Delusional Infestation managed in a combined Tropical Medicine and Psychiatry clinic

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Introduction

Delusional infestation is a well-recognised delusional disorder presenting as the persisting belief of the presence of parasitic or other infestations. Combined clinics have been run by dermatology and psychiatry in a small number of centres. Here we report the first few years of a unique combined clinic run with experts in infectious diseases/tropical medicine and psychiatric management of delusional infestation.

Methods

Review of all patients seen at the combined assessment clinics run at LSTM between 19 December 2011 and 31 October 2016. Data were collected prospectively as part of clinical assessment. Descriptive analysis of these data was performed to examine clinical features at assessment, investigations performed and treatment outcomes.

Results

Seventy-five patients were assessed. 52 (69%) were given the formal diagnosis of delusional infestation. 64% of individuals gave a history of travel but no significant tropical or infectious diagnosis was made. 61% of those who returned for follow-up reported improvement in symptoms. The CGI-S improvement was 1.36 for the DI patients, but only 0.63 for non-DI patients. DI patients were more impaired at baseline (5.0 vs 4.1). Health anxiety was the commonest diagnosis seen in those not considered to have DI.

Conclusion

Combined clinics to treat DI are effective in improving patient outcome. A significant minority of patients referred do not have a diagnosis of DI.

Keywords: Combined clinics, Delusional infestation, infectious diseases, tropical medicine, psychiatry

Introduction

Delusional infestation (DI, previously known as delusional parasitosis or Ekbom's syndrome) usually causes considerable difficultly for patients and has been recognised by clinicians for over 100 years (1-3). The condition presents as a fixed belief that the patient's skin, body or environment is infested by living or inanimate pathogens with no medical evidence for this. Primary cases of DI meet the criteria for persistent delusional disorder within ICD-10 (F22.0). Secondary cases related to substance misuse, prescribed drugs (such as dopaminergic agents) and medical and psychiatric diagnosis are also well recognised (3). Research into the underlying mechanism for DI suggest dysfunction within the regions of the brain responsible for judgement, sensation and learning, supporting the hypothesis that these delusional beliefs are due to misinterpretations of peripheral signals that result in favouring of an unlikely explanation of these sensations (errors of probabilistic reasoning) (4). Antipsychotic medication has been shown to improve symptoms in DI (5-7), however, engaging patients can be challenging, resulting in high rates of non-adherence to recommended medication (8, 9). Combined clinical services with dermatology or other medical services have been proposed as the optimal way to manage patients with DI, allowing them to engage with psychiatric services (10). There is increasing evidence that this approach is likely to be cost effective in reducing the overall number of investigations and repeat referrals which can occur in DI (11).

Much less common is a combined clinical service run in conjunction with infectious disease or tropical medicine specialists. Currently, we are only aware of such clinics in Liverpool and Berlin. However, the Berlin clinic only has access to psychiatric expertise, rather than being a truly jointly run clinic. UK residents are travelling abroad more frequently (12) with increased exposure risks for unusual infections and infestations. Travel has previously been described as a possible trigger for DI (13, 14), as well as reports of cultural variation in the presentation of DI in different parts of the globe (15-18). There have also been reports of DI where an individual could have been exposed to parasitic infection such as entomologists (Stanhope, Carver et al. 2015) or animal owners presenting to vets with alleged symptoms of infestation in their pets. (19-21). This paper discusses the experience of a combined psychiatry and tropical medicine clinic for DI, prevalence of illnesses in the patients assessed, outcomes, the approach used in the clinic, and a review of clinical database of cases.

