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Delusional Infestation

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The patient who develops the delusional conviction that he/she is infested with small organisms, such as mites or insects, has been recognised in the medical literature for over a century. A wide range of descriptive terms – 'dermatophobia' 'acarophobia', 'parasitophobia' and 'entomophobia' (Table 1) have been applied to this symptom. Such terminology is now inappropriate but it has continued to be used until relatively recently: Pope (1970), for example, defined parasitophobia as "a delusional state in which there are sensations of infestation of the skin by insects".

At the end of the 19th century when these terms were coined, 'phobia' was not used in the sense of neurosis (Berrios, 1982), although it later came to mean a special form of fear which is out of proportion with the demands of a situation, cannot be explained or reasoned away, is beyond voluntary control and leads to avoidance of the feared situation (Marks, 1970). The early authors of delusional infestation did not think that neurotic symptoms were central to this syndrome. They have, therefore, been misrepresented by subsequent investigators (Wilson & Miller, 1946; Hopkinson, 1970) who thought that 'phobia' was used in the modern sense. In fact, the early workers emphasised that these patients had psychotic symptoms with both delusions and hallucinations and even had an absence of anxiety. Over 50 years ago, Ekbom (1938) in his seminal paper described eight patients with delusional infestation and used the term *Dermatozoenwahn* or delusion of animal life in the skin. Nowadays the preferred terminology includes delusional infestation, delusions of infestation and delusions of parasitosis.

Table 1
Early descriptive terms used for delusional infestation

Term	Author	Year
Acarophobia	Thirbierge	1894
	Myerson	1921
	Giacardy	1923
	Klauder	1936
Dermatophobia	Grøn	1925
	Eller	1929
Parasitophobia	Perrin	1896
	Hermans	1963
	Pope	1970

Epidemiology

Delusional infestation has mainly been described in sporadic case reports. Wilson & Miller (1946) tabulated the 51 cases of the syndrome then published in the literature and described six original cases. More recently, Mester (1975) has estimated that about 300 cases of delusional infestation have been reported. One of the largest series was reported by an entomologist who saw 100 cases in five years (Schrut & Waldron, 1963), but it is a pity they were not systematically described.

Referrals to dermatologists have been the best group studied. In one decade, 25 cases were seen at St John's Hospital for Diseases of the Skin, London (Tullett, 1965). Two valuable and independent surveys of dermatologists have been performed. Reilly & Batchelor (1986) sent a questionnaire to 386 dermatologists in the UK and Ireland asking them to report the number of cases of delusional infestation they had seen in the previous five years. Two hundred and fifteen dermatologists (56%) replied and of these, 144 had seen at least one patient with this complaint within the time period. A total of 365 patients with delusional infestation were identified. In a similar study, Lyell (1983) in his Michelson lecture described the results of his postal survey of 374 British dermatologists. Two hundred and sixteen (59%) replied, giving information on 282 patients. Both surveys found a female preponderance of about 2 to 1. This sex ratio increased with age. Most dermatologists (89%) have seen at least one case during their clinical career (Lyell, 1983). Some of them had a particular interest in the syndrome and one dermatologist in Lyell's series had seen 30 cases. The shortcomings of these studies were that they were retrospective and many requested data were incomplete. Some of the psychiatric classifications offered by the dermatologists were idiosyncratic and did not always conform to the International Classification of Diseases or other accepted classifications.

Although it is believed that delusional infestation is more common with advancing age, there have been few studies of specific elderly populations. In a study of referrals to a district psychogeriatric unit serving a catchment population of 28 000 elderly, one group reported seven (age range 69 to 76) patients with delusional infestation over a three-year period (Morris & Jolley, 1987; Morris *et al*, 1988).

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Clinical presentation

Some patients have a history of genuine infestation but this is uncommon; it occurred in only six out of 282 patients in Lyell's series. Similarly, a history of arachnophobia appears to be unusual, although three out of our seven elderly patients with delusional infestation had a morbid fear of 'creepy-crawlies'. Patients tend to have a long history before clinical consultation. Indeed, according to Ladee (1966) many sufferers consult entomologists, parasitologists and hygienists before seeking medical referral. Some consult the British Museum in London asking for advice on which kind of infestation they supposedly have. Musalek & Kutzer (1989) compared and contrasted features of patients referred to the Institute of Parasitology at the University of Vienna and to the University Department of Dermatology. The sex ratio was similar but they differed in age, social background and type of alleged parasites.

