life event.

It is common for patients to present with evidence of the perceived infestation in the form of hair, garment fibers or pieces of skin stored in small bags or containers (known as the “ziplock” sign or in the past, the “matchbox” sign).^{2,16} The patients’ delusions are usually narrow in focus, as on a particular parasite, but can be fixated on other objects. For example, Morgellon’s disease is a type of delusions of parasitosis often involving fibers extruding from the skin and orifices of patients.¹⁷ Morgellon’s is a lay term that is widely used by patients, but has never been officially defined or accepted by the medical establishment.

The skin findings in delusions of parasitosis can range from normal-appearing skin to excoriation, lichenification, prurigo nodularis, erosions or ulceration. Any positive findings are self-induced from the patients’ attempts to dig out the “parasites”.

Differential Diagnosis

The differential diagnosis for delusions of parasitosis spans both dermatologic and psychiatric conditions. It is important to first rule out a true primary skin disorder.¹⁸ For example, difficult-to-diagnose scabies or transient acantholytic dermatosis (Grover’s) can be mistakenly diagnosed as delusions of parasitosis. In these cases, the primary lesion can be hidden by excoriations. Therefore, a careful physical exam should always be performed to search for any nonexcoriated, primary lesions suitable for biopsy.

Cutaneous dysesthesia is one of the most common diagnoses in patients initially suspected to have delusions of parasitosis.¹⁹ Cutaneous dysesthesia usually manifests as formication, which is a sensation of biting, crawling, or stinging that can occur in the absence of delusions of infestation. Most cases of formication are primary and idiopathic. Rarely, the sensations are secondary to an underlying neurological disorder.²

If untreated, some patients with formication may gradually come to believe that their symptoms are due to an infestation.

In the authors' opinion, it is critical to treat these patients with an appropriate antipsychotic agent as soon as possible to prevent the progression to delusional ideation. In order to be truly delusional, one must have a fixed belief that there is an infestation. Pimozide or risperidone is usually successful in treating formication even if the patient is not delusional.

Other patients experience formication as a result of substance abuse, especially with amphetamines or cocaine. These substances can produce symptoms identical to those seen in delusions of parasitosis. In fact, formication is a well-known side effect among drug users and is colloquially referred to as "cocaine bugs".²⁰ Among patients who experience these symptoms, relief only occurs upon cessation of the substance.²⁰

Another differential diagnoses for delusions of parasitosis is any condition that mimics delusions of parasitosis ("secondary delusions of parasitosis").²¹ For example, the delusion may be a manifestation of paranoia in a schizophrenic patient. Other conditions that can mimic delusions of parasitosis include B12 deficiency or abnormal thyroid function. In all of the above cases, treatment is determined by the underlying primary disorder.

The clinician must use his or her best clinical judgment to determine whether the patient is truly delusional. True delusions represent the extreme in a spectrum of thought pattern, which also includes normal ideation, overvalued ideas, and delusional ideation. Patients with overvalued ideas overemphasize one particular viewpoint but have the ability to consider others. Patients with delusional ideation are fixed in their beliefs, however may have minimal insight that other perspectives exist. Anything less than a truly delusional patient can be counseled and reassured with rational evidence such as a negative skin exam, culture, or microscopic exam.² However, this evidence will not be enough to satisfy a truly delusional patient, where antipsychotic therapy is often required.

Management

We break down the approach to complex patients with delusions of parasitosis into the following simple steps:

- establish therapeutic alliance,
- perform a thorough history and physical exam, and
- provide initiation and maintenance pharmacologic therapy.

Therapy should only be considered once secondary causes of delusions of parasitosis have been ruled out.

Establish Therapeutic Alliance

The first step in establishing therapeutic alliance is to have a positive mindset, and to be prepared for a negative, defensive and paranoid patient that has visited numerous doctors, tried numerous treatments unsuccessfully, and is skeptical of the medical profession.²² One effective tactic is to treat the patient like a "VIP" and let them know they are special patients requiring extra time. Another strategy is to use similar termi-

nology as the patient, many of which will refer to their disease as Morgellon's. Using this term in your discussion with the patient can be helpful in building rapport.²³

Once in the room, maintain control with a structured interaction. Do not confront the patient's delusion as a primarily psychiatric disorder as this can lead to an unpleasant interaction that may become a barrier to treatment. The patient may get defensive and think his or her skin condition is being brushed aside as a psychological problem.

