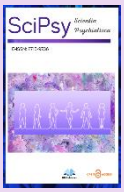

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Knowledges and Approaches to Delusional Parasitosis

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A B S T R A C T

Delusional parasitosis, also known as delusional infestation or Ekbom syndrome, is a rare psychotic disease defined by a persistent false belief in the presence of a parasitic infestation of the skin, notwithstanding the absence of medical evidence to support this assertion. There are three types of delusional parasitosis: primary, secondary, and organic. Close relatives might sometimes have the same illusions. This condition, termed as shared psychotic disorder–delusional parasitosis with folie a deux, has been found to occur in 5–15 percent of cases. Patients suffering with delusional parasitosis typically seek medical attention from a variety of specialists. Close interdisciplinary collaboration among doctors is frequently essential for reducing the time required to identify this disease. Initiation of psychopharmacological therapy is difficult because many patients refuse any psychiatric care due to the stigma associated with mental disease and their firm belief that they have a parasite infestation rather than a psychiatric ailment. Many patients experience isolation and the development of depressive symptoms as a result of a lack of understanding, which is why it is critical to win the confidence of such patients when caring for them.

1. Introduction

Delusional parasitosis (DP) is also known as parasitic delusion, parasitic infestation, and Ekbom's syndrome. It is a somatic kind of delusional disease, generally monosymptomatic, in which the patient believes he or she is infested with animal parasites (commonly insects or worms), despite the fact that there is no objective evidence to support this view. Patients with DP cannot be persuaded of the delusional nature of their misperception through reasoning or a lack of proof, and they look mentally well when dealing with matters other than their own "infestation". Many patients with DP are concerned about infecting others, particularly family members, and take different precautions. To get rid of the "parasite" or ease symptoms, a plethora of disinfectants, lotions, cleansers, and chemicals are employed extensively.[1]

Delusional parasitosis is classified into three types: primary, secondary (functional), and organic. Primary delusional parasitosis occurs when a patient believes he or she is infected with parasites but has no underlying mental or biological problems. Secondary (functional) delusional parasitosis associated with psychiatric conditions, such as schizophrenia and depression. Secondary (organic) delusional parasitosis caused by medical illness or recreational substance abuse.[2] Schizophrenia, sadness, dementia, anxiety, and phobia are some of the mental diseases that can accompany Ekbom syndrome, whereas the organic variety is associated with hypothyroidism, anemia, vitamin B12 insufficiency, hepatitis, diabetes, infections (e.g., HIV, syphilis), and cocaine addiction.[3] These symptoms are commonly misdiagnosed as tactile hallucinations or paresthesia. Excoriation,

subtle bruises, erosions, and wounds are common types of self-harm induced by parasite removal attempts. Additionally, excessive washing and the use of strong chemical or caustic chemicals to eliminate the imaginary parasite might cause skin injury. Patients may bring to the doctor's office a matchbox or another container into which they have deposited various dust particles, bits of skin, fibers, and so on to demonstrate the infestation. Samples of these materials are sent to several laboratories many times, and no indication of parasites is found. Close relatives may also have identical delusions; this condition is known as shared psychotic disorder–delusional parasitosis with “folie a deux”, and it is believed to occur in 5–15 percent of cases.[4]

Clinical manifestation

The onset is gradual, with symptoms lasting months to years before a diagnosis. Patients may experience tactile, visual, or auditory hallucinations associated to the infestation. Many patients may recall a previous incident, such as an insect bite, travel, sharing clothing, or contact with an infected individual. Following the inciting incident, the patient has increased awareness and misattributes previously neglected symptoms to the event. The illness has a three-year average lifespan, and symptoms increase as the disease progresses. Patients almost always try to remove their infestation using needles, tweezers, or other tools. Insecticides, bleach, or other cleaning agents may be utilized, and patients may receive several courses of antimicrobials from doctors after seeking therapy in multiple venues. According to one study, individuals with untreated delusional psikosis who presented to the emergency room had already visited an average of six physicians before to emergency assessment.[6]

The "specimen sign," formerly known as the "matchbox sign," refers to tiny bits of detritus gathered from the patient's body or residence that are believed to be evidence of their infestation. It is exhibited by 48 percent to 80 percent of people suffering from delusional psikosis. Specimens are often plant, cloth, or skin particles. In a 108-patient retrospective analysis, histopathological examination of materials from 80 patients revealed just one infesting organism: a pubic louse. Many patients exhibit a "digital specimen sign," which is the urge to show their physician hundreds of digital pictures of their skin and home surroundings to support and record their condition.[7]

