

## Delusional Parasitosis: Case Series of 8 Patients and Review of the Literature

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### Abstract

**Introduction:** Delusional parasitosis (DP) is a condition in which a person has the unshakeable and mistaken belief of being infested with parasites. **Patients and Methods:** All patients with DP seen by the Division of Dermatology, Department of Medicine, National University Hospital were reviewed. The case histories of 8 Chinese patients are discussed. **Results:** The patients with DP were predominantly women above 50 years of age, with medical co-morbidities and presented with a variety of symptoms and signs. The patients were prescribed various antipsychotics including the atypical antipsychotics. Response was variable, and the patients often defaulted follow-up. An approach to the management of DP is proposed together with a review of the literature.

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**Key words:** Antipsychotics, Belief, Management

### Introduction

Delusional parasitosis (DP), or delusional infestation, is a condition in which a person has the unshakeable and mistaken belief of being infested with parasites.<sup>1</sup> Originally described in 1894,<sup>2</sup> it has been previously referred to as dermatophobia, parasitophobic neurodermatitis, parasitophobia or entomophobia.<sup>3</sup> These terms with “phobia” attached are a misnomer because in classic phobia, the patients are usually aware of the fact that their fearful reactions are both excessive and irrational.

DP is a relatively uncommon condition. Here, we discuss 8 patients with DP and review the literature.

### Patients and Methods

All patients with DP seen at the National University Hospital were reviewed. The diagnosis of DP was made based on a detailed clinical history and supporting clinical findings. A total of 10 cases were identified since the first documented case in 1988. The records of 2 cases could not be located. Data on sex, occupation, age at presentation, nature and duration of symptoms, course and outcome were obtained. The findings are presented in Table 1.

### Results

Of the 8 patients available for study, 6 were female, giving

a female-to-male ratio of 3:1. All patients were Chinese. All were married except 1 who was divorced. All the women were housewives, and both men were gainfully employed. The age at presentation ranged from 54 to 90 years, with a mean of 66.8 years. Two patients were diabetic and 3 were hypertensive. One patient had a psychiatric background of paranoid schizophrenia. Duration of symptoms ranged from 2 months to 24 years, with a mean of 5.7 years. The nature of the presenting signs was variable, including excoriations from scratching, bruising, lichenification, traumatic hair loss and contact dermatitis to medicaments. In addition, 5 patients complained of insomnia. Seven patients were treated with antipsychotic medication, 3 of whom with pimozide, 1 with sulpiride, 1 with quetiapine, 1 with risperidone and 1 with zuclopenthixol. Two of the patients on pimozide developed extrapyramidal side-effects: 1 with akathisia and 1 with tardive dyskinesia. The drugs were then changed to thioridazine and tiapride respectively. All patients except 1 had been seen by both dermatologist and psychiatrist, but 6 defaulted follow-up.

### Discussion

From our case series, many common characteristics are observed.

DP has been mainly described in sporadic case reports and small series. In 2 postal surveys of dermatologists conducted by Reilly and Batchelor<sup>4</sup> and Lyell<sup>5</sup> with information on 647

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Table 1. Summarised Case Histories of 8 Patients with Delusional Parasitosis

