

Delusion of Parasitosis: Case Report and Current Concept of Management

Mirna Šitum¹, Iva Dediol¹, Marija Buljan¹, Maja Vurnek Živković¹, Danijel Buljan²

¹Department of Dermatology and Venereology; ²Department of Psychiatry, Sestre milosrdnice University Hospital Center, Zagreb, Croatia

Corresponding author:

Professor Mirna Šitum, MD, PhD
Department of Dermatology and Venereology
Sestre milosrdnice University Hospital Center
Vinogradska c. 29
HR-10000 Zagreb, Croatia
msitum@kbsm.hr

Received: September 2, 2010

Accepted: April 1, 2011

SUMMARY Delusions of parasitosis (DP) is a primary psychiatric disorder, a type of monosymptomatic hypochondriac psychosis in which patients believe that 'bugs' or 'parasites' have infested their skin or that they have even spread into their visceral organs. Patients with DP usually approach different medical specialists, mostly dermatologists and primary care physicians because of symptoms presenting as crawling under their skin. Therefore, the exact prevalence of DP is unknown. It is believed that it is a rare disorder but different studies indicate that the prevalence is greater than presented. The etiology of this disorder is still unclear. Patients with DP come to a physician with a stereotypic history. Usually the patient has previously addressed many other different specialists and symptoms are usually present for several months to years. The main cutaneous symptom is crawling, biting and pruritus due to 'burrowing of parasites, insects or bugs' under the skin. Patients with DP are rare but can be very challenging for making the correct diagnosis and for the treatment as well. It is essential to distinguish primary from secondary disorder since the approach to these patients is different. Dermatologists who have good knowledge in diagnosis, both dermatologic and psychodermatologic, and who dare prescribe antipsychotics after consulting liaison-psychiatrist, can have good results in treating patients with DP. When treating patients with DP, multidisciplinary approach by collaboration between a dermatologist and a psychiatrist is necessary to provide complete and meaningful treatment for these patients.

KEY WORDS: delusions of parasitosis, antipsychotic treatment, psychodermatology, monosymptomatic hypochondriac psychosis, parasites, crawling sensation

INTRODUCTION

Delusions of parasitosis (DP) is a primary psychiatric disorder, a type of monosymptomatic hypochondriac psychosis (MHP) in which patients believe that 'bugs' or 'parasites' have infested their skin or that they have even spread into their visceral organs. The disorder was first described by Thibierge in 1894, who

named it acarophobia (1). In 1946, Wilson and Miller renamed the disorder into delusion of parasitosis (2).

CASE REPORT

We present a case of a 62-year-old woman who presented to the outpatient clinic of Department of

Dermatology and Venereology, Sestre milosrdnice University Hospital Center, complaining of intensive crawling sensation beneath her skin, spreading from the head downwards. These symptoms had been present for two years. The patient had an irresistible need to pull 'the bugs' out of her skin. As a proof, she brought along a small box (Fig. 1A) and glasses (Fig. 1B) full of 'bugs' that she had managed to pull out of her skin. On examination, multiple excoriations, hyperkeratotic papules and hypopigmented scars were found on the patient's arms (Fig. 2A), back (Fig. 2B) and chest (Fig. 2C), on the body areas within the reach of the hand.

The patient had already been treated by a dermatologist at another hospital, with occlusive methods by wrapping the excoriated areas of the skin and the areas in the reach of the hands, however, with no improvement.



Figure 2A. Excoriations, lichenification and scars on the arms of the patient with delusions of parasitosis.



Figure 1A. Match-box sign.



Figure 2B. Excoriations, lichenification and scars on the chest of the patient with delusions of parasitosis.



Figure 1B. Glasses presented by the patient.



Figure 2C. Excoriations, lichenification and scars on the upper back of the patient with delusions of parasitosis.

Scabies and other skin diseases as well as systemic causes were excluded by clinical examination and extensive diagnostic workup, hence the patient was referred to a liaison psychiatrist. Delusional parasitosis with underlying psychosis was diagnosed by the psychiatrist. Antipsychotic therapy with risperidone was introduced. After two months, significant improvement of the skin lesions was observed. The patient remained under regular psychiatric follow-up.