Even when a medical opinion is sought, it is usually a dermatologist who is consulted; psychiatric referral is often refused. Persistent patients consult doctor after doctor. The variety of agencies consulted is well illustrated by McAndrews *et al* (1956) who reported a typical self-referral to their University Department of Tropical Medicine at New Orleans:

> "Gentlemen:
> Some eight months ago I or my wife contracted what has been diagnosed by three doctors, one a dermatologist, as Central American sand fleas, the pregnant female, in other words–if you can make this out from my spelling – *dermatialathasis nautileuas*. We have been to our home doctor, County Health officers, two dermatologists, state health officer and upon his request I went to the US Public Health Service Hospital at Lexington, only to be told very harshly that they only treated narcotic addicts and not nuts. . ."

The alleged organisms are numerous, although 'insects' such as spiders, dragonflies and fleas are among the most common. Some patients are imprecise saying for example that they are infested with 'black bugs' (Aleshire, 1954) or 'the things' (MacNamara, 1928), whereas others as in the case quoted above give detailed descriptions and supposed classifications of the offending agents. Munro (1978*a*) and McLaughlin & Sims (1984) have described the rare delusions of worm infestation. Indeed one of Ekbom's original series was a 64-year-old single chambermaid who complained of infestation by worms (which had 'escaped from a coffin'). Patients may bring specimens of the alleged parasites to the clinician; a *Lancet* editorial (1983) perceptively referred to this phenomenon as 'the matchbox sign'. A fear of contaminating others is not uncommon. This was recognised in the early literature and Myerson (1921) provided an example: "After a short time, everybody gets uneasy, especially those nearest to him, and this uneasiness is succeeded by wriggling, scratching and striking themselves. This is caused by the bugs which jump from him to the others and he feels that some people suspect him as the source of the bugs". There was a grandiose quality in the complaint of another patient who locked herself indoors, cancelled her home help and believed that she would otherwise contaminate the whole city of Manchester (Morris *et al*, 1988). Another patient in our Manchester series wore three headscarves in an attempt to confine the 'lice'.

Many patients engage in purification rituals. Edwards (1977) described a patient who bathed in petrol every day, and a patient of Bleumel (1938) soaked her head in kerosene. Another patient shaved his eyebrows and pubic hair so that his disinfectants might be more effective (Morris *et al*, 1988).

Associated psychiatric syndromes have been described, especially induced delusional disorder (MacNamara, 1928; Partridge, 1950; Schrut & Waldron, 1963; Macaskill, 1987). Mester (1975) estimated that 53 (18%) out of 295 patients with delusional infestation were induced cases. McLaughlin & Sims (1984) were the first to describe the coexistence of the Capgras syndrome and delusional infestation.

Aetiology

Delusional infestation occurs in a wide variety of illnesses, both physical and psychiatric. Physical conditions have included diabetes mellitus (Busch, 1960), hypothyroidism (Helmchen, 1961) and mediastinal lymphoma (Berrios, 1985). The psychiatric conditions associated with delusional infestation may be roughly divided into those with organic brain syndromes, schizophrenia (Cornbleet & Brown, 1948; Hopkinson, 1970; McLaughlin & Sims, 1984) and affective disorders (Schwarz, 1929; Harbauer, 1949; Hopkinson, 1970). All seven patients with delusional infestation referred to a psychogeriatric unit in South Manchester had an underlying depressive illness which required in-patient treatment. In two patients, the delusions of infestation developed in the context of guilt at not maintaining cleanliness in the home after the death of a spouse (Morris & Jolley, 1987). There is a group of patients who do not have an obvious underlying physical or psychiatric condition. This important group has been delineated by Munro (1978*b*, 1980), who uses the term monosymptomatic hypochondriacal psychosis (MHP) to describe these patients. MHP, which is regarded as a variant of

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Table 2
Neuropsychiatric causes of delusional infestation

Condition	Author(s)	Year	No. of patients
Alzheimer's disease	Renvoize	1987	1
Huntington's disease	Morris	1989	3
Cerebral tumour	Liebaldt & Klages	1961	1
	Miller-Kreuser	1962	1
	Ungvári & Petho	1980	1
Cerebral infarction	Valbuena Briones *et al*	1984	1
Syphilis	Ekbom	1938	3
	Hopkinson	1970	1
Cocaine psychosis	Tullett	1965	1
	Elpern	1988	2
Amphetamine psychosis	Kirk	1975	1

paranoia, may be defined as an illness characterised by a single hypochondriacal delusion that is sustained over a considerable period, sometimes for many years.

Table 2 summarises some of the brain syndromes that can cause delusions of infestation. Toxic psychoses, in particular cocaine psychosis ('cocaine bug'), are recognised causes of the syndrome. These causes are often associated with hallucinatory experiences. Among the chronic organic brain syndromes that cause delusional infestation are brain tumours, cerebral infarction and Alzheimer's disease. In South Wales, scrutiny of the case records of over 800 patients with Huntington's disease has yielded three cases with a history of classical delusional infestation (Morris, 1989).