Cutaneous manifestations of extermination or removal range from moderate skin irritation to a plethora of ulcerated sores. On locations within the patient's arms' reach, there are frequently prurigo nodules, lichenification, erosions, or scarring. Hair and nail exfoliation or clipping may be excessive. Most patients experience social isolation as a result of delusional psikosis. Patients avoid interacting with others because of fear of infecting others. It may have a detrimental impact on work and add to disability.[6,7] Shared delusion, also known as folie à deux, is a well-documented occurrence in which a patient's close contact becomes convinced of their hallucination. The individual who is afflicted is generally a female, and she is either a family member or a roommate. Separation from the inducer cures his or her illusion. Close touch can cause delusions in up to 25% of individuals with delusional psikosis. The assessment for shared delusion can save the contact from needless medical treatment.[7]

Diagnosis

A comprehensive diagnostic evaluation is critical in determining the best therapy for a disease with various etiologies. A true parasite infection should always be ruled out. A comprehensive dermatological skin examination, laboratory and microbiological testing, and mineral oil skin scraping may assist in the differential diagnosis.[8] Nonetheless, the absence of microscopic results may not be convincing if there is a history of exposure or characteristic skin lesions such as burrows. On the other hand, keep in mind that parasite skin illnesses can present in a variety of ways, and skin lesions can be unusual.[9] Bacterial superinfections, which are frequently produced by the

patient's self-manipulation, can also alter the clinical picture. After ruling out true parasitosis, the cause of concurrent pruritus, particularly pruritus linked to systemic illnesses, should be investigated. Furthermore, many medications might produce subjective symptoms such as pruritus or formication, therefore a thorough evaluation of all medications used by the patient is advised. Other diseases on the dermatopsychiatric spectrum must be considered as part of the differential diagnosis. Dermatillomania skin lesions may resemble those seen in delusional parasitosis, however individuals with dermatillomania do not have a persistent belief of an imagined skin infestation. Suspicion of delusional parasitosis necessitates the elimination of other mental diseases such as schizophrenia, psychotic depression, dementia, affective psychoses, or obsessive–compulsive disorder. When these illnesses are ruled out, a claimed parasite infestation and the existence of the "matchbox sign" may help in the diagnosis of delusional parasitosis.[9]

The precise kind of delusional parasitosis should next be identified, since this is critical in choosing a suitable therapy. Secondary (functional) and organic types of delusional parasitosis invariably necessitate treatment of the underlying disease, although the main form is often treated with antipsychotics.

Pathopysiology

Little is known about the neurological processes that may be involved for delusional parasitosis symptoms. Huber et al. postulated that impaired striatal dopamine transporter (DAT) function, which correlates to higher extracellular dopamine levels, might be a significant etiological component for both (primary and secondary) types of delusional parasitosis. DAT is a key regulator of dopamine reuptake in the brain, especially in the striatum. Many case reports were investigated to back up this assertion.[10] Medication that inhibits presynaptic dopamine reuptake at the dopamine transporter, such as cocaine, amphetamines, pemoline, and methylphenidate, has been shown to cause symptoms of delusional psikosis, such as formication. Furthermore, many disorders, including schizophrenia, depression, traumatic brain injury, alcoholism, Parkinson's and Huntington's diseases, human immunodeficiency virus infection, and iron deficiency, have been shown to involve impaired DAT functioning and may cause secondary or organic forms of delusional parasitosis. Antipsychotics appear to be able to alleviate the symptoms of delusional parasitosis in the majority of patients by lowering excessively high dopamine transmission.[11,12]

Contributing condition

A contributing and frequently curable underlying illness is detected in around 60% of individuals with delusional psikosis. Delusional psikosis can be induced only by psychiatric disorder or by a medical condition, medicine, or recreational substance. If the underlying disease is corrected, the illusion may be healed without the need of antipsychotic medications. Neurologic illness, hypothyroidism, B12 insufficiency, diabetes, anemia, substance misuse, postherpetic neuralgia, and infections have all been linked to delusional psikosis. A medication review is necessary. Corticosteroids, opiates, benzodiazepines, ketoconazole, fluoroquinolones, topiramate, and the dopaminergic medicines pramipexole and ropinirole have all been associated to delusional psikosis. Tactile hallucinations caused by neuropsychiatric illness or medicine may function as a second hit to initiate delusional psikosis. Recreational drugs are widely recognized for causing symptoms that resemble infestation. A positive urine toxicological screen is found in one out of every three patients with delusional psikosis. Patients frequently fail to reveal their use of recreational drugs; they may agree to urine testing but fail to submit a sample. Recreational drug use is more prevalent in younger patients, and total drug usage is higher in individuals with delusional psikosis than in the general population. The most frequent drugs connected with the syndrome include amphetamines, cocaine, opiates, benzodiazepines, and marijuana.[13] The diagnosis should be suspected only on the basis

of the history. It is proven when the doctor has ruled out delusion as a result of an underlying mental or physical condition. Reversible diseases should be addressed, and suspect medicines should be avoided if at all feasible. A complete blood count, full metabolic panel, erythrocyte sedimentation rate, C-reactive protein, thyroid stimulating hormone, and urine toxicology should be performed for every patient. Based on clinical suspicion, testing for human immunodeficiency virus, syphilis, viral hepatitis, B12 or folate deficiencies, and allergies may be beneficial. If a skin biopsy is required, it should only be done once.[14]