CLASSIFICATION AND DIAGNOSTIC CRITERIA

In the past, DP was known as parasitophobia, acrophobia, delusions of dermatosiasis, dermatophobia, entomophobia, parasitophobic neurodermatitis, Ekbon syndrome and Morgellon's disease. Today, etiologic classification of DP includes primary DP and secondary forms of DP (Fig. 3). Primary DP is classified by ICD-10 as persistent delusional disorder F22.0 (World Health Organization) and by DSM-IV-TR 297.1 as delusional disorder, somatic type (American Psychiatric Association, 2000) (3).

There are 5 criteria for the diagnosis of DP: 1) delusion lasting for at least 1 month; 2) no prior diagnosis of schizophrenia; 3) psychosocial functioning impaired directly by the delusion; 4) if the mood disorder coexists, its duration should be shorter than the delusional; and 5) delusion is not caused by drugs or any substance used nor by medical condition.

Secondary form of DP can be the result of many conditions like psychiatric disorders, general medical condition, brain pathologies or substance-induced as it is presented in figure 3.

EPIDEMIOLOGY

Patients with DP usually approach different medical specialists, mostly dermatologists and primary care physicians, because of symptoms presenting as crawling under their skin. Therefore, the exact prevalence of DP is unknown. It is believed that it is a rare disorder but different studies indicate that the prevalence is greater than presented. Approximately 0.6 to 20 cases *per* year are reported by various authors in their clinics (4-10). Szepietowski *et al.* report that 85% of surveyed dermatologists have encountered a patient with DP in their practice, and 77% had one to five patients with DP during the past five years (11). In the meta-analysis by Trabert, the mean age of DP patients DP was 57, with female to male ratio of 1.4/1 for patients aged <50 and 2.5/1 for patients aged >50 years (12).

ETIOLOGY

The etiology of DP is still a field to be investigated. Decreased striatal dopamine transporter (DAT) functioning corresponding with an increased extracellular dopamine level is one of the possible reasons suggested by Huber *et al.* (13). Their hypothesis is corroborated by case reports, which show that DAT-inhibitors such as cocaine, pemoline, methylphenidate and other amphetamine derivatives can induce clinical expression of DP. Another speculation is that sensations like paresthesia or pruritus occur in older patients who have dry skin more prone to idiopathic pruritus and nervous system less adaptive to sensations. These patients misperceive their sensations resulting in paranoid idea in their heads (14). Another explanation comes from the experience of good therapy results with specific dopamine blocker pimozide, which blocks the overactivity of dopaminergic system in the limbic area of the brain, as in schizophrenia or drug-induced psychosis (15). There is also the possibility of thalamic and serotonin receptor involvement. Some authors suggest that DP is a somatic manifestation of underlying anxiety, explaining it as a coping mechanism to avoid real problems (14).

HISTORY AND CLINICAL MANAGEMENT

Patients with DP present with a stereotypic history. Usually the patient has previously addressed many other different specialists. The symptoms are usually present for several months to years. The main cutaneous symptom is crawling, biting and pruritus due to 'burrowing of parasites, insects or bugs' under the skin. Patients describe their symptoms in great detail, even without being asked to talk about them. Also, they often try to show the parasites crawling under their skin explaining the 'life cycle' of the parasites and how they multiply and die. Patients try to dig the parasites from the skin to prove their words or as a proof of infection they bring small boxes in which they gather the 'samples of bugs' or 'parasites'. In fact, the contents of such boxes are hair, scales of skin, bits of wool, and crusts (Fig. 1A,B). These boxes have a historic term, 'match-box sign', even though in recent literature authors suggest naming it the 'Ziploc® sign' because of carrying the material in Ziploc® bags (16). This sign is pathognomonic for DP. Usually, patients try to eradicate the parasites with pesticides by applying various, sometimes aggressive substances on their skin, often resulting in erosions and crusting. It has been reported that some patients were spending a lot of money to disinfect their home from 'parasites' and 'bugs', or that they even killed their pets just to rid themselves of the source of infestation (17). Another

