

## REVIEW ARTICLES

### Delusions of Parasitosis: A Review

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Patients who are erroneously convinced that they harbor dermatologic parasites present a diagnostic and therapeutic challenge to the practitioner. Delusions of parasitosis can exist as an isolated psychosis or as part of a much more complicated medical and/or psychiatric illness. To diagnose these patients, physicians must be familiar with the patterns of presentation usually seen in patients with delusions of parasitosis and must be confident that other psychiatric and/or medical conditions that could be causing the symptoms—including true parasitosis—have been ruled out. Clinical signs, such as the presence of cutaneous lesions on exposed and accessible parts of the body (wounds self-inflicted in efforts to extricate parasites with needles, knives, or fingernails), and behavioral signs, such as the collection of bottles and jars purported to contain samples of the parasites, are characteristic. These patients can be rigid, antagonistic, distant, and demanding; they may write long letters to physicians describing their parasites in detail, enclosing drawings or samples. Psychotherapy, with or without confrontational denial, has a reported efficacy of ~10%; placebo therapy is usually not recommended. The recent application of a new neuroleptic agent, pimozide, to the treatment of this disorder is controversial and needs further study. Guidelines for an appropriate approach to patients with delusions of parasitosis include the necessity of identifying medical or psychiatric disease, if present, and of listening carefully to the patient's history; the physician's goals are to detect ways to help reduce the patient's sense of isolation and to help the patient to decrease the need for protective projections and self-mutilating behaviors.

Since its original description in the medical literature in 1872, the condition in which patients claim with inappropriate certainty to have parasitic infestation has been reported with increasing frequency in the medical literature. The diagnostic label *delusions of parasitosis* has replaced earlier terms, including *acarophobia* and *parasitophobia*, because such words imply merely a fear of the offending organism rather than the deep-seated, immutable conviction of preexisting infection that is usually found [1, 2].

This review summarizes the case reports of delusions of parasitosis published in the past 65 years, as well as the experience with this disorder accumulated at the Department of Tropical Medicine, Tu-

lane University School of Public Health and Tropical Medicine, in New Orleans.

#### Medical and Psychiatric Background

Delusions of parasitosis have been reported in patients with a great variety of organic and psychiatric disorders. The organic disorders include vitamin B<sub>12</sub> deficiency [3, 4], pellagra [4, 5], renal failure [4], tuberculosis [2, 6, 7], and certain neurologic infections [7]. In addition, a number of toxic psychoses, related especially to alcohol and cocaine abuse (associated both with phases of active abuse and of withdrawal) but also to other drugs, including methylphenidate (Ritalin) and certain monoamine-oxidase (MAO) inhibitors, have been reported to produce delusional manifestations [1, 4, 7, 8].

Among individuals with primary psychiatric illness associated with delusions of parasitosis are, at one extreme, those with normal or above-average intelligence who function well in society and in whom the only significant manifestation of psychiatric ill-

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ness is deep-seated delusional belief. At the other extreme are those patients who are frankly schizophrenic and for whom the delusion is only one aspect of significant psychiatric disease [1, 2, 4, 7]. Between these two extremes are patients with many gradations of disorders that affect their overall social functioning to various degrees. Patients in this middle group include those with depression [2, 4, 7, 9]; those who are compulsive cleanliness fanatics [1, 10], eccentric or obsessive [4, 11, 12], or severe reclusives [4]; those with disproportionate guilt feelings, especially sexually based [11]; and those with strong family histories of significant psychiatric illnesses [2].

### Characteristics of Patients

The 110 cases reported in the literature, together with our department's experience of 30 more, document a female-to-male ratio of 2.5:1. Lyell, in his informal survey of 282 cases, reported a ratio of 2:1 [4]. For patients  $\leq 50$  years of age, the ratio is 1.4:1; for those  $>50$ , it is 5:1.

The occurrence of delusions of parasitosis peaks between the ages of 40 and 60 years; the mean age for women is slightly older (mean, 53 years) than that for men (mean, 48 years). Younger patients are more likely than older patients to have a specific psychiatric diagnosis [4].

In approximately 12% of the reported cases, more than one family member shared the delusion [4, 13–17]. This phenomenon, known variously as *folie à deux*, *folie à trois* (and so on), or, more generally, *folie partagée* (shared delusions), is described with other delusions unrelated to infestation with parasites [15], and seems to be a manifestation of a strong, forceful individual with a primary delusion and/or extremely sympathetic or receptive family members; it often occurs in an environment of significant family strife [16]. In Lyell's series, 27 cases of *folie partagée* occurred among 282 reported cases, including 14 cases of husband and wife, four cases of mother and daughter, and two cases of mother and son [4]. One remarkable case recorded in our department was that of a husband who "infected" his wife, his mother, his brother, and his sister-in-law. The result was tragic disruption of family structure and loss of employment, despite medical intervention provided by a number of institutions.

### Presentation

Patients with delusions of parasitosis will often provide the clinician with a significant history of frequent contact with "inept," "uncaring," "uninterested," and "ignorant" physicians [4, 18], as suggested by one mother and daughter who were seen by 103 physicians and one veterinarian during a period of six months [16].

