

## Delusional Parasitosis and the Matchbox Sign Revisited: The International Perspective

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The clinical presentation of delusional parasitosis, the fixed false belief of being infested by small creatures or inanimate particles, undergoes constant modulation by cultural phenomena as for the exact type of imaginary pathogens, but is otherwise very stable (1, 2). One of the key features is that patients bring specimens of alleged pathogens to the physician in order to prove that their skin, other parts of their body, or immediate environment are infested. This behaviour was first described by Perrin in 1896 (3). For this sign, an editorial in *The Lancet* in 1983 (4) proposed the name “the matchbox sign”, based on a report that many patients show their proofs of infestation carefully stored in matchboxes (5).

With the advent of the internet in the late 1990s, patients started to use the web to find and share theories about their infection (6). They discuss how to make specimens for lay-research and exchange digital “proofs”. Since 2002, patients with this self-diagnosed so-called “Morgellons disease” have contacted dermatologists and microbiologists. They show the usual symptom constellation of patients with delusional parasitosis, but they blame fibres or filaments instead of living creatures for their infestation.

The clinical spectrum of delusional parasitosis has been described by Lyell based on a survey among UK dermatologists in 1983 (5). However, this, and all other available surveys from the UK (7) and France (8) are old and were conducted only in single countries.

Little is therefore known what exactly patients nowadays believe themselves to be infested with, and what they present as proofs of infestation, from the larger, international perspective. We therefore carried out the first international survey amongst psycho-dermatology experts in order to address these issues.

### METHODS

A specially designed short survey with only 3 questions was distributed to attendants of an international congress on psycho-dermatology (the 13<sup>th</sup> Congress of the European Society of Dermatology and Psychiatry (ESDaP) held in Venice, Italy, in September 2009). This congress was selected because of its worldwide audience, consisting mainly of international experts in the field (dermatologists with additional training in psychotherapy, psychosomatics or psychiatry as well as psychiatrists specialized in disorders associated with skin problems; referred to as “psycho-dermatologists” below).

The questions addressed were related to:

- the number of patients seen personally since 1995 (this date was chosen in order to facilitate memory and to limit the survey to the period of mass internet use), and how many of them presented proofs of infestation;
- what the patients called the infesting species, whether the name “Morgellons” had been used, and what exactly the specimen provided was found to be;
- whether the proof was presented in a container.

All respondents were asked to state in which country they practice. Answers were anonymous.

In order to control selection biases a second survey was performed in unselected dermatologists in Australia (contacted via the Australasian College of Dermatologists). There were no significant differences between the groups, therefore data were subsequently pooled ( $n = 51$  psycho-dermatologists,  $n = 21$  Australasian dermatologists).

### RESULTS

The data basis consisted of 72 surveys reflecting the personal experience of doctors from 19 countries worldwide (in Europe, North America, the Middle-East, Russia, Japan, and Australia).

Respondents reported a median of 8 patients with delusional parasitosis seen personally since 1995, with a range of 1 to 100 (the latter were three centres in Russia, Germany and the UK). Summing up cases, the 72 respondents reported to have seen 1078 cases in total over a 15-year period.

A median of 4 patients had presented some sort of a proof of infestation to them (range 0 to 98), i.e. every second patient (median 63%, range 0 to 98).

The pathogens blamed by patients vary widely. One respondent reported to have heard “more than 20 definitions”. Among organic pathogens, “insects” and “animals” were most frequent, while “parasites” were comparatively rare. “Vermin”, “bacteria”, “viruses” and “worms” were also infrequent. Organic pathogens too rare to be listed in Table I (<3%) were “pest(s)”, “flies”, “fleas”, “faeces”, “germs”, unknown organisms”, and “creepy crawlies. As for non-organic pathogens, the experts reported “fibres”, “threads”, “filaments” and “strands” to be most frequently blamed by the patients. “Things (crawling/moving)” were mentioned sometimes, while “material”, “dots”, “bits”, “silicone”, “small bodies” or “chemicals” were reported to be rare (<6%). Only physicians from English- and German-speaking