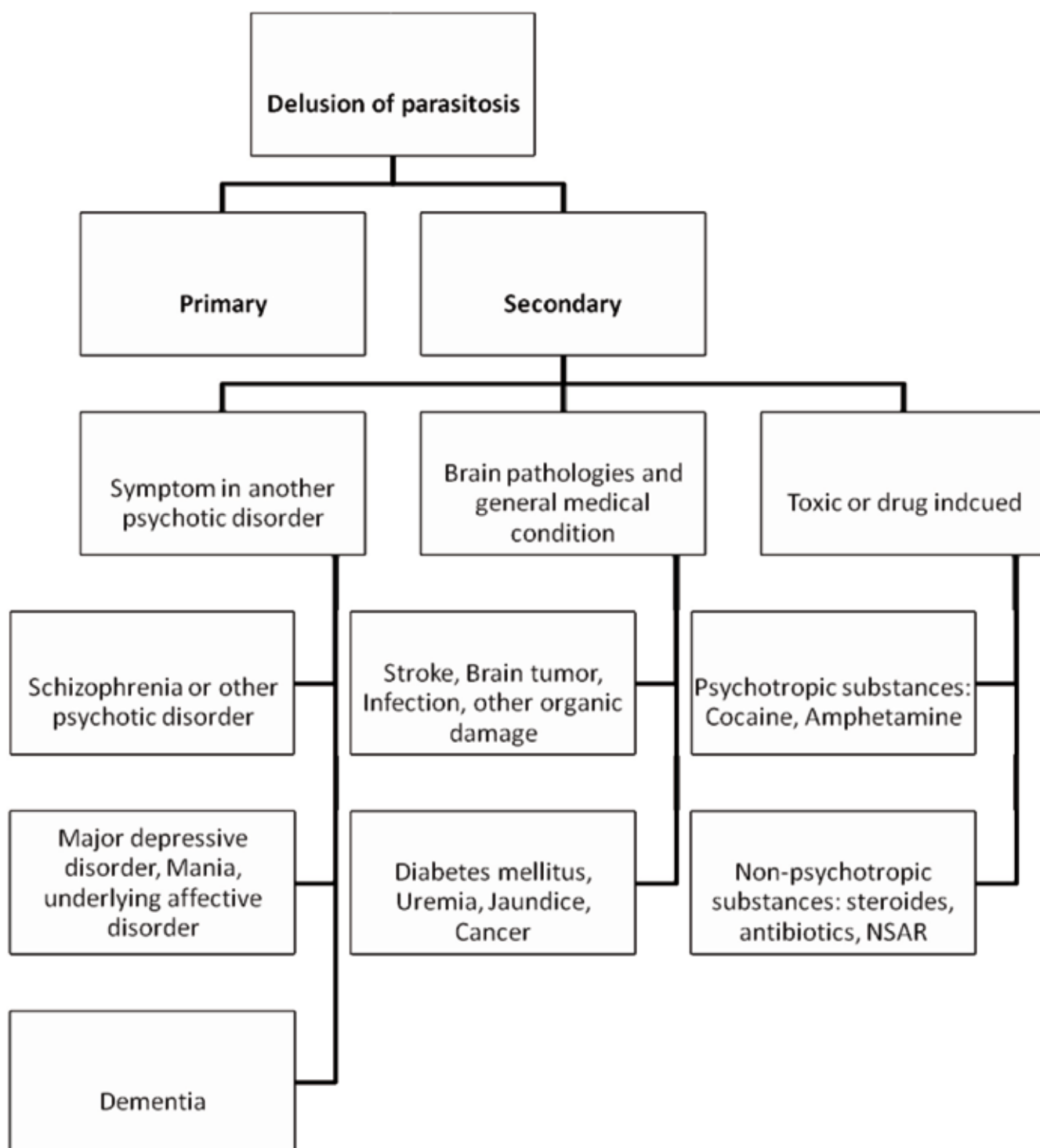


Figure 3. Own etiology classification of delusion of parasitosis.



possible manifestation of DP is so called '*folie à deux*', where delusion is shared with a close person, usually husband or wife, mother or son. Bak *et al.* report on 11% of cases in which patients with DP presented with *folie à deux* (18). In the interesting study from Korea, the authors report a case 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 tract (19).

