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Delusional Infestation, Psychiatric Comorbidity, and Dementia: A Review of 146 Swedish Patients

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Delusional infestation is a rare but severe dermatopsychiatric disorder. The diagnosis is associated with great suffering for the patients and their relatives, as well as substantial use of healthcare resources. It has been observed that patients with delusional infestation often have psychiatric comorbid conditions. Neurodegenerative diseases like dementia have been reported to be associated, but only in a few case reports. An observational, retrospective search was conducted in the institutional database and all medical records of patients with a diagnostic ICD code in the range F40.0–F40.9 (i.e., phobic anxiety disorders) were collected. A total of 146 patients met the criteria of delusional infestation; 42% were observed to have a former or current psychiatric comorbidity. Half the group, 50%, had more than 1 concomitant psychiatric diagnosis; depressive and/or anxiety disorder was the most common (62%). Furthermore, 9.6% developed dementia during the investigation period. Psychiatric comorbid conditions are common in this patient group. Such conditions should be diagnosed and treated. Further, delusional infestation could be an early sign of dementia and if signs of cognitive impairment are noted, further investigations and follow-up regarding dementia are recommended.

Key words: delusional infestation; dementia; delusional parasitosis; comorbidity.

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SIGNIFICANCE

Delusional infestation is a rare but severe disorder, referring to a false belief of infestation by insects or parasites. The personal and social impact of the disease, as well as consumption of healthcare resources, may be substantial. Our study confirmed the well-known correlation between delusional infestation and other psychiatric disorders. More surprising was the finding that nearly 10% of the patients with delusional infestation were later diagnosed with dementia, implying an association that should be taken into consideration.

Delusional infestation (DI), delusional parasitosis, or Ekbom syndrome is a rare but severe dermatopsychiatric disorder. It has been described since the 19th century and refers to a persisting false belief of infestation by either insects or parasites or by inanimate objects such as fibres, hairs, particles, or crystals. The latter is referred to as Morgellons disease, currently regarded as a subtype of DI (1, 2).

These patients comprise a heterogeneous group and there are important comorbidities to rule out. The classic form, primary DI, develops without any known aetiology and meets the criteria for a persistent delusional disorder (ICD-10). However, 60% have secondary forms that occur in the context of other medical conditions, such as substance misuse, psychiatric illnesses (delirium, dementia, depression, or schizophrenia), dopaminergic medications, stroke, or other conditions that affect the brain or cause pruritus (3). Conditions like these are important to consider and treat.

DI most often affects middle-aged Caucasian women (4). It is considered to be rare, but there is a lack of real epidemiological data. Recent figures suggest a prevalence of 83 cases per million, with an extrapolated annual incident rate of 17 new cases per 1 million inhabitants (5).

The personal and social impact of the disease may be substantial, as may the use of healthcare resources. Self-diagnosis and self-treatment may contribute to underdiagnosis of this disorder, as well as putting patients at risk of serious consequences (6).

The condition is difficult to treat, partly because of the great discrepancy between the patient's subjective perceptions and the objective findings. Patients may present with signs of skin excoriations or ulcers from perceived sensations of itching associated with parasitic invasion. They may bring items such as photographs and containers (e.g., plastic bags, matchboxes) with pieces of skin, hair, or clothing as "evidence" of their infection. They may seek help from dermatologists, primary care doctors, as well as doctors in infectious diseases and microbiology, but generally avoid psychiatrists (7). Of note is that the delusions relate only to the infestation; the patients are otherwise generally well-functioning (8).

The observation that patients with DI often have 1 or more psychiatric comorbid conditions has been reported by many authors, with the conclusion that DI should not be regarded as a stand-alone diagnosis (1, 3).

Several behavioural and psychiatric conditions are known to be associated with dementia, for example de-

pression, anxiety, and psychosis. DI has been reported in that context. Significant neuropsychiatric symptoms, such as delusions and hallucinations, are common during the later course of the illness, affecting patients with obvious cognitive impairment. However, DI appears to be quite rare as the first presenting symptom of dementia, with only a few reported cases (9).

The purpose of this study was to investigate the presence of any psychiatric comorbidity in patients with DI assessed at our specialized psychodermatological outpatient clinic at Karolinska University Hospital, Stockholm, Sweden. An additional objective was to determine the proportion of patients with DI who eventually developed dementia.