Methods

A combined psychiatry and tropical medicine clinic has been running twice per month since 2011 at the Liverpool School of Tropical Medicine, UK. Referrals are accepted from within the Merseyside

and North Wales regions as well of out of area referrals. Referrals were accepted from primary and secondary care and were screened by consultants from both disciplines for suitability (Figure 1). The aim of this screening process is to identify those patients felt most likely to have DI rather than requiring assessment at the general tropical medicine clinic. Criteria identified in referral letters which led to prioritisation for assessment in the DI clinic include a history suggestive of DI (a persistent, strong belief of being infested in combination with unusual constellations of symptoms), a previous diagnosis of DI made by a colleague, and the duration and degree of distress associated with the symptoms. . Prior to attending the clinic, patients are asked to have basic routine blood tests (full blood count, urea and electrolytes, liver function test) and an ECG. This is to help with the exclusion of real infestations (high eosinophil count) and provides a baseline QTc interval in case antipsychotics are suggested. Each clinic session is booked for 1 hour, and an introduction of all team members and the aims of the clinic is performed at the beginning of each clinic. The psychiatrist is introduced as an integral part of the clinic, as symptoms such as those experienced by the patient often cause significant distress and can be associated with psychiatric morbidity. The initial clinic appointment is led by the Tropical Medicine Consultant taking a classical medical history and examination. Important parts of the history include any travel history or other activities which could expose an individual to unusual infections or infestations. Examination includes a close examination of areas of concern for the patient, perceived areas of skin change or infestation. Investigations are limited only to those, which the tropical medicine consultant feels are appropriate given the history and examination. Any specimens brought by the patient are reviewed in the diagnostic parasitology laboratory. It is pointed out that this is a specialist laboratory able to identify most known parasites by microscopy. Patients are encouraged to provide specimens for examination because it helps with any later explanations of the assessment. Where appropriate, a diagnosis of primary DI (persistent delusional disorder within ICD-10; F22.0), or of DI in the context of another illness (secondary DI) (10) is made. In accordance with ICD-10 F22.0, a diagnosis of primary DI is made in the presence of a persistent stable delusional belief of being infested as the main clinical feature in the absence of schizophrenic symptoms, marked blunted affect or evidence of organic brain disease. In the presence of other organic, psychiatric or neurological disorders, a diagnosis of secondary DI is made. Alternative diagnoses were made according to standard diagnostic criteria, of note the diagnosis of 'Health Anxiety' was made with reference to ICD-10 F45.2 Hypochondriacal disorder.

At this stage the Tropical Medicine consultant explains to the patient whether we feel that the presentation is likely to be due to infestation or not, and the rationale behind this decision. It is pointed out that the patient's symptoms are believed and that the clinicians' intention is to identify

the cause of those symptoms with an open mind. If DI is felt to be a likely diagnosis, the clinicians explain three possible options with the aim of introducing the possibility of a non-parasitic explanation of the symptoms to the patient. The three explanations include a hitherto unknown infestation, an infestation which has subsided but left the patient with residual symptoms, or an illness of the brain. If the feeling of the team is that this is likely to be DI then the Psychiatrist present may take over leading the consultation at this stage. We offer the explanation that sensations can be abnormally interpreted by the brain; and the benefit of anti-psychotic medication in ameliorating these are emphasised. We do not explicitly explain the diagnosis as a delusional illness at an early stage unless the patient specifically asks. Follow-up sessions are structured along similar lines with Tropical Medicine consultant's emphasising the lack of physical evidence of infestation and risk factors whereas the psychiatrist emphases the problems with errors of probabilistic reasoning, encouraging adherence to medication.

Patients often respond with a high degree of scepticism to any explanation of symptoms that does not fit their own (of being infested). However, by building up rapport and trust it is often possible to persuade patients to try medication against their "better judgment". In other words, they may try the medication because they are persuaded by the possibility of an alternative explanation, because they trust the doctors to have their best interest at heart, or because they feel they have nothing to lose by trying. Occasionally, they become dismissive and it requires skill to keep them on board, which is possible in most cases. The degree to which patients are able to consider an alternative explanation usually corresponds with the degree of their delusional intensity.