Treatment

The most successful option is low-dose antipsychotic treatment. It is the only therapy that has been shown to change the course of the underlying disease and produce a cure. Except in cases of medical contraindication, antipsychotic treatment should be the ultimate objective. Cognitive behavioral therapy may improve patient acceptability and efficacy of medication. Encourage the patient to accept partial answers and to concentrate on symptom management through positive coping strategies. This may be more successful if antipsychotic treatment is started first.[13]

Medication

Risperidone is the therapy of choice for delusional psikosis, with a suggested dose range of 0.5-2 mg daily, while it is authorized for schizophrenia at considerably larger levels (2-16 mg daily). Lanzapine (2.5-12 mg daily) at low doses has also been proven to be helpful in delusional psikosis. Sedation is reduced when taken at night. The lowest effective antipsychotic dose should be administered, and the dose should be gradually increased until the delusion resolves or the maximum dose is achieved. Improvement can be noticed in as little as two weeks, with the greatest benefit occurring after six to ten weeks. Following the resolution of the illusion, the effective dose is maintained for three months before gradually decreasing every two weeks. The recommended overall period of treatment is 6 months. Relapse happens in 1 in every 4 individuals after therapy and necessitates retreatment. 2 Long QT syndrome, arrhythmia, and Parkinson's disease are all contraindications to antipsychotics. It should not be used with dopamine agonists or medicines that extend the QT interval. Antipsychotics should be taken with caution in patients with renal insufficiency, hepatic illness, dementia, or those over the age of 65. Because of higher mortality in older individuals with dementia-related psychosis, first- and second-generation antipsychotics have a "black box" warning for adults over the age of 65. They are most likely safe to use during pregnancy (Category B-C).[13]

Specialist referral

The participation of psychiatry is critical, but it should not be delayed. If the patient refuses to be referred, therapy should begin anyway. Once the illusion has worn off, the patient may be willing to seek psychiatric treatment. Delaying therapy while waiting for a psychiatric referral may result in excessive healthcare usage due to "doctor shopping" and repeat examinations in emergency departments and outpatient clinics. Emergency physicians report difficulty treating these patients, potentially as a result of difficulties obtaining specialized treatment from psychiatry or dermatology in the emergency room. Referral to dermatology can help rule out organic skin illness, but it is not a guarantee of therapy. Many dermatologists are unprepared to treat this illness; most do not feel comfortable diagnosing and treating psychocutaneous disease, despite the fact that it is commonly considered to be within the scope of their speciality. A study of dermatologists revealed that all had encountered the disease and that one in every five were presently treating a patient with delusional psikosis, but only around 15% would prescribe antipsychotics.[13]

New treatments

Freudenmann et al. reported the first successful use of aripiprazole (atypical antipsychotic) and

ziprasidone in drug-induced DI and organic DI, respectively. Contreras et al. found a favorable response to Pimozide in combination with ziprasidone, an atypical antipsychotic (with a decreased risk of extrapyramidal manifestation); hence, ziprasidone may be a viable first-line therapy choice. In the case of a patient's noncompliance with oral medicines, depot antisychotics may be explored. The "hyposensitization" motivational method is utilized to persuade the patient of such an approach (depots) by explaining to the patient that their condition is comparable to excessive hypersensitivity of the most peripheral cutaneous nerves.[2]