MATERIALS AND METHODS

Patients and methods

We conducted an observational, retrospective search of our institutional database and collected all medical records of patients who had received a diagnostic ICD code in the range F40.0–F40.9 (i.e., phobic anxiety disorders) seen at our outpatient clinic, at the Department of Dermatology, Karolinska University Hospital, between 1 January 2004, and 30 August 2021. At our clinic, we see patients who present with primarily dermatological conditions and most often have delusional infestation as an isolated delusion. Patients with more severe delusional disorders or psychosis are primarily treated by other medical or psychiatric disciplines and are not as often seen at our outpatient clinic. Given the fact that patients in Sweden have easy access to their own medical record, and the fragile relationship between patient and doctor in these cases, there is a culture at our clinic of not explicitly mentioning parasitophobia as a diagnosis, but instead using the (perhaps milder) paraphrase of phobic anxiety disorder of F40.0–F40.9. The criteria for diagnosis of DI were defined as the conviction of being infested by pathogens – animate (e.g., insects or worms) or inanimate (e.g., fibres) – with abnormal skin sensations but without reasonable evidence of any infestation. This is consistent with other authors' criteria (1, 10). Patients who met these criteria were identified by review of the records found in the original search. All patients who fulfilled the criteria for DI were included in the study group. Patient data including psychiatric comorbidity and long-term follow-up were collected from the medical records.

The study was approved by the ethical review authority, no. 2021-04286. All patient data were deidentified before statistical analysis.

Mini Mental State Examination

Some of the patients investigated in this study had undergone a Mini Mental State Examination test (MMSE) during the first visit to the dermatology department. This test is simple and gives a rough estimation of cognitive functions such as orientation, memory, language, and logic-spatial ability. The result is given in points, with 30 being the maximum score. The cut-off point established for the MMSE defines "normal" cognitive function and is usually set at 24 (11).

Statistics

Descriptive statistics of the studied patient variables, such as comorbidities, are presented as percentages of the total patient population.

RESULTS

The initial search identified a total of 223 patients. Of these, 146 patients met the criteria for DI and were included in the study group.

Sex and age

The cohort of 146 patients included 80% females and 20% males, resulting in a female-to-male ratio of 4:1. Mean age at presentation was 60.3 years (range: 28–89 years).

Psychiatric comorbidity

Forty-two percent were observed to have a former or current psychiatric comorbidity. Half the group, 50%, had more than 1 concomitant psychiatric diagnosis, depressive disorder being the most common, reported in 43%. Mixed depressive/anxiety disorder was noted in 19%. Substance use disorder was noted in 27%. Other reported diagnoses were neurodevelopmental disorders, such as attention-deficit/hyperactivity disorder (ADHD), attention-deficit disorder (ADD)/autism spectrum disorders, present in 21%, and psychotic disorders, present in 18%. Other reported diagnoses were bipolar disorders (8%) and personality disorders (5%).

Dementia

Fourteen (10%) patients in the study group were diagnosed with dementia during the investigation period: 12 females and 2 males. Mean age at presentation in this group was 79.2 years (range: 66–89 years). Fourteen per cent had a former or current history of psychiatric comorbidity (2 patients, both with former episodes of depression), whereas this was the case for 42% in the whole study group.

Time from onset of DI to dementia diagnosis

The mean time from the first visit to the dermatology department presenting with DI to dementia diagnosis was 67.9 months (approx. 5.6 years) with a range from 16 months (1 year and 4 months) to 132 months (11 years) (**Table I**).

Table I. Patient characteristics

Sex (F/M)	116/30
Age at presentation, years, mean (range)	60.3 (28–89)
Psychiatric comorbidity, *n* (%)	62 (42)
- Depression	27/62 (43)
- Depression and/or anxiety	12/62 (19)
- ADHD/ADD/autism spectrum	13/62 (21)
- Substance use disorder	17/62 (27)
- Psychotic disorder	11/62 (18)
- Bipolar disorder	5/62 (8)
- Personality disorder	3/62 (5)
Dementia development, *n* (%)	14 (10)
- Age at presentation (years), mean (range)	79.2 (66–89)
- Psychiatric comorbidity, *n* (%)	2 (14)
- Time from DI onset to dementia diagnosis (months), mean (range)	67.9 (16–132)

Mini Mental State Examination

In the group of patients later diagnosed with dementia, 4 underwent a cognitive impairment screening test, MMSE, during the first visit.