In patients with DP, clinical examination usually shows normal skin without changes, or more often multiple excoriations, inflammation secondary to scratching, lichenification, prurigo nodularis and frank ulcerations (Fig. 2A,B,C). These skin lesions predominate on the areas of the body that can be reached by hands, as it was the case in our patient. Screening laboratory tests can help in the evaluation of the disease. Complete blood cell count, chemistry panel, thyroid stimulating hormone, rapid plasma reagin, urinalysis and urine toxicology screen should be conducted. Moreover, measuring of B12/folate levels or performing computed tomography scan, as well as psychiatric examination can be helpful in setting the diagnosis of DP.

DIFFERENTIAL DIAGNOSIS

Dermatovenerologic diseases like scabies, insect bite reactions, chronic folliculitis, Grover's disease, Lyme disease (20) and syphilis have to be considered and excluded. Formication with underlying neurologic diagnosis such as multiple sclerosis, and Parkinson's disease has to be evaluated. Psychiatric disorders like obsessive-compulsive disorder with obsessive fear of being dirty and ritualizing cleaning of the skin, phobia, organic psychosis, depression, acute mania and abstinence of amphetamine, cocaine and alcohol can present with symptoms of DP. Delusion of parasitosis is distinguished from psychotic disorders such as schizophrenia, where patients present with hallucinations and blunted affect, and paranoia, in which patients know their fears are irrational. Careful psychiatric evaluation should be conducted to exclude the possibility of other psychiatric disorders. It is important to bear in mind that the use of medications such as ciprofloxacin, corticosteroids, amantadine, levodopa (21) and phenelzine can induce DP. Reichenberg *et al.* report on successful treatment of a patient with DP after discontinuation of antidepressant doxepin and antihistaminic cetirizine, which were included in the patient's medication list (22). Likewise, different systemic medical conditions can mimic the symptoms of DP, e.g., diabetes mellitus, pellagra, vitamin B12 deficiency, hypertension, kidney disease, thyroid disease (23), heart failure, hepatitis, cerebrovascular

disease, stroke, pneumonia, tuberculosis, lymphoma (24), AIDS (25), and pituitary gland tumor (24).

The most important criteria for the diagnosis of DP is the absence of infestation with parasites. Careful examination and listening to the patient can extract fascinating details that can help with the diagnosis.

TREATMENT

The treatment of patients with DP is very difficult because they often refuse referral to psychiatrist and antipsychotic therapy. When a patient with DP visits dermatologist, it is crucial to establish good communication with the patient. Detailed skin examination and looking for parasites is a good start and sometimes even skin biopsy and microscopy of skin scrapes can be useful. It is important not to confront the patient but not to agree with him or her either. Lee proposes to say to the patients with DP 'no evidence of infestation today' (26). Explaining the psychiatric nature of the illness and proposing antipsychotic treatment can elicit disappointment and anger in the patient. Moreover, the patient may never come back and sometimes decide to deal with the problem alone, often seeking help on the Internet. Bourgeois *et al.* report on a patient with DP who even attempted to murder his general practitioner, who tried to explain him the psychiatric nature of his symptoms (27). This illustrates the intractable nature and potential dangerousness of the illness. When talking to the patient, it is advisable to present an antipsychotic drug in his therapy as a drug that will decrease the symptoms of crawling or stinging sensations. Psychopharmacotherapy of DP includes typical (first generation) and atypical (second generation) antipsychotics (Table 1). Trabert reports on the use of antipsychotics in 50% and antidepressants in 5% of DP cases (12).

Pimozide, a typical antipsychotic, is considered to be the first-line treatment for DP because of good therapeutic effect (28). It is recommended to start with 0.5-1 mg/day and to slowly increase by 1 mg every week. Depending on the dosage, side effects of pimozide can be very serious. Adverse effects include longer QT interval in electrocardiogram and cardiac arrhythmias when high dosage is used. Therefore, it should not be used in patients with high cardiac risk or in elderly patients. In the USA, pimozide is approved for the treatment of Gilles de la Tourette syndrome, and in Europe, it is used for the treatment of schizophrenia. Haloperidol is another effective drug for DP. Zanol *et al.* recommend intramuscular use of haloperidol as a more practical method in DP patients. They report that one of their patients commented that the given injection paralyzed his parasites, so they did not move anymore even though they were not gone (16).