Case number	Sex	Marital status	Occupation	Age (years)	Comorbidities	Duration of symptoms	Type of lesions	Complaints	Patient's interventions	Outcome
1	F	Married	Housewife	63	None	2 months	Erythematous rash over back, abdomen, legs	Bites from insects with eggs, spreading from groin to body and head; insomnia	Visited private dermatologist and NUH dermatology	Treated by private dermatologist with malathion and developed irritant contact dermatitis; defaulted follow-up after first session with NUH dermatology; referred to psychiatry but lost to follow-up
2	F	Married	Housewife	65	Diabetes mellitus, hypertension, ischaemic heart disease, history of thyroid, cardiac bypass and piles operations	5 years	Scratch excoriations over body; post-inflammatory hyperpigmentation on legs	Thread-like worms developing from pigeon droppings, then becoming insects which fly off from her hair; hears insect bite noises "tuck, tuck"; body itch from bites	Applied kerosene to hair and inflicted wounds on her scalp to destroy the insects; wore shower-cap to prevent flying insects from re-entering her scalp; afraid to rest head on chair for fear of contaminating others; ironed all clothes to destroy insects	Symptomatically treated by NUH dermatology over 1 month then defaulted follow-up; treated by psychiatrist with pimoziide 2mg ON and subsequently added fluoxetine 20mg OM, but defaulted follow-up after 5 months
3	F	Married	Housewife	54	Diabetes mellitus, hypertension	3 months	None	Ants biting and worms crawling over back; insomnia	Rubbed her back causing bruises; self-medicated with Chinese medicated oil containing menthol, eucalyptus oil, methylsalicylate and camphor causing redness	Seen by private dermatologist; defaulted follow-up after first session with NUH dermatology
4	F	Married with 2 children	Housewife	72	Paranoid schizophrenia	10 years	Slightly erythematous patches on scalp	Houseflies, mosquitoes, cobwebs and worms emerging from holes and depressions on her head  Accuses others of doing this to her.	Insisted on a skull X-ray which was normal; then insisted on a CT brain which showed multiple subcortical infarcts	Known history of paranoid schizophrenia, previously on intramuscular zuclopenthixol, but defaulted. Referred by government polyclinic to NUH dermatology and then psychiatry. IM zuclopenthixol continued. However there was irregular attendance, and no improvement noted. Eventually defaulted follow-up to both
5	F	Divorced	Retired dressmaker	66	Hypertension, osteoporosis	24 years	Generalised erythematous maculopapular rash with excoriations on body and limbs	Insects with brown body, red head, some resembling spiders, crawling beneath her skin; insomnia	Caught some "insects" and showed to 2 private dermatologists; visited numerous general practitioners, dermatologists, psychiatrist and Chinese practitioners; treated with Nerisone-C, permethrin 5%, aqueous cream, white soft paraffin, coal tar shampoo, raw sulphur	Admitted to NUH dermatology for severe irritant contact dermatitis to topical medications; skin condition improved with topical steroids and antihistamines; treated by in-house psychiatrist with quetiapine 12.5mg ON; defaulted follow-up to both upon discharge

Table 1. contd.

Case number	Sex	Marital status	Occupation	Age (years)	Comorbidities	Duration of symptoms	Type of lesions	Complaints	Patient's interventions	Outcome
6	M	Married with 7 children	Clerk	64	Treated leprosy	5 years	Hyperkeratosis of fingers and toes	Started with a nodule on the dorsum of the right middle finger, which he felt was alive and growing, like a barnacle; Thread-like worms under the skin of his hands and eating his fingernails; claimed his fingernail clippings and skin tags were little creatures that died	Cut his nails till they bled; Showed a bundle of nail clippings and skin tags to dermatologist as evidence of the dead creatures	Seen by NUH dermatology and referred to psychiatry; treated with pimoziide 4mg OM and artean 2mg OM, but developed akathisia after 2 months; pimoziide was switched to thioridazine 25mg TDS and propranolol 20mg OM given. Patient improved; no more delusions. Eventually referred back to doctor in Batu Pahat for continued follow-up
7	M	Married	Fruit-seller	60	Lymphoma diagnosed 5 years subsequently	1 year (since after demise of father)	Lichenified nodules on forearms, thigh, legs; excoriations and short hairs on scalp (attributed to shaving with razor blade); hairs of various lengths on forearm and thigh (same reason)	Small, black, thorny parasites with 8 legs and sand-like eggs, crawling in his skin; "cannot sit, cannot stand, cannot lie down, cannot sleep" Accuses a hawkker of causing the above infestations by using "black magic."	Pinched the insects out of his skin; used razor blades to scrape the parasites and eggs from his scalp and extremities; used paraffin to destroy them; 3 attempts at suicide by hanging with rope, cloth over door and ceiling; seen by many general practitioners, psychiatrists, Chinese mediums	Already treated by general practitioners and psychiatrists with pimoziide 1mg TDS, deanxit (flupenthixol and melitracen) and bromazepam; admitted to NUH psychiatry for paranoid delusions and tardive dyskinesia; medication changed to tiapride 100mg TDS, propranolol 20mg BD, valium 10mg ON PRN. Improved and accepts the insects as "fate" and was no longer bothered by them. Defaulted follow-up with dermatology and psychiatry upon discharge. A review 6 years later showed that patient was still well, and no medicine was given. Defaulted subsequently.
8	F	Married	Housewife	90	Mild congestive cardiac failure	6 months	Scaly and excoriated patches over back, chest, limbs, fingers	Reddish, multi-legged insects crawling in skin, and crawling out of her eyes, nose, mouth, vagina; insomnia; developed secondary depression with suicidal thoughts	Seen by many general practitioners; dug her ears and skin and showed psychiatrist and ward doctor the "bugs"; sprayed insecticide all over her body; cut up the mattresses to search for the "bugs"; scraped the floor to eradicate the "bugs"	Admitted with contact dermatitis to insecticide; she was transferred to psychiatry and treated with sulphiride 100mg ON, then switched to quetiapine 12.5mg ON for better sedation. However, patient developed postural hypotension to quetiapine; eventually switched to risperidone 0.5mg OM, 1mg ON. On follow-up with psychiatry and dermatology, she still believes there are "bugs" crawling on her skin, but she no longer sprays insecticide on her body, indicating an improvement.