These patients often leave a rather rigid, sometimes antagonistic, and usually quite distant and demanding first impression. Classically, they bring bottles, jars, and other containers filled with their parasites (the "matchbox sign" [19]). These receptacles most often contain only bits of skin, hair, cloth, or other corporal detritus and flotsam of everyday life [19–21]. In addition to evidence brought in their containers, however, many patients present with numerous cutaneous lesions that they may claim are "burrows" or "tracks" of their parasites. Almost always found on the exposed and accessible parts of the body, these lesions, in reality, represent self-inflicted injuries from efforts to extricate the parasites with needles, knives, or fingernails [21–24].

The patients often report that they experience significant social isolation [2, 6] and loss of employment [20]; that they bathe frequently [2, 4, 6, 8, 14, 20] and apply topical ointments and home remedies [17]; that they change domiciles regularly [4, 11, 12, 25]; and that they have had presumptive intermediate hosts (usually house pets) put to death [2].

The majority of these patients will go first to their family physicians, though 90% of the cases have been reported by dermatologists, with the remainder reported by psychiatrists [13, 18, 26, 27], entomologists [4, 25], public health personnel [4], and other medical specialists [16].

Much of the contact our department has had with cases of delusions of parasitosis has been by telephone or by mail, almost always from the patients themselves; the letters are often accompanied by samples for analysis. Frequently very specific parasites with elaborately defined life cycles are described. These calls and letters almost always conclude with a request to be able to visit our medical center "regardless of cost" for diagnosis and treatment with "experimental drugs" that are thought to be available only to us.

In our experience, patients with delusions of

parasitosis can be generally classified into four broad groups: those seeking secondary gain, those seeking only treatment, those with classically defined delusions of parasitosis, and those with exotic and elaborate delusions as a major component of more overt psychiatric disease.

*Those seeking secondary gain.* Not infrequently, we receive letters or telephone calls that reflect concern about the effects of parasitic infections that may have occurred in the distant past. Some of those who initiate these contacts are lawyers acting on behalf of clients; others are veterans attempting to apply for disability benefits on the basis of current symptoms which, they claim, are due to exposure received while they were serving overseas. It is often difficult to ascertain the extent to which the infection and/or its current manifestations are actual or delusional.

*Those seeking only treatment.* A small number of patients have requested treatment only, not diagnosis, and seem to lack any desire to be truly rid of the imagined parasite. Many, in fact, appear to be fairly well adjusted to their illness. In these patients, onset of the delusion has almost always followed diagnosis of a specific infection and resulted in a subsequent persistence of the purportedly related symptoms.

A good example is the case of a 29-year-old man who gave a history of having, for five years, experienced multiple vague complaints that he attributed to malaria. Five years before, while trekking through Africa, he had been diagnosed as having malaria. Since that time, he had taken quinine almost constantly and reported that he sometimes had to leave the country to buy the drug. His first contact with us was by telephone, and although he was extremely reluctant to come to the clinic, he was persistent in his request that we call in a prescription for him. When we did convince him to come to the clinic, he declined to undergo “unnecessary” diagnostic tests, and left our care when quinine was denied him.

Another case was that of a middle-aged woman who described in letters symptoms suggestive of onchocerciasis (a diagnosis that she suspected herself) despite the failure of repeated medical evaluations to confirm onchocerciasis. She asked us to send her a prescription for suramin, and, when we invited her to come to our medical center for a full parasitologic evaluation instead, she told us that she had decided to leave the country in order to purchase the suramin abroad.

*Those with classically defined delusions of parasitosis.* Many of the patients who contact us appear to have classic, textbook cases of delusions of parasitosis, as described above. Letters from these patients tend to be long and virtually always include either examples of the “parasites” or rough drawings of them. The nature of these letters is predictable. “Enclosed are samples taken off our body. They are . . . microorganisms . . . little black specks . . . [that] bite like a mosquito and bury under our skin. . . . If we disturb a spot . . . they start to bite us under our skin all over our body . . . as if they have communication. [They] are also in our eyes, ears, nose, rectal and urethral tracks [sic].”

*Those with exotic and elaborate delusions.* This last category of patients with delusions of parasitosis represents a significant departure from those previously described. Letters from these patients are distinctive for several characteristics.

First, they are extremely long, often thousands of words, typed single-spaced with no margins. The flow is disjointed. Historical facts, symptoms, and personal problems mingle in no predictable order.

Second, the parasites identified are specific, often exotic, and unusual. They have been called, among other names, tapeworms, loa loa, onchocerca, liver flukes, and malaria. Furthermore, the exact number and location of these parasites is known. “I have 12 adults. It has been two months now and they have calmed down, but I had one move back into the heart muscles. . . .” Or, “. . . these flukes divided last Saturday night.”

Third, inappropriate justification for the diagnosis is often presented. “. . . I had some stool checked . . . [that] were consistently negative except for yeast. In the . . . books, I read that tapeworms depend on yeast from their host for their sustenance. . . .” From another, “I started scanning . . . books, looking for symptoms and finally came on Loa Loa. . . . It mentioned swelling that lasted for two days and then turned pink on top. I had had headaches that lasted for two days before they would subside. . . .”