A clinical database was collected prospectively focusing on initial assessment, duration and severity of symptoms, clinical diagnosis made during assessment and follow-up appointments. Additional information on clinical presentation and previous investigations was collected from clinical notes and clinic letters retrospectively, and added to the database. Descriptive statistics were used. The nature of the clinic meant that formalised statistical analysis was not carried out. Data were presented according to final clinical diagnosis and categorised as i) all DI (primary and secondary combined) and ii) non-DI patients. Outcome data are collected with Clinical Global Impressions Scale (CGI-S) (22), which are routinely generated for most patients. CGI-S scores are clinician rated, well validated, have high inter-rated reliability and take a holistic approach to the patient's overall level of impairment. A score of 1 means "no illness" whilst the highest score of 7 means "one of the worst cases seen".

Results

Seventy-five patients attended for assessment between 19 December 2011 and 31 October 2016 (Table 1). Approximately two thirds of clinic attendees were diagnosed with DI (n=52/75), two of whom had a shared delusional belief. This shows a reasonably successful screening process. No patient objected to the presence of the psychiatrist. Five patients had secondary DI, with illicit drug use (cannabis, amphetamines and cocaine), schizoaffective disorder, depression, and dopaminergic Parkinson's drugs being the causes. Health anxiety was the commonest diagnosis seen in those not considered to have DI (n=8/23). All patients with health anxiety fulfilled general ICD-10 criteria for F45.2 (hypochondriacal disorder, sometimes known as illness anxiety disorder), but some focussed their anxieties on overvalued ideas about infestations. Other causes included: Irritable Bowel Syndrome (2), Depression (2), no illness identified (2), Anxiety (2), Depression and anxiety (1), Chronic Fatigue Syndrome (1), gut motility disorder (1), impetigo (1), idiopathic pruritus ani (1), diagnostic uncertainty (2). Psychiatric diagnoses were made using ICD-10 criteria; some patients came with diagnoses made by external clinicians, which we confirmed. Reported symptoms were very similar between DI and non-DI patients, abnormal sensation were common in non-DI patients but almost universally seen in DI (Table 2). Most patients had been investigated previously and had often seen multiple specialties as well as attending private clinics and private (unregulated) laboratories. Previous treatment for parasitic infestation was common, often initially by GPs and then procured from alternative sources by patients. Multiple courses of anti-helmenthic or anti-parasitic agents had often been taken. Symptoms had often been present for many years (up to 20 years in some cases). Patients commonly reported medical co-morbidities but this was seen more frequently in those not diagnosed with DI. A previous psychiatric diagnosis was present in around 40% of patients of both groups.

Patients were investigated in accordance with the agreed approach in clinic. Only tests, which the Tropical Medicine Physician felt were appropriate were done. However, all specimens brought to clinic were reviewed. The specimen sign at the first clinic appointment was commoner in those with DI (39%, 20/52 vs 30% 7/23), but when requested to produce a specimen after clinic review this increased in both groups (58% 30/52 vs 48% 11/23). The majority of specimens demonstrated normal epithelial cells, skin debris and vegetable matter. Four samples demonstrated insects including one head louse, one cat flea, one non-biting midge and a carpet beetle. Stool microscopy was performed on approximately 43% of both DI and non-DI patients (22/52 vs 10/23). One patient had *Entomoeba Histolytica/Coli* and *Blastocystis* identified in their stool but it was not felt that this was the cause of their symptoms (DI secondary to cannabis use, good response to antipsychotics). Eosinophilia was seen in around 25% of all patients (13/52 vs 6/23). This was generally low level and not confirmed on repeat testing. Serology was performed more commonly in patients with DI (46%

24/52 vs 26% 6/23), including any relevant non-infectious tests such as autoantibody screen. No tropical infections or autoimmune conditions were identified through this screening.