Table 1. Antipsychotic drugs in use for delusions of parasitosis

Antipsychotic drug		Trade name	Formulation	Usual dose range (mg/day)	Side effects
Typical/ first generation	Pimozide	Orap®	Tablet, liquid	5-25	Extrapyrmidal side effects – acute dystonia, parkinsonism, akathisia, tardive dyskinesia Orthostatic hypotension Hyperprolactinemia – amenorrhea, galactorrhea Sexual dysfunction – decreased libido, impotence, ejaculation failure Anorgasmia Sedation Anticholinergic effects – blurred vision, dry mouth Constipation
	Haloperidol	Haldol®	Tablet	2-12	
Atypical/ second generation	Olanzapine	Zyprexa® Vaira®	Tablet, dissolvable wafer	10-20	Extrapyrmidal side effects (low risk) Metabolic syndrome – weight gain, hyperglycemia, hyperlipidemia, diabetes mellitus type II Hyperprolactinemia Anticholinergic effects Sedation QTc interval prolongation <i>Note: Atypical antipsychotics are not a homogeneous class and differences in side effects should be considered when choosing an antipsychotic for a patient.</i>
	Amisulpride	Solian®	Tablet	400-800	
	Quetiapin	Seroquel®	Tablet	300-600	
	Risperidone	Risset®, Prospera®	Tablet, liquid, depot	3-6	

Today, there are much more suitable second-generation antipsychotics with markedly less side effects. Several studies have reported good effectiveness of risperidone, quetiapine, olanzapine and amisulpiride (19,29-31). Risperidone is used at a dose of 1-4 mg/day and can also be used as a depot, which is a better approach for treatment control. Lepping *et al.* compared therapeutic effect of typical *versus* atypical antipsychotics by searching the literature on DP (3). Even though innate bias was identified between the studies, statistical significance between the two treatments was not found. They conclude that both antipsychotics are effective, although evidence for the use of atypical antipsychotics in DP is weaker than for typical antipsychotics. Trabert reports that only 29% of 206 patients experienced little or no improvement in the treatment of DP, and that the longer the symptoms of DP existed, the patients were more resistant to therapy (12).

In the literature, the effect of electroconvulsive therapy is reported for patients with DP who have contraindications for the use of antipsychotics (elderly patients) (8).

Many dermatologists do not feel comfortable on prescribing psychopharmaceuticals in the treatment of their patients with DP, therefore, psychiatrist consultation can help. The patient should be referred to the psychiatrist as soon as possible, before he or she can change his mind. Furthermore, quick screening questionnaire for depressive symptoms can help exclude depression in patients with DP. If depression coexists, it is important to treat it with a combination of antipsychotic drugs and antidepressants prescribed by a psychiatrist.

CONCLUSION

Patients with DP are rare but can be very challenging for making the correct diagnosis and for the

treatment as well. It is essential to distinguish primary from secondary disorder since the approach to these patients is different. Dermatologists who have good knowledge in the diagnosis, both dermatologic and psychodermatologic, and who have courage to prescribe antipsychotics after consulting liaison psychiatrist, can have good results in treating patients with DP. When treating DP patients, a multidisciplinary approach with collaboration between dermatologist and psychiatrist is necessary to provide complete and meaningful treatment for these patients.

