SKIN

BRIEF ARTICLE

Successful Treatment of Delusional Infestation with Dupilumab: Case Report

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ABSTRACT

Delusional infestation (DI) is a psychodermatologic disorder marked by fixed, false belief of parasitic infestation, often accompanied by significant distress. The pathogenesis remains incompletely understood. Currently, the standard of care is antipsychotic medication. We report the case of a 71-year-old man with Parkinson's disease and a four-year history of treatment-resistant DI, who experienced complete symptom resolution following the initiation of dupilumab. The patient presented with sensations of worms, bugs, and fibers invading his body, severely impacting his quality of life. Skin findings were absent, and blood work revealed persistent peripheral eosinophilia. Multiple treatments had been trialed, including antiparasitics, antihistamines, topical steroids, antifungals, and immunosuppressants, which were unsuccessful or discontinued due to side effects. Following the initiation of dupilumab, the patient reported near-complete relief from DI symptoms. This case demonstrates dupilumab's potential to act as a novel treatment for DI. Dupixent blocks interleukins 4 and 13, key contributors for Th2 inflammatory pathways, which may indirectly reduce delusional ideation by resolving symptoms of formication and itch. To our knowledge, this is among the first reported cases to describe complete symptom resolution of DI with dupilumab. These findings suggest that immunomodulatory therapy may be an effective treatment in managing select cases of DI, especially in the presence of peripheral eosinophilia. Further research is warranted to explore the neuroimmunologic underpinnings of DI and expand therapeutic options for this challenging condition.

INTRODUCTION

Delusional infestation (DI) is a neurocutaneous syndrome characterized by crawling sensations and fixed beliefs of infestation without clinical evidence.[1] We present a case demonstrating successful treatment of refractory DI with dupilumab.

CASE REPORT

A 71-year-old male with Parkinson's disease treated with ropinirole was referred to dermatology for five-months of sensations of worms, bugs, and fibers infiltrating his organs, severely affecting his life. Before presenting, he underwent several permethrin treatments, with minimal improvement. Examination revealed no skin lesions. Diffuse

xerosis and mild scalp flaking were present (**Figure 1**). A KOH scraping was negative for infestation.

Numerous systemic treatments were trialed, including ropinirole cessation, ivermectin (at patient's request), diphenhydramine, doxepin, fluconazole, gabapentin, naltrexone, and quetiapine without improvement (**Figure 2**). Parkinson's disease complicated treatment: ropinirole was resumed for insomnia, while gabapentin, doxepin, and pimozide were discontinued due to gait disturbance, weakness, and palpitations, respectively. A referral to neurology inadvertently introduced difficulties, when the neurologist suggested the bugs were hallucinations, resulting in the patient refusing antipsychotics.

Figure 1. Right upper extremity, demonstrating diffuse scaling and xerosis.