These 4 patients had a mean result of 24.5 points (range 22–26) but did not show any other obvious signs of cognitive impairment.

DISCUSSION

The coherence between psychiatric illness and the risk of developing dementia (12–15) is confirmed in this study with patients diagnosed with DI. However, in our patient group who eventually developed dementia, there was interestingly less history of other psychiatric diseases compared with the whole study group.

DI as a symptom of dementia has, to our knowledge, previously only been described anecdotally in case reports, mainly as one symptom among many others in late-stage disease, with significant cognitive decline. DI presenting as a presumed early sign of dementia – in this study occurring in nearly 10% of all patients – is an observation to take into consideration. In this study, these patients had no initial obvious signs of cognitive impairment, were older than the whole study group (mean age 79.2 years vs 60.3 years) when first presenting with DI symptoms, and less often had psychiatric comorbidities (14% vs 42%). Four of the patients underwent a cognitive screening test, with results suggesting signs of mild cognitive impairment based on the cut-off values presented by Folstein et al. (15). Over time, people with mild cognitive impairment may gradually experience progressive cognitive decline and changes in personality and behaviour. When the cognitive impairment interferes with daily function, individuals are diagnosed with dementia (16). It should be emphasized that the MMSE is not a diagnostic instrument, but a test that measures cognitive functions and changes in them. As a stand-alone single-administration test, MMSE has not been shown to be a reliable predictor of mild cognitive impairment evolving into dementia (11, 16). Nevertheless, using repeated measurements showing changes over time might be more valuable. Such use might add more information than baseline scores to determine progression from mild cognitive impairment to dementia (16). Dementia cannot be ruled out with high, "normal" scores. Abnormally low scores can be obtained for reasons other than cognitive impairment, for example language difficulties, impaired hearing, and impaired general condition. Still, test results are considered to provide guidance in the investigation of dementia or dementia-like conditions (16, 18). The MMSE test is a simple non-invasive test that could easily be incorporated into daily clinical practice.

This study also confirms the earlier suggested correlation between DI and psychiatric comorbidity (1, 5, 7). Our finding that 42% of all patients with DI had some form of concomitant psychiatric disorder supports previous reports – although the proportion is larger in some series. For example, Trabert (17) reported that 60% of patients had psychiatric comorbidity, Norman et al. (2) reported that 70% did so, and Hylwa et al. (1) found that 75% of all patients with DI had a comorbid psychiatric diagnosis. However, the authors all emphasized that the association between DI and psychiatric comorbidity does not imply causation, and that the correlation needs to be studied further. The true proportion of patients with psychiatric comorbidity in our study might have been higher and the discrepancy could be explained by the circumstances mentioned below. Other findings, such as mean age at presentation, were consistent with previous reports, as was the 4:1 predominance of females. Other studies have also shown a predominance of females ranging from 1.3:1 to 5.7:1 (18, 19).

The findings of this study should be interpreted with some caution. The main reason is limitations regarding access to the patients' entire medical records. Additionally, there could be a lack of consistent diagnostic classification, due to the fact that all patients in Sweden have direct access to their own medical record. In the case of DI, a clinician might choose a less precise diagnosis so as not to jeopardize the important therapeutic alliance with the patient. As a result, some patients with DI might have been overlooked in the initial data collection. However, the fact that major findings align with previous reports suggests that the results are valid.

Conclusion

We wish to express a gentle reminder to the clinician: when seeing a patient with DI, it is important to look for comorbid conditions and psychiatric illnesses that should be diagnosed and treated. A patient who presents with DI symptoms at an older age, with no former history of psychiatric comorbidity, should raise the clinician's awareness to look for signs of cognitive impairment, even if these are not evident. Nonetheless, the co-occurrence of DI symptoms and early signs of dementia observed in

this study does not establish a causal relationship, and the nature of this association warrants further investigation.

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