Patient outcome was variable. Loss to follow-up and erratic-attendance at follow-up clinic appointments was common (Table 3). A few patients requested discharge from clinic as they did not agree with the diagnosis of DI or the treatment approach. 77% of patients diagnosed with DI were offered antipsychotics at some time during their clinic attendance, but only 28% of these reported good adherence to treatment. Interestingly, patients who reported good or partial adherence to antipsychotics had a longer average duration of symptoms (67.8 (sd 72) and 82.6 (sd 83) months respectively) than those with poor adherence (23.8 (sd 18.1) months). 57% of those who returned for follow-up appointments reported an improvement in their symptoms.

Discussion

Joint or combined clinics between Liaison Psychiatry and either dermatology or tropical medicine have been proposed as a way forward in the treatment of DI, although few such clinics exist. The overall success rate in our combined clinic was good with 61% of those who were not lost to follow up reporting improvement. Unsurprisingly, those with good adherence improved much more (almost 2 CGI-S scores reduction) than those with poor adherence who showed little improvement. 31% of all patients seen were not diagnosed with DI, which seems acceptable for a clinic that sees patients with a complex infestation symptom history. Equally, it suggests that the clinicians keep an open mind with regards to the diagnosis, which is an important aspect of the clinic's approach. No infestations were identified, suggesting an excellent screening process with regard to identifying patients without actual current infestations. 40% of our DI patients had a past psychiatric history, which is similar to research done at a psycho-dermatology clinic in London where DI patients are seen (23).

With regards to the alleged pathogens and symptoms we had a high number of alleged worms compared to previous studies (31% in our sample, compared to 6% in a previous sample) (24). In a previous study (25) it was the combined clinic in Berlin, also run by a School of Tropical Medicine, which had most alleged worms in their sample. In comparison, all combined clinics run with dermatologists had few patients complaining of alleged worms. This indicates there are differences amongst combined clinics with clinics run by dermatologists where skin complaints rather than systemic infestations seem to be the main presenting problem, having a different focus of patient complaints. These differences are confirmed by our finding that our patients almost all complain about abnormal sensations, whereas few have primary skin complaints. We also know from further analysis of our group's data that despite this difference, the baseline CGI-S scores appear to be very

similar in all specialist clinic settings (26). This shows that the overall impairment of patients because of the illness is similar in all settings despite a different patient mix. It is unclear at this point whether specific presentations of DI may be more difficult to treat than others. Anecdotally, we believe that patients who present with systemic rather than defined skin symptoms may be more difficult to treat, because it is more difficult to discuss diagnosis them with unspecific terms such as "unexplained dermopathy", and it is rarely possible to give them dermatological treatment to facilitate engagement in the treatment process.

In our patients, those with a diagnosis of DI were significantly more impaired at baseline with a whole CGI-S score difference compared to those without a DI diagnosis. Otherwise, the two samples were remarkably similar. The only other significant difference was the lack of illicit drug use in the non-DI group compared to the DI group. These findings do not suggest any specific indicators that can differentiate DI and non-DI patient *a priori* to aid the screening process.

Recent research has shown that the longer DI remains untreated, the worse the prognosis becomes (26), increasing pressure to intervene early with DI patients. This increases the need for specialist settings, as treatment rejection is high in routine primary care or dermatology settings (3). It also highlights the need for early referral and treatment to optimise outcome. In combined clinics with dermatology and psychiatry the cost effectiveness of such clinics has already been shown, compared to standard treatment per year prior to referral to the combined clinic. Altaf et al showed a 42% reduction in overall treatment costs, indicating that psychodermatology clinics are a cost-effective service for managing patients with DI (11). We have not formally evaluated the cost-effectiveness of our clinic but it is likely that any effective combined clinic will reduce costs.

The disadvantage of tertiary settings is that is may be difficult to link in with local psychiatric or primary care services, or, if the patient does not improve, there may be no back-up system or associated community service that can take over the engagement of the patient. Long-term aftercare therefore remains a problem when patients refuse the engage with local services. It begs the question whether Tropical Medicine/Infectious Diseases services along with Dermatology should be up-skilled to deal with DI patients more effectively without the need for rare tertiary services to widen the options for patients and improve referral to treatment times. Given the complexity of some of the psychiatric aspects of the illness (risk, antipsychotic treatment, possible use of mental health legislation) close links with local psychiatric services should promote the safety and feasibility of such an up-skilling process.