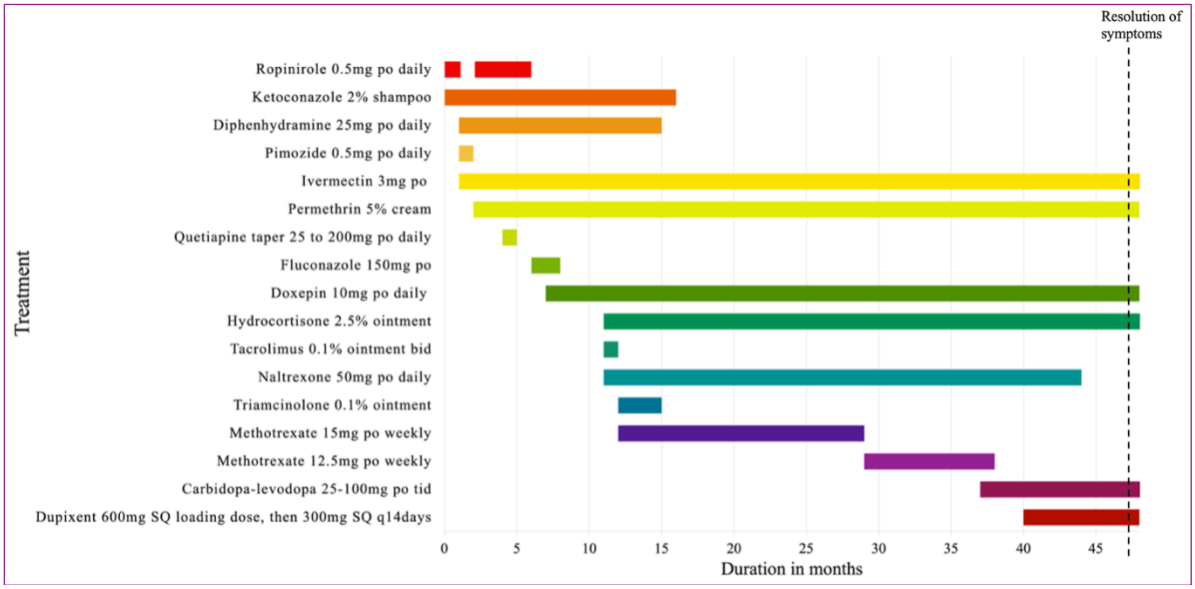

Figure 2. Timeline of treatments tried, illustrating the initiation, duration, and completion of each therapy beginning at presentation to the dermatology clinic. Treatments are displayed in chronological order based on their initiation date, with the length of each bar representing the duration of use in months.

Optimistic that seborrheic dermatitis and xerosis exacerbated his formication symptoms, targeted treatments were trialed, including petrolatum, topical antifungals, hydrocortisone, triamcinolone, tacrolimus, and NB-UVB. After discovering peripheral eosinophilia, a yearlong trial of methotrexate was initiated but discontinued due to rising mean corpuscular volume, suggesting toxicity despite folic acid.

Dupilumab, initiated in June 2024, led to the first significant improvement in four years; by seven months, he reported near-complete relief. He no longer spontaneously mentioned infestation and, when asked, stated it was “no longer active.” His wife confirmed resolution of scratching and skin picking. Without interim evaluations, the exact timeline of symptom resolution is unclear.

DISCUSSION

DI is a complex condition with no universally accepted treatment. The pathogenesis is poorly understood and frequently diminishes quality of life.[1] Though often considered psychosomatic due to associations with conditions like substance use disorders, numerous primary cases are documented.[2] Current standard of care includes antipsychotics; however, patient resistance to psychiatric involvement poses a major treatment barrier.[2] Additional interventions are essential to address the complexity of DI management. Our case highlights dupilumab as a novel intervention for DI, especially in those with peripheral eosinophilia.

Dupilumab, an antagonist of inflammatory cytokines, may provide a promising treatment avenue. Dupilumab blocks interleukin (IL)-4 and IL-13 via the interleukin 4 receptor alpha subunit, and is approved for several inflammatory diseases, including atopic dermatitis, asthma, eosinophilic esophagitis, and prurigo nodularis.[3] Ongoing trials are revealing broader applications, however, none investigate its potential in psychodermatology.[3] The IL-4/IL-13 influence pain and itch pathways in the dorsal root ganglia.[3] The symptomatic relief may indirectly mitigate patients’ delusional ideation by breaking the cycle of discomfort, scratching, and reinforcement of infestation beliefs.[4] A PubMed search yielded one case series exploring dupilumab’s use for such conditions.[5]

Our patient's long-standing DI and resistance to psychiatric interventions resulted in exploration of numerous ineffective treatment modalities. Dupilumab initiation resulted in a complete response, supporting its potential role for refractory DI. Further studies are needed to investigate the immunological profile and evaluate dupilumab and other biologics as treatment options for psychodermatologic disorders.

Conflict of Interest Disclosures: Dr. Keller is a speaker for Galderma.

Funding: None

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