It is equally important to avoid confirming the patient's delusion. The more support the patient's delusion has, the more fixed it becomes. By asking targeted questions, determine whether the patient's primary concern is to convince others about his or her delusional beliefs or to no longer have symptoms of formication. Patients who are most focused on symptom relief are oftentimes open to therapy. In contrast, patients who are most interested in convincing others about the validity of their delusion are usually not open to therapy other than that which clearly kills an organism. Either way, these patients usually require many visits to establish therapeutic rapport before medication can be discussed. Therefore, the physician should not feel pressured to talk about antipsychotics on the first visit.

History and Physical Exam

Address the patient's complaint seriously and perform a thorough physical exam. Pay attention to whatever "specimens" are brought in by the patient. If this proves too cumbersome because of the messiness of the "specimen" brought in by the patient, provide the patient with some glass slides to take home. Instruct the patient to put clear plastic tape over the specimens (*not* the usual matted Scotch tape) on the slide and bring them to the next visit. Most frequently, pieces of skin, fibers or hair are brought in. The glass slide technique is a time-efficient and hygienic way to address the patient's concern. After examining the specimens, discuss the results with the patient without confirming the delusion. Once the patients believe the clinician agrees with them, they become increasingly difficult to treat. Finally, offer to return the specimen to the patient. Some patients are very emotionally invested in the specimen they have collected.

In addition to bringing in a specimen as proof their infestation, some patients may request a skin biopsy of one of their lesions. This can be performed at the discretion of the physician, especially to build rapport with the patient and to avoid a power struggle which may endanger rapport.

When clinical suspicion warrants, consider performing laboratory tests to rule out some of the secondary causes of delusions of parasitosis.²⁴ Some of these tests include: complete blood count (CBC) with differential, serum electrolytes, liver function tests, thyroid function tests, serum calcium, blood glucose, serum creatinine, Vitamin B12, folate, urinalysis, urine toxicology, HIV and Raid Plasma Reagin.

Pharmacologic Therapy

Traditionally, the treatment of choice for delusions of parasitosis is pimozide (Orap).²⁵ This medication is a centrally

acting dopamine antagonist that primarily blocks D2 and 5HT2 receptors.²⁶ Other antipsychotics, including risperidone (Risperdal) and olanzapine (Zyprexa), are becoming increasingly more popular in treating delusions of parasitosis due to similar efficacy and more favorable side effect profiles.²⁷ However, in the United States, pimozide is unique because it does not have an Food and Drug Administration (FDA) indication for the treatment of a psychiatric disorder; the only FDA indication is in the treatment of Tourette's syndrome. As a result, patients are more accepting of this medication since it is not typically prescribed as an antipsychotic. In addition, the only randomized trials investigating the treatment of delusions of parasitosis used pimozide.²⁸

Pharmacologic therapy can be discussed once adequate therapeutic rapport has been developed. A pragmatic approach is to present pimozide as "trial and error" treatment which is very effective at decreasing or eliminating the patient's mysterious condition of unknown etiology.² This approach avoids discussion of the medication as an antipsychotic which can cause most delusional patients to reject the treatment. As stated earlier, pimozide has no psychiatric indication in the United States; the official FDA indication is Tourette's syndrome. It can be helpful to explain to patients that they are not being treated for this condition.

When starting pimozide, the medication should be carefully titrated to reach a therapeutic response. Begin the patient at 1 mg daily, increasing by 1 mg increments every 2 or 3 weeks until optimal clinical response or the patient is up to 5 mg/day, usually enough for the patient to expect great improvement.²⁶ Clinical response should be measured by the improvement in symptoms of formication and agitation. The patient generally does not relinquish the delusion of infestation, but often will experience great relief and may even feel "cured" of the condition.