patients in total, a female preponderance of about 2 to 1 was found. The sex ratio increased with age to 3:1 in patients aged 50 years and older.<sup>6</sup> The latter finding is identical to that of our case series. Also notably, all our patients are Chinese. To our knowledge, DP has been reported in only 1 other Asian study.<sup>7</sup>

In a meta-analysis of 1223 case reports, the mean duration of symptoms was 3.0 +/- 4.6 years.<sup>8</sup> The finding in our case series is consistent with that study.

DP is known to occur in a wide variety of physical and psychiatric illnesses.<sup>6,9,10</sup> The number in our case series is small, but several co-morbidities like diabetes mellitus, cardiac failure, lymphoma, schizophrenia and depression were found. Other associated conditions include hypothyroidism, nutritional deficiency (vitamin B12, niacin), infections (tuberculosis, syphilis), neurological conditions (dementia, Huntington's disease), use of recreational drugs and corticosteroids, and bipolar I disorder.

Patients usually complained of crawling, burrowing and biting worms and insects. They frequently give detailed descriptions of the characteristics and activities of the offending "parasites". Patients may resort to self-mutilation in an attempt to remove the "parasites", such as obsessive nail-biting, or using a razor blade (Fig. 1). Others engage in purification rituals, such as applying kerosene to hair, spraying insecticide on the environment as well as their bodies. Many harbour a fear of contaminating others. By the time the patient presents to the dermatologist or psychiatrist, he would have been seen by many doctors, specialists and traditional practitioners. Patients often bring spurious samples of the parasite (Fig. 2) in support of their claim, also known as the "matchbox sign".<sup>11</sup> Insomnia is a common complaint, as the patients are frequently quite disturbed by the "parasites".

Depending on the duration of symptoms and the stage of presentation, the range of physical findings is wide. Some patients have none to minimal signs, including scratch excoriations. With chronic scratching, lichenification is commonly seen (Fig. 3). Others suffer from irritant contact dermatitis to the topical medicaments (including scabidals and traditional herbal medicine) applied.

When confronted with such a patient, the following steps modified from Winsten's article<sup>12</sup> are useful in approach:

### 1. Ensure that the diagnosis is correct

Some patients may start off with a true organic skin disorder, and then become deluded with the notion of parasitic infestation to explain their itch. Where the itch is localised, it is important to consider differential diagnoses such as scabies (wrists, finger-webs and axillae), dermatitis herpetiformis (extensor distribution) and insect bite reactions (extremities and exposed sites).

### 2. Listen empathetically

One reason why many patients "doctor-hop" could be to seek sympathy and a listening ear. Doctors running busy

outpatient clinics may hurriedly dismiss their complaints as absurd and insane. Patients may then turn to other means to exterminate their "parasites" such as spraying insecticide, seeking help from Chinese mediums and so on.