References

1. Thibierge G. Les acarophobes. *Rev Gen Clin Ther* 1894;8:373-6.
2. Wilson JW, Miller HE. Delusion of parasitosis. *Arch Dermatol* 1946;54:39-56.
3. Lepping P, Russell I, Freudenmann RW. Antipsychotic treatment of primary delusional parasitosis. *Br J Psychiatry* 2007;191:198-205.
4. Schrut AH, Waldron WG. Psychiatric and entomological aspects of delusory parasitosis, entomophobia, acarophobia, dermatophobia. *JAMA* 1963;186:429-30.
5. Ungvari G, Vlarar K. Pimozide treatment for delusion of infestation. *Act Nerv Super (Praha)* 1986;28:103-7.
6. Bhatia MS, Jagawat T, Choudhary S. Delusional parasitosis: a clinical profile. *Int J Psychiatry Med* 2000;30:83-91.
7. Tandon AK. A psychological study of delusional parasitosis. *Indian J Psychiatry* 1990;32:252-5.
8. Srinivasan TN, Suresh TR, Jayaram V, Fernandez MP. Nature and treatment of delusional parasitosis: a different experience in India. *Int J Dermatol* 1994;33:851-5.
9. Sheppard NP, O'Loughlin S, Malone JP. Psychogenic skin disease: a review of 35 cases. *Br J Psychiatry* 1986;149:636-43.
10. Aw DC, Thong JY, Chan HL. Delusional parasitosis: case series of 8 patients and review of the literature. *Ann Acad Med Singapore* 2004;33:89-94.
11. Szepietowski JC, Salomon J, Hrehorow E, Pacan P, Zalewska A, Sysa-Jedrzejowska A. Delusional parasitosis in dermatological practice. *J Eur Acad Derm Venereol* 2007;21:462-5.
12. Trabert W. 100 Years of delusional parasitosis. *Psychopathology* 1995;54:39-56.
13. Huber M, Kirchler E, Karner M, Pycha R. Delusional parasitosis and the dopamine transporter. A new insight of etiology? *Med Hypotheses* 2006;68:1351-8.
14. Lyell A. Delusions of parasitosis. *J Am Acad Dermatol* 1983;8:895-7.
15. Munro A. Monosymptomatic hypochondriacal psychosis. *Br J Hosp Med* 1980;34:36-8.
16. Zanol K, Slaughter J, Hall R. An approach to the treatment of psychogenic parasitosis. *Int J Dermatol* 1998;37: 56-63.
17. Donabedian H. Delusion of parasitosis. *Clin Infect Dis* 2007;45:10-7.
18. Bak R, Turnu P, Hui C, Kay D, Burnett J, Peng D. A review of delusions of parasitosis. Part 1: Presentation and diagnosis. *Cutis* 2008;82:123-30.
19. Kim C, Kim J, Lee M, Kang M. Delusional parasitosis as "folie deux". *J Korean Med Sci* 2003;18:462-5.
20. Saverly VR, Leitao MM, Stricker RB. The mystery of Morgellons disease: infection or delusion? *Am J Clin Dermatol* 2006;7:1-5.
21. Swick BL, Walling HW. Drug induced delusions of parasitosis during treatment of Parkinson's disease. *J Am Acad Dermatol* 2005;53:1086-7.
22. Reichenberg JS, Magid M, Drage LA. A cure of delusions of parasitosis. *J Eur Acad Dermatol Venereol* 2007;21:1423-4.
23. Nicolato R, Correa H, Romano-Silva MA, Teixeira AL Jr. Delusional parasitosis or Ekbon syndrome: a case series. *Gen Hosp Psych* 2006;28:85-7.
24. Berrios GE. Delusional parasitosis and physical disease. *Comp Psychiatry* 1985;2:395-403.
25. Holmes VF. Treatment of monosymptomatic hypochondriacal psychosis with pimozide in an AIDS patients. *Am J Psychiatry* 1989;146:554-5.
26. Lee CS. Delusions of parasitosis. *Dermatol Ther* 2008;21:2-7.
27. Bourgeois ML, Duhamel P, Verdoux H. Delusional parasitosis: folie a deux and attempted murder of a family doctor. *Br J Psychiatry* 1992;161:709-11.
28. Lorenzo CR, Koo J. Pimozide in dermatologic practice. *Am J Clin Dermatol* 2004;5:339-49.
29. Elmer KB, George RM, Peterson K. Therapeutic update use of risperidone for the treatment of monosymptomatic hypochondriac psychosis. *J Am Acad Dermatol* 2000;43:683-6.
30. Le L, Gonski PN. Delusional parasitosis mimicking cutaneous infestation in elderly patients. *Med J Aust* 2003;179:209-10.
31. Lepping P, Gil-Candon R, Freudenmann RW. Delusional parasitosis treated with amisulpride. *Prog Neurol Psychiatry* 2005;9:12-9.