Rare disease

Self inflicted corneal abrasions due to delusional parasitosis

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Correspondence to Dr Adeel Meraj, adeel_shamse@yahoo.co.uk**Summary**

The authors report a case of self inflicted bilateral corneal abrasions and skin damage due to ophthalmic and cutaneous delusional parasitosis. A male in his 50s presented with a 10 year history of believing that parasites were colonizing his skin and biting into his skin and eyes. The patient had received extensive medical evaluations that found no evidence that symptoms were due to a medical cause. He was persistent in his belief and had induced bilateral corneal abrasions and skin damage by using heat lamps and hair dryers in an attempt to disinfect his body. The patient was treated with olanzapine along with treatment for his skin and eyes. His delusional belief system persisted but no further damage to his eyes and skin was noted on initial follow-up.

BACKGROUND

Delusional parasitosis is a rare psycho-dermatologic disorder more often seen in dermatology than psychiatry settings. These patients may appear to be normal apart from insisting on the infestation despite medical evidence and reassurances, as this is their sole delusion. Delusional parasitosis has also been termed Ekbom's syndrome, psychogenic parasitosis, delusional ectoparasitosis, chronic tactile hallucinosis, mono-symptomatic hypochondriacal psychosis and dermatophobia.

The aetiology of delusional parasitosis as with most psychiatric disorders is not known but is hypothesised to relate to aberrant dopamine transporter protein function resulting in increased extracellular dopamine levels in the striatum and the limbic areas of the brain.¹

In 1983 Lyell in his publication reported male to female ratio estimated to be 1:1 in patients until the age of 50 and 3:1 for patients over 50.² The true frequency of delusional parasitosis is unknown worldwide and within the US due to underreporting. However, two epidemiologic studies conducted in German Hospitals and public health department as well as private practices demonstrated a significantly higher prevalence and incidence in private practices as compared to hospitals and public health departments. Freudenmann and Lepping in their literature review reported more than 1400 published cases. Prevalence also appears to vary by specialty. According to this review, patients are more commonly seen in dermatology outpatient as compared to psychiatry outpatient. Around 90% patients seek help from a dermatologist with many dermatologists having seen at least one patient during their career. Information regarding delusional parasitosis in psychiatry is restricted to predominantly inpatient admissions.³

A meta analysis of 1223 cases conducted by Trabert reported, mean duration of delusions in delusional parasitosis was 3 years +/-4.6 years and median duration was 1 year. This analysis also confirmed a female predominance and reported that about half of the patients attained full remission.⁴

Delusional parasitosis can threaten vision due to self inflicted trauma. Our literature search for ocular manifestations of this disorder found a series of four cases of delusions of ocular parasitosis reported by Sherman *et al*, a case-report by Trager *et al* involving eye lids and a case-report of camphor related self inflicted eye damage by Lim *et al* due to delusional parasitosis.⁵⁻⁷ Here we report a case of delusional parasitosis presenting with bilateral corneal abrasion in addition to the usual cutaneous manifestation.

CASE PRESENTATION

A male in his 50s with no prior psychiatric contact or history of substance abuse presented to the hospital emergency department with the chief complaint of blurry vision. On further questioning he reported a history of what he called infestation by parasites which were colonizing in the pores of his skin. He reported that this infestation had gradually progressed over a 10 year period. He further reported extensive medical investigations of his complaints at various medical and dermatology clinics. He came to the emergency room because his primary care physician would no longer see him. The patient reported that the parasites crawled on his body at night and bit his skin and infiltrated into his eyes. The patient was concerned that he might have transmitted these parasites to family members. He was unable to see the parasites but was able to feel them and was convinced that they were present and had attempted to treat himself. He reported he was unable to sleep due to their biting. According to collateral information, patient slept in a bath tub filled with salt water to alleviate bites by parasites. Also, his mother shared his belief about the infestation and believed she had acquired it during a visit to the patient per collateral information and patient's report. He had purchased ultraviolet lamps to disinfect his skin and applied over the counter cream to his eyes to prevent bites by the organisms. Patient endorsed depressive symptoms in the month before visiting the emergency department and reported feeling overwhelmed and hopeless due to inability to find an explanation for his symptoms. He denied suicidal or homicidal ideation,

reported poor sleep but denied any problems with his appetite or any weight loss. There was no history of loss of energy, psychomotor changes or diminished ability to think. Patient did not meet criteria for major depression per the diagnostic and statistical manual of mental disorders, 4th edition text revision (DSM-IV-TR) but did criteria for depression not otherwise specified. In the last several years, he moved from several houses because he believed that the carpet in his house was full of parasites. He reported running a successful business which he had to close a year ago because of his symptoms.

