Delusions of Parasitosis

Haig Donabedian
Division of Infectious Diseases, Department of Internal Medicine, College of Medicine, The University of Toledo, Toledo, Ohio

Patients who believe themselves to be infected with external or internal parasites present a vexing problem for the infectious diseases practitioner. The patients suffer greatly, sometimes inflicting great harm on themselves, but have no treatable infectious disease. The history and characteristics of delusions of parasitosis are reviewed, as are potential modes of therapy.

Patients who are falsely convinced that a parasite has invaded their body are extremely difficult to treat. They are at once desperate for help and disdainful of efforts to help them. They insist that anti-infective medication be prescribed, but they are dubious that it will be effective. These patients despair of finding a credulous physician, and they continue to seek different therapies to cure them of their infestation. Three illustrative and cautionary patient vignettes from my infectious diseases practice are shown below.

CASE REPORTS

Patient A. Patient A was a 51-year-old white woman married to a high-ranking police officer. She bred dogs for an avocation and was active in her Catholic church. During an interview, she reported that, several months earlier, her dogs had an infestation of parasites that she had treated with topical agents. During these treatments, several of these parasites, which are usually described as “worms,” crawled into her skin, where they continued to reside. She reported that the worms occasionally exited her skin and jumped to her nose or eye and, from there, traveled to her brain, where they induced severe headaches. The patient assured me that she took no medicines but applied colloidal silver (purchased over the Internet) to her nose and eyes to thwart the parasites. She believed in the power of prayer to cure all ills, and knowing that the examiner would doubt her story, she produced several sealed plastic bags with the “worms” contained in tissues.

Microscopic examination in the clinic revealed that the “parasites” were various forms of inanimate matter. This reassertion triggered a diatribe by the patient against uncaring and ignorant physicians who could not conceive of the suffering that she endures. The patient was assured that her suffering was real and that she desperately needed counseling and psychoactive medication.

Patient A’s husband witnessed the entire interview and discussion. He stared at the floor during most of it, only looking up to ask whether there were any tests that could be performed to ascertain the presence of “parasites.” A serologic test for leptospirosis was ordered. The patient refused to accept referral to a psychologist or psychiatrist. She never returned. The serologic test for antibodies against leptospira yielded negative results. Several months later, a family practice physician reported that the patient was receiving a neuroleptic agent and that she claimed that she had leptospirosis.

Patient B. Patient B was a 28-year-old white man who left his career as a respiratory therapist to enter medical school. During his second year of school, he became convinced that there were metazoan parasites in his stools. After several negative results of “ova and parasite” examinations, which had been performed in the hospital laboratory by the student health service physician, patient B contacted me directly about his infestation. He had never left the Midwest, and he thought that the “worms” were acquired from his respiratory therapy sessions with patients. He was assured

Received 22 May 2007; accepted 7 August 2007; electronically published 19 October 2007.
Reprints or correspondence: Dr. Haig Donabedian, Dept. of Medicine, Mail Stop 1186, Health Science Campus, The University of Toledo, 3000 Arlington Ave., Toledo, OH 43614 (haig.donabedian@utoledo.edu).
Clinical Infectious Diseases 2007;45:e131-4
© 2007 by the Infectious Diseases Society of America. All rights reserved.
1058-4838/2007/4511-00E1$15.00
DOI: 10.1086/523004
that medical students often believe that they are affected with diseases that they learn about and that medical school can be very stressful. Patient B was upset that his physician refused to consider this parasitic infestation seriously. I agreed to examine his stool samples with him in the hospital laboratory. After several visits to the laboratory to inspect slides he prepared of his own feces, he became outraged at my inability to see the parasite structures on the slide. He accused me of violating physician-patient confidentiality by showing the slides to microbiology technicians to obtain their opinions. Patient B never spoke to me again. He graduated from medical school on schedule. There is no follow-up information on his illness.

**Patient C.** Patient C was a 19-year-old black man who was referred by a psychiatrist to the infectious diseases clinic for an infestation of worms. He had been seeing a psychiatrist for paranoid ideation. The paranoid symptoms included, but were not limited to, a sensation that worms were crawling around his anus. I was irritated that I was being asked to waste my time with what was clearly a psychiatric problem. A scotch tape test of patient C’s peri-anal skin revealed several asymmetric eggs of the *Enterobius* pinworm. The patient said that he had experienced the sensations of formication for several years. He denied participating in oral-anal intercourse and close physical association with young children. The infestation responded to treatment with an oral vermicide, and patient C was referred back to the psychiatry clinic.