The longstanding debate on the psychopathology of delusional infestation has been well discussed by Berrios (1985). There are two main schools of thought: the first is that the central symptom is a primary delusion. This view, which was supported by Ekbom (1938), Wilson & Miller (1946) and Fish (1974), is currently favoured. The second or 'sensorialist' view holds that the primary disorder is a hallucination, usually tactile and that the delusion of infestation is secondary (MacNamara, 1928; Bers & Conrad, 1954). Classical delusional infestation refers to the conviction of personal infestation; an interesting variant is when the patient believes that his environment (e.g. home) is infested rather than him or herself.

Treatment

Drug treatment of delusional infestation has tended to depend upon which specialist was consulted. Dermatologists have favoured antiseptics, benzyl benzoate, and a wide range of other topical dermatological treatments. Although a proportion of these agents were prescribed at the insistence of the patient, some dermatologists have recommended psychotropic drugs, in particular, pimozide. Psychiatrists have advocated drug treatment according to the underlying psychiatric diagnosis. Antipsychotic treatment is beneficial in those who have an underlying schizophrenia or mono-symptomatic hypochondriacal psychosis. Although pimozide has been most commonly advocated, many reports were anecdotal (Table 3). Only one double-blind study of pimozide in delusional infestation has been conducted (Hamann & Avnstorp, 1982) and, even here, only 11 patients were studied and no control drug was used. However, due to the rarity of the syndrome, it is difficult to perform adequate trials. There is no conclusive evidence that pimozide is superior to other antipsychotic medication. No randomised controlled trials on other drugs have been reported in the management of delusional infestation. In the elderly patient with delusional infestation, successful treatment of the mood disorder with tricyclic antidepressants (5 cases) or electroconvulsive therapy (2 cases) led to resolution of the psychotic symptoms (Morris & Jolley, 1987). In a case report, Aleshire (1954) found that antipellagrous therapy was successful, but this has

Table 3
Pharmacological treatment of delusional infestation

Drug	Author(s)	Year	No. of patients	Whether effective
Neuroleptics				
Haloperidol	Andrews *et al*	1986	3	Yes
	Hunt & Blackler	1987	1	Yes
Pimozide	Riding & Munro	1975	5	Yes
	Riding & Munro	1975	6	Yes, in 5
	Reilly	1976	1	Yes
	Munro	1977	4	Yes
	Reilly *et al*	1978	1	Yes
	Munro	1978*a*	2	Yes, in 1
	Munro	1978*b*	4	Yes
	Hamann & Avnstorp	1982	11	Yes
	Renvoize	1987	1	Yes
	Mitchell	1989	1	Yes
Trifluoperazine	Gould & Gragg	1976	1	Yes
Antidepressants				
Imipramine	Hopkinson	1970	1	Yes
Amitriptyline	Morris *et al*	1988	1	Yes
Phenelzine	Tullett	1965	1	No
Tranylcypramine	Roberts & Roberts	1977	1	Yes
Other drug treatments				
Antipellagrous treatment	Aleshire	1954	4	Yes
Cyanocobalamin/ Iron	Pope	1970	1	Yes

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not been replicated. Injections of cyanocobalamin and iron supplements were successful in treating delusional infestation in a patient with B12 deficiency (Pope, 1970).

Other physical treatments have also been used. Prefrontal leucotomy was beneficial in relieving the delusions within 24 hours in a 63-year-old patient who also had depression (Partridge, 1950). Electroconvulsive therapy may alleviate underlying depressive symptoms (Hopkinson, 1970). Treatment of physical disease may lead to improvement of the delusions. In one patient with cardiac arrhythmias, insertion of a pacemaker led to remission of psychotic symptoms (Hoffman, 1973).

Non-pharmacological treatment of delusional infestation has also been advocated (Torch & Bishop, 1981). Macaskill (1987) found that supportive psychotherapy was beneficial in the treatment of his 55-year-old patient who thought that miniscule insects lived under his skin. Although Macaskill reported that "this supportive type of approach was effective", the remission of psychotic symptoms may have been spontaneous. (Indeed, Wessely (1987) described spontaneous remission in his two cases.) In another case report, Mick *et al* (1987) described in detail three phases of psychological treatment which spanned ten months. Although the authors correctly emphasise the importance of obtaining the patient's co-operation, their three phases of therapy are artificial and are unlikely to succeed in most other patients.

The prognosis of delusional infestation will depend on the underlying aetiology, type of treatment and patient compliance but real infestation should first be excluded.

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