Possible side effects of pimozide include extrapyramidal side effects and QT prolongation.²⁶ As a result, a baseline EKG may be performed, especially if the patient is elderly or has a history of arrhythmia. The EKG may then be repeated when the patient has reached the therapeutic dose. If the corrected QT interval is prolonged to 520 milliseconds (or >25% beyond baseline), a dose reduction is recommended.¹⁹

One possible extrapyramidal side effect is akathisia, a subjective feeling of inner restlessness. Akathisia often manifests as pacing, fidgeting, foot tapping and/or an overall inability to remain still.²⁶ Another possible side effect is muscle stiffness. In order to help with these extrapyramidal side effects, patients can take diphenhydramine (Benadryl) 25 mg 3 times a day as needed or benzotropene (Cogentin) 1 to 2 mg every 6 hours as needed. Patients should be counseled about the possibility akathisia and be prepared with one of these medications before starting pimozide. If the side effects are controlled, it is even okay to increase the dose of pimozide gradually.

Once the patient has achieved an optimal clinical response, maintain the dosing for 2 to 3 months. At this point, one can attempt to taper pimozide 1 mg every 1 to 4 weeks, titrating to the minimum effective dose or off the medication altogether. A reasonable expectation for the total length of

therapy is 5 to 6 months.^{2,25} If delusions recur, pimozide can be restarted and titrated as above to control the episode. Treating on an episodic basis in patients with recurrent disease is preferred. This is done to limit the incidence of tardive dyskinesia, which is a rare side effect associated with long-term use of low-dose typical antipsychotics. Tardive dyskinesia is characterized by repetitive, involuntary, and purposeless movements such as lip smacking, lip puckering, or tongue protrusion. Rarely, some patients develop involuntary movements of the mouth after tapering off pimozide. These movements are known as withdrawal dyskinesia, and are distinguished from tardive dyskinesia in that they are time limited.² Tardive dyskinesia from pimozide use in delusions of parasitosis has not been reliably described in medical literature.^{29,30}

In addition to the risk of side effects, Pimozide also has the risk of drug-drug interactions. These interactions are thought to be related to medications that affect cytochrome P450 3A.¹⁵ As a result, the FDA has listed the following medications as contraindicated due increased risk for prolonged QT interval: macrolide antimicrobials (ie, azithromycin, erythromycin), azole antifungals, protease inhibitors, and zileuton.²⁵ Grapefruit juice is also an inhibitor of cytochrome P450 3A and should be avoided when taking pimozide.

Other possible therapies for delusions of parasitosis include second generation antipsychotics like risperidone (Risperdal) and olanzapine (Zyprexa).³¹ Risperidone, like pimozide, should be started at 1 mg daily, and increased every 5 to 7 days to a total of 3 mg to 6 mg daily divided into 2 doses.²⁶ After the titration, the total dose can be taken at bedtime. The most common side effects from risperidone include rhinitis, dizziness and anxiety. The medication is also associated with dose-dependent sedation, fatigue and QT interval prolongation.

Another second generation antipsychotic which has been shown to be effective in treating delusions of parasitosis is olanzapine.¹⁶ This medication is started at 5 mg to 10 mg daily and increased to 10 mg to 15 mg daily. The most common side effects include sedation, anticholinergic effects (dry mouth, blurry vision, urinary hesitation, constipation), and weight gain.²⁶

Even though starting treatment in delusions of parasitosis can present a clinical challenge, response to treatment is usually robust. In a systematic review of 1,233 cases of delusions of parasitosis treated with an antipsychotic agent, 50% showed complete remission.³² An even higher rate of remission was reported by a retrospective study in which 12 of 15 patients treated with antipsychotics achieved complete remission.⁸ The increased rate of remission in this study may be due to the emphasis placed on development of therapeutic rapport. For example, the treatment team included dermatologists, psychiatrists, and patients' spouses working together in the same office to optimally manage the patient.

In conclusion, delusion of parasitosis is an important condition for the dermatologist to know how to handle as these patients present a real challenge for proper management. However, once a therapeutic alliance is established, the

dermatologist can truly turn around the lives of these long suffering patients.

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