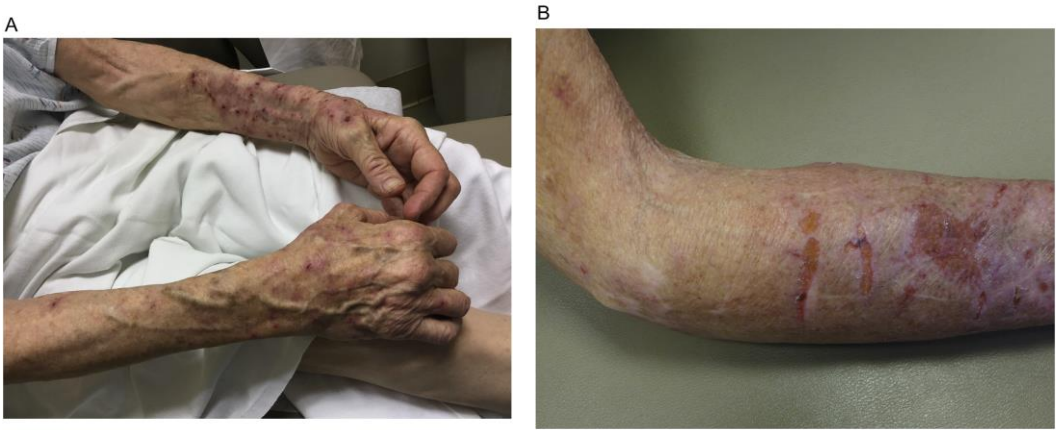

Figure (A) Excoriations and scarring in a patient treated with surgical equipment to remove filaments and "wooden stickers" from the skin months after exposure to wood. The biopsy revealed excoriated prurigo nodularis. **(B)** Linear erosions and scars on a patient's forearms caused by moving particles in the skin. As confirmation of infestation, this patient provided specimens that were recognized under magnification as hair shafts, hemorrhagic crusts, and lint.[13]

Treatment of Delusional Infestation or Delusional Parasitosis (Options, Antipsychotic Medications, and Symptomatic Medications).13

A. Treatment Options for Delusional Infestations

- Evidence supports efficacy for second-generation antipsychotics for symptom management and cure
- Remission achieved in 60%-100% of patient treated with antipsychotics
- Delusional infestation attributed to excess dopamine activity in the brain
- All antipsychotics reduce dopamine activity in the central nervous system
- Second generation antipsychotics
  - Risperidone 0.5-2 mg orally nightly or depot formulations
  - Olanzapine 2.5-12 po mg nightly or depot formulations
- Titrate to lowest effective dose
- Improvement may be seen in 2 weeks. Maximum effect at 6 weeks
- Once delusion clears, continue maintenance therapy for 3 months then slowly taper every 2 weeks until discontinued
- Recommended total duration for therapy is approximately 6 months
- 1 in 4 patients may relapse and require retreatment

First-generation antipsychotic
  - Pimozide

Third-generation antipsychotics
  - Aripiprazole
  - Ziprasidone

Palliative therapies
  - Sedating or non-sedating antihistamines, topical steroids, emollients, discouraging harmful extermination attempts

B. Delusional Infestation

Medication	Anti-psychotic generation	Recommended starting dose	Maximum dose
Pimozide	First	0.5 mg orally daily	4 mg orally daily *
Haloperidol	First	0.5 mg orally nightly	10 mg orally nightly
Risperidone	Second	0.5 mg orally nightly	2 mg orally nightly *
Olanzapine	Second	2.5 mg orally nightly	12.5 mg orally nightly *
Aripiprazole	Third	2 mg orally daily	30 mg orally daily
Ziprasidone	Third	20 mg orally twice daily	80 mg orally twice daily *
Quetiapine	Third	12.5 mg orally nightly	80 mg orally nightly *

* Higher doses have been studied in other conditions.

C. Symptomatic Medications for Treatment of Delusional Infestation

Medication	Drug Class	Recommended starting dose	Indication
Loratadine	Second-generation antihistamine	10 mg orally daily	Pruritus
Cetirizine	Second-generation antihistamine	10 mg orally daily	Pruritus
Diphenhydramine	First-generation antihistamine	25 mg orally every 4-6 hours as needed	Pruritus, may be especially beneficial for nocturnal pruritus.
Hydroxyzine	First-generation antihistamine	25 mg orally every 6 hours as needed	Pruritus, may be especially beneficial for nocturnal pruritus. May have anxiolytic effect.
Hydrocortisone 2.5% ointment or cream	Low-potency topical steroid	Apply thin film to affected area 2-4 times daily	Pruritus
Triamcinolone 0.1% ointment or cream	Medium-potency topical steroid	Apply thin film to affected area 2-4 times daily	Pruritus
Betamethasone dipropionate 0.05% ointment or cream	High-potency topical steroid	Apply thin film to affected area 1-2 times daily Avoid face and intertriginous areas	Pruritus
Petroleum jelly	Emollient	Apply to affected area twice daily after bathing	Moisturizer

2. Conclusion

Delusional psikosis is a primary mental illness that generally manifests itself in basic care or the emergency room. A triggering event, concern with their symptoms, and formication are all hallmarks of patient histories. A diagnosis can be made based on features such as shared hallucination or the specimen sign, and inspection reveals self-inflicted wounds. Once the disease has been identified, an adequate workup to identify reversible variables must be completed before therapy can begin. Because of the patient's lack of understanding, informed consent is inherently problematic, therefore most data is obtained retrospectively. The use of antipsychotics is supported by our current understanding of the illness process and drug responses. The use of an antipsychotic by a skilled primary care physician might allow psychiatric participation for subsequent treatment. Delaying or neglecting to begin antipsychotic medicines delays care, prolongs suffering, and may endanger the patient.[13]

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