**WHO IS AFFECTED?**

Reports of patients with delusions of parasitosis can be traced back to the late 19th century, when Thibierge reported cases of “acarophobia” [1]. These patients did not, as the name suggests, fear a mite infestation; they were convinced that they had such an infestation, against all evidence to the contrary. The currently accepted terminology of “delusion of parasitosis” was coined by Wilson and Miller [2] in 1946.

A comprehensive meta-analysis by Trabert [1] reviewed 193 articles from the North American and European literature that encompassed 1123 patients. The mean age of these patients was 57 years, and the ratio of female to male patients was 1.4:1 for persons aged 50 years and 2.5:1 for those aged ≥50 years. A United Kingdom survey by Lyell [3] and Wykoff’s [4] study of American patients support the universality of these ratios.

The prevalence of these delusions is not known with any certainty. The great majority of published reports are in the dermatologic literature. Lyell [3] called the condition “rare.” Trabert [1] estimated that the incidence in Germany was 1.6 cases per million people. When Reilly and Batchlor [5] surveyed 386 British and English dermatologists, 66% of the replies indicated that they had seen at least 1 such patient in the previous 5 years. Wykoff [4] included reports about 30 patients from the Department of Tropical Medicine at Tulane University (New Orleans, LA) but did not specify the time interval in which these patients’ cases spanned. One or 2 such patients per year (of ~500 new patients) are seen in my academic infectious diseases practice.

Approximately 5%–15% of reported cases represent “folie deux” or even “folie partagée,” in which ≥1 acquaintance of the index case adopt the same delusional symptoms. A nice example of parasitosis folie deux was presented in a report from Korea [6] that detailed the experience of a widowed mother and her unemployed 33-year-old son, who moved together from motel to motel to escape the “bugs” that invaded their skin and respiratory passages. Lyell [3] reported that the most common pair of persons involved in shared delusions is husband and wife. Oddly enough, the patient rarely, if ever, is concerned that the infestation will spread to the examining physician [7]! The patients may come from any socioeconomic class; some patients are physicians [3]. They are often reported to be socially isolated, but it is not documented whether the isolation is the result of the delusions or is a contributory factor [1].

Many patients develop hostility to persons who deny their infestations, even to the point of threatening to shoot any physician who denies the existence of the parasites [7]. In some cases, patients have killed their pets to rid themselves of the perceived source of the infestation [7, 8] or have spent thousands of dollars to treat their homes with pesticides. Patients have even been reported to immolate themselves to rid themselves of their parasites [9].

**WHAT SORT OF ILLNESS IS IT?**

Patients with delusions of parasitosis are not psychotic but have a delusional disorder of a somatic type [10]. There is no grossly disorganized behavior or generalized thought disorder. To be classified as a true delusional disorder by the *Diagnostic and Statistical Manual of Mental Disorders* (fourth edition, text revision), there must be no precipitating medical condition or use of a licit or illicit drug. Several medications, including phenelzine, corticosteroids, and ciprofloxacin, have been reported to cause delusions of parasitosis [11, 12]. Cocaine abuse has long been known to be associated with this type of delusion [13].

Different neurologic and systemic disorders, including Parkinson disease, have been associated with these delusions [14]. A particularly illuminating case of reversible delusional parasitosis was published wherein a right temporoparietal infarct brought on the delusions and therapy with risperidone both eliminated the delusions and increased blood flow to the infarcted area, as demonstrated by radionuclide single photon emission CT [15].

In his analysis of 449 published, classifiable patient reports, Trabert [1] found that 40% of persons had delusions of parasitosis unassociated with any other illness or use of pharmacologic agent. Of course, the reporting bias is expected to
over-report delusions associated with other conditions. Two of the patients (A and B) described in this article had cases that were not associated with any other apparent illness. Delusions of parasitosis may be a misdiagnosis if the patient is not deluded but is rather using parasitosis for his or her own ends, as has been reported in a case of Munchausen parasitosis [16].

Could the patient truly be parasitized? Patient C surely experienced a false case of delusions of parasitosis. He may have had psychiatric illness, but his parasitosis was real. Many authors warn the practitioners not to assume that the patient is deluded until investigations are made. Careful and nonjudgmental listening will often elicit fascinating details that can guide the physician in evaluation of the reality of the delusions [7]. Patient A’s leaping worms clearly marked her symptoms as delusional. Reilly and Batchelor’s [5] survey of dermatologists in Ireland and Great Britain estimated that ~14% of cases are falsely labeled as delusional.