### 3. Ask how the condition has affected the patient's quality of life

This gives an idea of the severity of the delusion and the urgency for intervention. The patient with suicidal ideation from his bothersome delusions may need a period of inpatient observation. Some patients may need to be admitted for respite and treatment as their family members are unable to cope with their behaviour and actions. As many patients suffer from insomnia, hypnotism may be useful to ensure sleep and recovery.

### 4. Establish the trust of the patient

Without a good rapport, it is unlikely the patient is going to cooperate with subsequent management. The sufferer would expect the doctor to treat him or her with respect as a *bonafide* patient. One effective way to convey to these patients that the doctor is taking their complaint seriously is to do a thorough skin examination. Pay attention to the "specimens" they bring in. If necessary, perform a microscopy of skin scrapes and of these "specimens" to convince them that no organisms are present.

### 5. Consider referral to a psychiatrist

After ruling out a true infestation, a psychiatric referral may be warranted.<sup>13</sup> This is to reduce the burden on the dermatologist to distinguish the delusions as an encapsulated delusion (i.e. as a monosymptomatic hypochondriacal psychosis) from delusions associated with an organic condition or another psychiatric condition such as schizophrenia. In addition to the above, secondary psychiatric conditions like depression and even suicide will require expert assessment and management. Finally, the therapeutic process using antipsychotics may be too long and cumbersome for a dermatologist to handle alone. On the other hand, a psychiatric referral may make the patient feel rejected, and patients might decline psychiatric or even all medical care, thus losing opportunity for treatment.<sup>11</sup> Because of this, a liaison between the dermatologist and psychiatrist is advocated.<sup>14</sup>

### 6. Consider the use of medication to ease the patient's anxiety or psychosis

Apart from managing the skin conditions of acute and chronic dermatitis, a therapeutic trial with antipsychotic agent should be offered. Any underlying medical or psychiatric conditions contributing to the delusions of infestation must be treated. This can result in the resolution of the delusions. In patients with isolated delusions of infestation, pimozide (Orap) was traditionally the drug of choice. In a double-blind cross-over trial involving 11 patients, 10 patients improved.<sup>15</sup> There are also several anecdotal reports in which pimozide improved the delusions.<sup>16-18</sup>





Fig. 1. Scalp abrasions inflicted with a razor blade to rid the head of "parasites".



Fig. 2. Bundle of nail clippings brought by a patient, purported to be "parasites".



Fig. 3. Lichenified nodules resulting from chronic scratching to root out "parasites".

Before starting a patient on pimozide, a pre-treatment baseline electrocardiogram (ECG) should be done, and periodically throughout dose adjustment. This is because pimozide prolongs the QT interval, and further increase in dose should be stopped if there is any prolongation of QTc interval beyond 0.52 seconds or more than 25% above the patient's original baseline.

Pimozide may be started at doses as low as 0.5 mg or 1 mg, and increased weekly by 0.5 mg or 1 mg according to the clinical response. Responses include a reduction in the mental preoccupation with symptoms and cleaning rituals, reduced anxiety and insomnia, and possibly a resolution of delusions and cutaneous sensations. There is a danger in pushing this potent antipsychotic drug to high doses in an attempt to eradicate the delusion because there is greater risk of extrapyramidal side effects such as drug-induced parkinsonism, akathisia, dystonia and potentially irreversible tardive dyskinesia. These side effects can cause many patients to drop out of treatment. Medications such as benzhexol may be used to reduce the unwanted extrapyramidal effects. Therefore, the therapeutic aim may only be for reduction in preoccupation and improved quality of life, even though the patient may still believe the infestation is taking place.

Studies have shown that remission occurs with pimozide, and some patients can discontinue medication for years without

recurrence of delusions.<sup>19</sup> However, many patients may need long-term pimozide. The effective dosage is maintained for at least 1 month. Thereafter it can be tapered off gradually. Should there be an exacerbation of symptoms, the patient may be restarted on pimozide and treated in the similar time-limited fashion. The advantage of treatment with a time-limited fashion in contrast to continuous long-term medication is that the risk of tardive dyskinesia may theoretically be reduced.