Conclusion

Combined clinics for DI between Tropical Medicine/Infectious Diseases and Psychiatry services are effective in delivering improved outcomes. The patients' symptom focus differs somewhat from those presenting to Dermatology, presenting additional challenges. Early treatment remains important. The lack of combined clinics makes the up-skilling of infectious disease/tropical medicine clinicians in DI desirable.

Authors Statement

Authors' Contributions: PW and SBS conceived the study and carried out clinical assessments. RB extracted and cleaned data. ST analysed data. ST and PL wrote first draft. All authors reviewed final draft. SBS and PL are guarantors for the paper.

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Conflicts of interest: None declared

Ethical approval: In line with UK Health Regulatory Authority guidance this work was conducted as a service evaluation rather than research and no specific ethics review was therefore required. Only data routinely collected for clinical assessment was included and patients were not contacted for additional information.

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Figure caption

Figure 1 Flow chart of study screening process and clinical approach. DI = Delusional Infestation.

Table

Table 1 Baseline assessment

	DI (n=52)	Non-DI (n=23)
Age (Med (IQR))	56.7	49.7
Sex (Female, %)	35 (67%)	20 (87%)
Referral Source (%)		
GP	38 (73%)	18 (78%)
ID/Trop Med	3 (6%)	0
Dermatology	7 (14%)	2 (9%)
Psychiatry	1 (2%)	0
Other	3 (6%)	2 (9%)
Duration of Symptoms (months,sd)	56 (sd 62)	66 (sd 73)
Previous Investigations (Yes, %)	42 (82%)	20 (87%)
Tropical travel history (Yes, %)	36 (69%)	12 (57%)
Any previous treatment for parasitic infestation (%)	46 (89%)	15 (68%)
Accompanied at clinic (%)	19 (37%)	4 (20%)
Medical PMH (%)	46 (89%)	22 (96%)
Psychiatric PMH (%)	21 (40%)	9 (39%)
Illicit drug use reported (%)	5 (10%)	0
Drug of Abuse Screen Positive	6 (12%)	3 (13%)
CGI-S	5.02 (sd 0.71)	4.09 (sd 1.06)
Visual impairment (%)	10 (19%)	2 (9%)

Key: sd = standard deviation, PMH = Past Medical History, CGI = Clinical Global Impression Score

Table 2 Patient Reported Symptoms*

	DI (n=52)	Non-DI (n=23)
Skin Change	57% (27/47)	55% (12/22)
Abnormal sensation	98% (49/50)	85% (17/20)
'Worms' in stool	31% (15/49)	38% (8/21)
Pruritis Ani	37% (10/27)	33% (5/15)
Poor Sleep	81% (13/16)	100% (6/6)

*Not all patients had this information recorded. Percentage is for the patients with available information

Table 3 Outcome

	DI (n=52)	Non-DI (n=23)
Median number of follow-up appointments (Inter Quartile Range)	2 (1-3)	2 (1-2)
Lost to follow-up/ missed follow-up appointments	22/52 (42%)	4/23 (17%)
Offered antipsychotics at DI Clinic	40/52 (77%)	0/23
Reported adherence to antipsychotics		
Good	11/40 (28%)	
Partial	8/40 (20%)	
Poor	10/40 (25%)	
Refused Treatment	4/40 (10%)	
Unknown/Lost to follow up	7/40 (17%)	
Reported improvement in symptoms	22/36 (61%)	7/11 (63%)
CGI-Schange		
Overall	-1.36 (sd 1.71)	-0.625 (sd 1.2)
Reported treatment adherence		
Good	-1.75 (sd 1.58)	
Partial	-1.63 (sd 1.76)	
Poor	-0.29 (sd 1.3)	

Key: sd = standard deviation, CGI-S = Clinical Global Impression Score

Figure

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