Our patient agreed for admission to a psychiatric inpatient unit for further evaluation. Consultations were obtained from ophthalmology and dermatology services. General physical examination was unremarkable except for skin and eyes. Laboratory evaluations including complete blood count, renal and liver function, thyroid function test, rapid plasma reagin and Lyme's serology were within the normal range. A urine drug screen was negative, serum B12 and folic acid were within the normal range. A punch biopsy of scalp skin was normal. An MRI of the brain did not show any abnormality. On mental status examination patient was well groomed, calm, cooperative and was wearing sunglasses to protect his eyes from light. He was alert and oriented with intact cognition and sensorium. His speech was coherent, spontaneous and with normal rate and volume. Mood was depressed and affect was mood congruent with full range. There was no evidence of auditory or visual hallucinations and no suicidal or homicidal ideations were reported. Thought process was linear and goal directed. No evidence of thought insertion, withdrawal and broadcasting was noted. Tactile hallucinations and somatic delusions were noted. He had poor insight into his condition. His judgement was impaired.

Dermatological examination demonstrated erythema and superficial desquamation of skin on his chest, back and neck, and excoriations on the right upper axilla due to heat lamp use. On eye examination visual acuity was 20/400 oculus dexter and 20/200 oculus sinister, pupils were 3 mm in size, reactive and no afferent pupillary defect appreciated. Intraocular pressure was normal in both eyes with normal fundoscopic examination. External examination was notable for dry skin of entire head with exfoliation of dermis, including lids bilaterally. There was 3+ mucoid exudate between the lids and lashes and hyperemia of the interpalpebral fissures bilaterally. Corneal examination showed horizontal linear abrasions across the visual axis and 3+ punctate epithelial erosions in both eyes. Diagnostic impression was bilateral corneal abrasions with dry eye syndrome secondary to excessive use of heat lamps and hair dryers, there was no evidence of infestation on skin and eyes examination. Dermatology recommended zinc oxide topical twice a day to gluteal cleft and vaseline twice a day to dry areas of the skin. Ophthalmology started artificial tears six times a day and as needed for dry eyes and sulfamethoxazole/trimethoprim ointment three times a day.

Patient was evaluated by clinical psychologist and participated in inpatient group therapy and insight-oriented counselling. Initially his participation was minimal but later he was able to engage in discussion. His therapy was designed to reinforce medication adherence, avoid self harming behaviour and gain insight into the possibility that his belief system was false. Cognitive behavioural

therapy was utilised to identify his cognitive distortions regarding self harming behaviour and proposed alternative explanations. He agreed to a trial of olanzapine which was titrated to 20 mg daily.

DIFFERENTIAL DIAGNOSIS

Our differential diagnosis in this patient included schizophrenia, depression, bipolar disorder, psychotic disorders secondary to general medical conditions and substance induced psychosis. A thorough medical investigation excluded organic causes including infectious aetiology, vitamin B12 deficiency, multiple sclerosis, cerebrovascular disease, syphilis and delirium.

OUTCOME AND FOLLOW-UP

With these treatments his sleep improved, he appeared calmer and developed partial insight. His delusional belief system persisted but he started questioning it and no longer did anything harmful to his body. His mood was euthymic and denied any depressive symptoms. He was discharged after 8 days of hospitalization with recommendation for follow-up in dermatology and psychiatry clinics. He did not keep his follow-up appointment with psychiatry but did come to see dermatology. In his dermatology appointment his skin was improving and there was no further damage to his eyes.

DISCUSSION

In DSM-IV-TR, delusional parasitosis is classified among delusional disorders somatic type.⁸ It was first described in 1674 by Sir Thomas Browne who called it Morgellons disease.⁹ The term delusional parasitosis was introduced in English language literature in 1946 by Wilson and Miller after the publication of several case reports.¹⁰ Delusional parasitosis has been noted to be either primary in the absence of an underlying psychiatric condition or secondary when occurring in conjunction with another psychiatric condition such as schizophrenia, anxiety, depression, obsessive-compulsive disorder, post-traumatic stress disorder or somatoform disorder. Approximately 25 percent cases of delusional parasitosis co-occur with an underlying organic disease such as multiple sclerosis, vitamin B12 deficiency and hepatitis.²

Recently Morgellons disease has gained publicity through media and internet. This phenomenon is controversial and consist of poorly defined somatic symptoms. Patients with this condition believe that they have skin lesions consisting of fibers. There is no clinical evidence to support infectious aetiology of this condition and the skin biopsies have demonstrated non-specific findings. Patients with this condition often lack insight, hold their beliefs firmly and are resistant to psychiatric treatment.¹¹ Because of recent publicity of Morgellons disease, center for disease control (CDC) is currently investigating this condition. Many in the medical community hold the view that Morgellons disease is another term for delusional parasitosis and not a separate entity.¹² In 2009, CDC convened an external review panel of experts from various disciplines to investigate Morgellons disease. Currently CDC categorises this condition as unexplained dermatopathy and is planning to publish the results of this investigation in its weekly bulletin or in a peer review scientific journal.¹²