However, the supremacy of pimozide for the treatment of monosymptomatic hypochondriasis has been questioned for several years. An Indian study evaluated the response of 19 patients with delusional parasitosis who were treated with antipsychotic drugs such as haloperidol, trifluoperazine, chlorpromazine and electroconvulsive therapy. Eleven of these cases had complete remission with 5 remaining well for more than 3 years.<sup>7</sup>

There is now an emerging role for atypical antipsychotics in the treatment of DP, in view of their more favourable side effect profile. In a case report involving 3 patients, risperidone was effective in eliminating the symptoms.<sup>20</sup> So far there have been no reports or trials involving other atypical antipsychotics like olanzapine or quetiapine in the treatment of delusional parasitosis. As the side effects of conventional antipsychotics like pimozide and haloperidol will affect compliance, clinicians

should consider using atypical antipsychotics like risperidone as first-line therapy for patients with DP. However, experience in the use of these drugs in management of DP is limited, and further reports are much anticipated.

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### REFERENCES

1. Reilly TM. Delusional infestation. *Br J Psychiatry* 1988;153(suppl.2): 37-40.
2. Musalek M, Bach M, Passweg V, Jaeger S. The position of delusional parasitosis in psychiatric nosology and classification. *Psychopathology* 1990;23:115-24.
3. Johnson GC, Anton RF. Delusions of parasitosis: differential diagnosis and treatment. *South Med J* 1985;78:914-8.
4. Reilly TM, Batchelor DH. The presentation and treatment of delusional parasitosis: a dermatological perspective. *Int Clin Psychopharmacol* 1987;1:340-53.
5. Lyell A. Delusions of parasitosis. *Br J Dermatol* 1983;108:485-99.
6. Arnold LM. Psychocutaneous Disorders. In: Sadock BJ, Saddock VA, editors. *Kaplan & Sadock's Comprehensive Textbook of Psychiatry*. 7<sup>th</sup> ed. USA. Lippincott Williams & Wilkins, 2000:1823-4.
7. Srinivasan TN, Suresh TR Nature and treatment of delusional parasitosis: a different experience in India. *Int J Dermatol* 1994;33:851-5.
8. Trabert W. 100 years of delusional parasitosis. Meta-analysis of 1223 case reports. *Psychopathology* 1995;28:238-46.
9. Michael M. Delusional infestation. *Br J Psychiatry* 1991;159(suppl 14):83-7.
10. Paul YT, Lois K. Case report: Delusions of parasitosis as an unusual presenting feature of dementia. *Ann Long-Term Care* 1999;7:153-5.
11. Gould WM, Gragg TM. Delusions of parasitosis: an approach to the problem. *Arch Dermatol* 1976;112:1745-8.
12. Winsten M. Delusional parasitosis: a practical guide for the family practitioner in evaluation and treatment strategies. *J Am Osteopath Assoc* 1997;97:95-9.
13. Driscoll MS, Rothe MJ, Grant-Kels JM, Hale MS. Delusional parasitosis: A dermatologic, psychiatric, and pharmacologic approach. *J Am Acad Dermatol* 1993;29:1023-33.
14. Sheppard NP, O'Loughlin S, Malone JP. Psychogenic skin disease: a review of 35 cases. *Br J Psychiatry* 1986;149:636-43.
15. Hamann K, Avnstorp C. Delusions of infestation treated by pimozide: a double-blind crossover clinical study. *Acta Derm Venereol* 1982;62: 55-8.
16. Damiani JT, Flowers FP, Pierce DK. Pimozide in delusions of parasitosis. *J Am Acad Dermatol* 1990;22:312-3.
17. Reilly TM, Jopling WH, Beard AW. Successful treatment with pimozide of delusional parasitosis. *Br J Dermatol* 1978;98:457-9.
18. Mitchell C. Successful treatment of chronic delusional parasitosis. *Br J Psychiatry* 1989;155:556-7.
19. Lindskov R, Baadsgaard O. Delusions of infestation treated with pimozide: a follow up study. *Acta Derm Venereol* 1985;65:267-70.
20. De Leon OA, Furmaga KM, Canterbury AL, Bailey LG. Risperidone in the treatment of delusions of infestation. *Int J Psychiatry Med* 1997;27:403-9.