Table I. Presentation of delusional infestation internationally. Survey of 1078 cases seen by 72 physicians from 19 countries (data given in declining order in % of respondents, multiple mentioning allowed)

Patients' description of the pathogens	Actual identity of "manifestations"	Container used for specimen
<i>Organic:</i>	Skin debris, dander 56%	Matchbox 39%
Insects 36%	Cloth, cotton, threads 31%	Plastic bag 38%
Animals 28%	Hair 28%	Adhesive tape 22%
Lice 14%	Photographs 14%	Paper, envelope 21%
Parasites 13%	Dirt, dust 10%	Glass, jar 19%
Bugs 13%	Crusts, dried blood 8%	Tissue paper 15%
Mites 11%	Flies, insect parts 4%	Plastic box/cup 13%
Worms 6%	Scales 3%	Specimen or urine pot 7%
Vermin 4%	Fibres 3%	Photographic container
Bacteria 4%	Unidentified material 3%	3%
Eggs 4%	Sand 1%	Microscope slide 3%
Virus 3%, etc.	Crumbs 1%	Petri glass 1%
<i>Non-organic:</i>	Water 1%	Pill bottle 1%
Fibres 15%	Wood 1%	In liquids 1%
(Some)thing(s) 7%		
Threads/filaments/ strands 6%, etc.		

countries had patients who believed in an infestation with "Morgellons" (USA, the UK, Australia, Austria, Switzerland and Germany).

The material presented as proof of infestation was reported to be mainly skin, skin debris, wounds, particles from cloth(es) such as fluff or threads, and hair. Photographs of imaginary pathogens were also quite frequent. Approximately one in four physicians (17 of 72) reported to have received digital proofs of infestation from some patients.

All but one of the 72 respondents (99%) reported that patients used a container to bring the specimen to them. Matchboxes and plastic bags were reported with equal frequency. Proofs stuck on adhesive tape, wrapped in tissue paper, or stored in small jars, were also common. One respondent noted that there were "not so many matchboxes".

## DISCUSSION

This is the first survey on the current clinical presentation of delusional parasitosis and the "matchbox sign" from an international perspective.

Respondents reported by far the largest number of cases seen personally in a survey ( $n = 1078$  vs. 282 (5) or 150 (8) in previous studies). For comparison, the most comprehensive retrospective case collection, not based on surveys, identified 1223 cases (9). The number of reporting physicians was still limited, however.

Our survey supports, with a median of 8 cases per physician seen personally since 1995, that delusional parasitosis is not a rare presentation in dermatology (10, 11), although the figures differ widely even among

experts. The study confirmed that the presentation of proofs is not obligatory, although characteristic. The rate of approximately 63% of patients presenting specimens, as reported by physicians, is higher than in other recent studies (e.g. 29% (12)), but in line with the reported range between 4% in India (13) and 92% in Argentina (14). A possible explanation is that the specimens are presented specifically to dermatologists (in our study), and not to psychiatrists (as in many other reports).

Compared with the 1980s (9, 15), currently the "most popular pathogens" are still "insects", but reported types of pathogens undergo marked changes. Inanimate material, fibres and so-called "Morgellons" become more frequent. "Parasites" have become "out-dated". This supports our recommendation to use the term "delusional infestation" rather than "delusional parasitosis" (1).

The name "infestation" does not emphasize the constantly changing pathogens and covers all present and future variations of the theme that are bound to arise (as with other all psychotic disorders and delusional themes). One of them is "Morgellons". It has become a fashionable self-diagnosis, propagated via the website of the idiosyncratic 'Morgellons Research Foundation'.

As for the "matchbox-sign", the use of a container for the proof seems obligatory except for when photographs, films or the like are presented. Matchboxes are still common, but receptacles such as plastic bags, glasses, paper, tissue wraps or adhesive tape prevail in number. The name "matchbox sign", therefore does not reflect what patients present as proofs and how they store them nowadays. This backs up the proposal to use the name "specimen sign" instead (1).

It highlights the fact that a proof is presented and covers different presentations, not just one type of container.

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