There are 2 interesting ironies in analyzing delusions of parasitosis: (1) parasitic diseases may in fact cause delusions [17, 18], and (2) antipsychotic phenothiazines, the derivatives of which may be used to treat delusions of parasitosis, were developed from antihelminthic drugs [19]. Nonetheless, the improbable scenarios and outlandish symptoms in the absence of other evidence of psychiatric illness make the delusional patient readily identifiable [20].

HOW SHOULD THESE PATIENTS BE TREATED?

Treatment of patients with delusional parasitosis is notoriously difficult. Most will refuse to believe that there is a noninfectious reason for their illness [14]. The majority of these patients seek nonpsychiatrist health care providers, who may not have the patience and expertise to treat mental illness [7].

Fifty percent of reported medications used for delusional parasitosis are neuroleptics, with use of antidepressants reported for only 5% of cases [1]. Reilly et al. [21] reported the successful use of the antipsychotic drug pimozide in 1978; the authors (apparently all psychiatrists) suggested that psychiatric referral was not necessary and that dermatologists could “easily administer” the drug. Hamman and Avnstorp [22] went on to conduct a double-blind crossover trial that compared a placebo with pimozide, with 11 patients in each arm. Ten of the 11 patients improved with receipt of pimozide treatment; only 1 improved with the placebo. Parkinsonism, depressive reaction, dry mouth, and blurred vision were the major adverse effects of pimozide therapy. After the study terminated, 7 patients continued to receive pimozide therapy. Two stopped therapy with no recurrence, and 3 were free of symptoms while receiving therapy. A Dutch study found full remission in 6 patients and improvement in 5 of 18 patients treated with pimozide [23].

Pimozide is uncommonly used in the United States, although it is available for the treatment of Tourette syndrome. Haloperidol [24], olanzapine [25], and risperidone [26] have been successfully used to treat delusions of parasitosis. Of course, these studies were not randomized, and patients who are willing to take neuroleptic agents may be more prone to successful treatment.

Surveys by Lyell [3] and Reilly and Batchelor [5] indicate that the results for therapies that do not incorporate neuroleptic medication, such as regimens consisting of dermatologic agents alone or counseling, are abysmal. It is difficult to know what percentage of patients will accept neuroleptic medication. The Reilly and Batchelor survey [5] reported that ~60% of patients will accept the neuroleptics, and of these patients, two-thirds will benefit. There is no evidence suggesting that persons who experience parasitic delusions go on to develop a generalized psychosis.

Patients A and B, unfortunately, represent the more common course of physician-patient interaction. The physician insists on the enforcement of reality, whereas the patient is outraged at the tenacity and ignorance of the physician. The patient produces the very parasites that cause the affliction, as did patient A (the “matchbox sign,” wherein the offending “parasites” are encased in a matchbox or other container), and yet the physician only speaks about psychotherapy!

WHAT IS TO BE DONE?

Lynch [7] suggested a compromise, in which the physician takes the time to listen sympathetically and suggests psychotropic medication—not to treat the illness per se, but to lessen the symptoms produced by the perceived parasites.

Wilson and Miller [2] reported the dismaying result that 82% of the 51 reported patients had no change in their illness, although the review by Trabert [1] of 206 patients after 1960 revealed that only 29% experienced little or no improvement. This more optimistic number may result from reporting bias in favor of success.

No information exists about the unimproved patients. Do they go on to develop other delusions or frank psychosis? Does a new delusionary set take over, or do they just live with the “parasites” as their secret burden? Trabert’s analysis [1] of hundreds of reported cases indicates that, the longer that the delusions have existed, the more resistant they are to therapy. This bodes ill for persons who refuse therapy and terminate the therapeutic relationship.

CONCLUSIONS

Delusions of parasitosis present the infectious diseases practitioner with difficult problems. The patient is experiencing deeply held beliefs that are resistant to rational therapy. The physician should take time to listen to the complaints of the patient, examine the evidence for parasitosis, and attempt to
guide the patient into a treatment regimen that incorporates a neuroleptic agent.

Acknowledgments

Potential conflicts of interest. H.D.: no conflicts.

References