The diagnosis of delusional disorder occurs in the absence of an explanatory underlying medical condition or illicit drug use.⁸ Patients with this disorder maintain a firm belief that their body is infested by living organisms which move under their skin and for some patients bite them. In an attempt to rid themselves of these organisms, patients may self treat and cause damage to their skin. They may present evidence to physicians, in the form of small containers filled with supposed parasites. In literature this has been referred to as matchbox sign.² Schizophrenia, psychotic episodes, depression or mania and substance induced psychosis are included in the differential diagnosis. A thorough medical investigation to exclude organic causes including drug withdrawal, infectious aetiology, vitamin B12 deficiency, multiple sclerosis, cerebrovascular disease or syphilis is warranted during initial evaluation.¹³

Both somatic delusions and tactile hallucinations were noted in this case-report and the diagnosis of delusional disorder was made. Our patient displayed a strong delusional belief that insects were crawling on skin and eyes which was false as evidenced by negative evaluations by dermatology and ophthalmology. Initially his belief was firm, fixed and unshakable. One might differentiate this patient's delusional belief (abnormality of thought) from his tactile hallucination (an abnormality of perception). This distinction can be clinically difficult to separate but we were more inclined towards delusional disorder based upon our patient's description and interpretation of his symptoms. Often tactile hallucinations signify either organic cause (delirium) or illicit drug use (cocaine) which were excluded in this patient.

It is often difficult to treat this disorder and lengthy medical investigation by multiple clinicians especially dermatologists and infectious disease physicians and not by psychiatrists are common. Patients may be tried on multiple antiparasitic medications without benefit. These patients often resist the idea of psychiatric referral and evaluation and frequently find a new provider who is willing to acknowledge or consider their belief system. An estimated 8 to 25 percent of these patients have close family members who share their belief that patient is infested with parasites called folie a deux.²

Antipsychotics are the mainstay of the pharmacological treatment. Pimozide, an antipsychotic which has some similarity to haloperidol in its chemical structure, has been the most extensively studied medication for this disorder. However, its side effects (parkinsonism, tardive dyskinesia, neuroleptic malignant syndrome, prolongation of QT interval on ECG) and the availability of newer atypical antipsychotics limit its usefulness. It is approved in the US for the treatment of Tourette's syndrome and its use for delusional parasitosis is off label.^{13 14} Lepping *et al* in 2007 published a first systematic review of literature on the effectiveness of typical and atypical antipsychotics for delusional parasitosis and concluded that there were 16 trials, none randomised and various case series and case reports. This limited data did not reveal significant difference in the efficacy and remission rates between typical and atypical antipsychotics in treatment of primary delusional parasitosis.¹⁴ Freudenmann and Lepping published first retrospective case-based study to evaluate outcome and efficacy of second generation antipsychotics

in primary and secondary delusional parasitosis. They concluded that time of maximum effect was shorter in secondary delusional parasitosis (3 weeks) compared to primary delusional parasitosis (10 weeks). Secondary delusional parasitosis was more likely respond to second generation antipsychotics than to primary cases (78% vs 59%). Among the antipsychotics, risperidone and olanzapine were most frequently used and resulted in full (69%) or partial (72%) remission.¹⁵ Recently Kenchaiah, Kumar and Tharyan published a retrospective review of 20 cases and concluded that evidence for use of pimozide as first line is limited to one small non-randomised placebo controlled trial and case series and delusional parasitosis responds to most antipsychotics.¹⁶

In addition to our case, we found several other case reports successfully treated with olanzapine including three cases reported by Meehan,¹⁷ and individual cases by Freudenmann *et al*,¹⁸ Bosmans and Verbanck.¹⁹ Other successful treatments include paliperidone,²⁰ aripiprazole²¹ and risperidone.²²

It is important to advise patients about the metabolic side effects, including weight gain, hyperlipidemia, sedation and insulin resistance with these medications and to monitor fasting blood glucose and baseline lipid profile.

Learning points

- ▶ In delusional disorders the major obstacle is to convince patients to seek psychiatric help.
- ▶ An organic causes should be ruled out for tactile hallucinations.
- ▶ These patients may have close family members who share their delusions.
- ▶ Development of a strong therapeutic relationship with the patient by the use of a non-confrontational realistic approach which acknowledge that symptoms are real, if not the infestation.
- ▶ Family Physicians and dermatologists may be the only providers these patients are willing to see.
- ▶ These practitioners may need to be familiar with appropriate psychotropic use and supportive psychotherapy skills to help this rare but reasonably well responsive patient for whom treatment may be of tremendous benefit.

Competing interests None.

Patient consent Not obtained.

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