Fourth, these patients often report that their diagnosis has been documented by members of the medical community, often in circumstances that appear highly unusual. For example, “I would guess it to be a symbiotic relationship between a fungus and a parasite—the parasite should, by all indications, fall into the filariasis group, namely onchocerciasis, due to the fact that a local physician agrees

to this due to the damage it has done." Or, "After hearing my story, the psychiatrist sent me back to the medical doctor and told him to treat me for tapeworms."

Last, these patients frequently exhibit significant paranoid or schizophrenic overlays: "Several years ago, my mother contaminated my food with dog manure," or, "Recently, I have been victim to eating a poisonous meat which was apparently prepared on purpose by someone in the parasitology field . . . from the North East areas of China."

We are not certain if the delusions of these patients are more florid because they are of longer standing, are created in a framework of more overt psychiatric illness, or are simply the form taken by manifestations of delusions of parasitosis in more intelligent or widely read persons who have access to medical texts.

Clearly, the organisms reported by the patients in our last category differ significantly from those reported in the medical literature. The majority of patients described in the literature report nothing more specific than an "insect" or a "bug." Of the 110 cases in the literature, there are 14 cases of "scabies"; 12 of "lice"; 10 of "fleas"; five of "parasites"; three each of "mites," "animals," and "bacteria"; two each of "flies," "bedbugs," and "cockroaches"; one of a "tick"; eight of "worms" (of the skin); and 47 of non-specific "bugs" or "insects." Virtually all parasites are reported to be burrowing and crawling under the skin, though worms in the intestine or in other locations are rarely reported [27, 28]. Some cases of delusions of parasitosis may be preceded by actual infestations [4, 12, 29], by skin changes (e.g., vitiligo) [6], or by potential exposure as a result of sexual contact [18, 21, 29].

### Treatment

Until the recent application of a new neuroleptic agent, pimozide, to the treatment of patients with delusions of parasitosis, the outcome for these patients was uniformly poor. Psychotherapy, with or without confrontational denial, had a reported efficacy of ~ 10% [2, 18, 20, 26, 30]. Most reports emphasize the patients' reluctance to seek psychiatric care [4, 31], and the limited rate of improvement with psychotherapy alone is not much better than the reported "spontaneous" cure rate [4, 10]. The efficacy of antidepressant medication, though endorsed by some reports, has also been limited [4, 10, 31].

Administration of placebo medication (presented to the patient as an "effective new antiparasitic agent") appears to produce an improvement that is usually brief and transient rather than significant and long-term; therefore placebo therapy is usually not recommended [5, 32–34].

Substantial disagreement exists over the extent to which a physician who is treating a patient with delusions of parasitosis should either agree with the patient's delusion [11, 32, 34] or confrontationally deny the existence of the parasite [4]. The cautious approach recommended by Gould and Gragg [35] seems most appropriate and is outlined in the following seven steps:

1. Be certain of the diagnosis. A number of cases of true parasitosis, with bizarre or unusual organisms or presentations, have been reported [4, 25]. Be certain to identify underlying medical or psychiatric disease.

2. Listen carefully to the patient's history. Clues to underlying medical or psychiatric problems may be revealed [21].

3. Ask the patient how the condition has affected his or her life. This encourages discussion of real issues instead of imagined parasites.

4. Work to establish a common bond with the patient. Empathy may be the key to allowing the patient to decrease his or her protective projections [23].

5. Be alert to any area in which the patient will allow help. The patient may be able to identify and reduce areas of stress that aggravate the symptoms [21]. In addition, efforts can be made to reduce dangerous, self-mutilating, and inappropriate behaviors [36].

6. Try to reduce the patient's sense of isolation.

7. Consider the use of medicine to decrease the patient's anxiety and/or psychotic thinking. It is in this last area that significant improvements in the treatment of delusions of parasitosis have been reported by some workers. Both in case studies [4, 37–41] and in one double-blind study [42], the use of pimozide (Orap), a neuroleptic of the diphenylbutylpiperidine group, has been reported to produce significant clinical improvements in patients with delusions of parasitosis. In Lyell's series, 44 of 66 patients given pimozide, 2–12 mg/day, improved; 16 showed no change; and six were lost to follow-up [4].

Complications of therapy with pimozide include depression [41], extrapyramidal dysfunction [39, 42], states of extreme alertness and inertia [42], some drug interactions, and prolongation of the Q-T in-

terval. Pimozide has also been implicated in cases of sudden death. It apparently produces remissions, not cures, and in most cases symptoms recur after administration of the drug is discontinued [4, 42]. No published data on the long-term psychiatric health of patients treated with pimozide exist, and it is therefore not known if additional disorders will ultimately appear to replace the cured delusions.

Because pimozide is not widely accepted for treatment of patients with delusions of parasitosis, significant familiarity with the drug—its indications, contraindications, dosages, precautions and toxic effects—is highly recommended before instituting treatment with the drug.

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