Lichen planus pemphigoides successfully treated with dupilumab

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INTRODUCTION

Lichen planus pemphigoides (LPP) is a rare, autoimmune, immunobullous dermatosis characterized by overlapping clinical features between lichen planus and bullous pemphigoid (BP). Most cases are idiopathic, but it has been associated with angiotensin-converting enzyme inhibitors and viral infections. Because lichenoid lesions typically precede the bullae, it has been hypothesized that the lichenoid inflammation leads to epitope spreading and ultimately antibody formation against the basement membrane proteins.[1] Diagnosis of LPP relies on clinical observation followed by confirmatory direct immunofluorescence of IgG/C3 and/or serologic tests for autoantibodies against BP, BP180 and BP230, proteins found in type XVII collagen. Treatment for LPP has traditionally involved topical corticosteroids, systemic corticosteroids, dapsone, and acitretin, each with varying degrees of success and side effect profiles.[1] The development of more targeted immunomodulators presents a potential novel method of treatment for LPP. Dupilumab, an interleukin 4 (IL-4) receptor alpha inhibitor, decreases type 2 inflammation by modulating the signaling of IL-4 and IL-13, 2 key cytokines involved in the Type 2 helper T-cell pathway.[2] This pathway has also been suggested to play a role in lichen planus, a close relative of LPP.[3] Numerous case reports have been published showing positive results with dupilumab in treating lichen planus and BP.[3-6] Herein, we report a case of LPP that was successfully treated with dupilumab therapy.

Abbreviations used:

BP: bullous pemphigoid
IL: interleukin
LPP: lichen planus pemphigoides

CASE REPORT

An 18-year-old male with a past medical history of atopic dermatitis presented to our dermatology clinic with a widespread, pruritic, papular eruption throughout his body that had been present for 2 weeks. The rash started on the feet with blistering lesions and spread to the arms and torso. On exam, violaceous papules and plaques were present on the distal extremities (Fig 1, *A*) and trunk with numerous tense bullae on the lateral feet and toes (Fig 1, *B*). A punch biopsy was performed on the right ventral distal forearm that showed a dense lichenoid lymphocytic infiltrate with necrotic basal keratinocytes that was consistent with lichen planus. The patient was treated with intramuscular triamcinolone (80 mg total) and prescribed triamcinolone acetonide 0.1% topical cream to be applied twice daily.

At his 1-week follow-up, the patient appeared to be worsening with new development of foot bullae. Serologic testing for BP180 and BP230 were ordered, which were found to be greatly elevated (BP180 antibodies 141 U/mL, reference $\leq$14 U/mL), confirming the diagnosis of LPP. The patient was prescribed dexamethasone 8 mg daily and mycophenolate mofetil 1000 mg daily.

By 5 weeks, improvement was noted after taking dexamethasone 8 mg daily, but he never started

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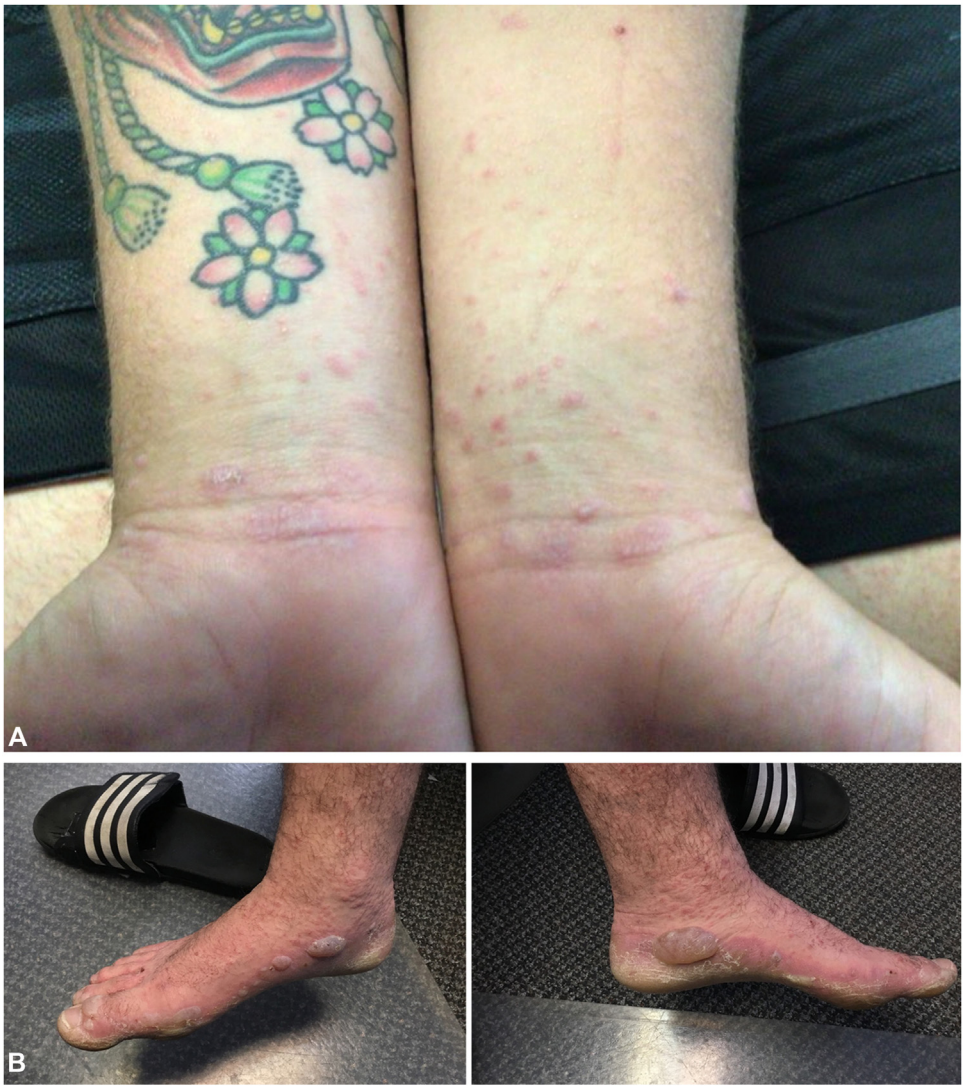

Fig 1. A, Violaceous, scaly, flat-topped papules on the ventral wrists; (**B**) blisters on feet.

mycophenolate due to concerns of side effects. The rash was now macular with mixed areas of erythema and variable hyperpigmentation. Previous bullae and papules had resolved. At week 10, the patient had self-tapered off of dexamethasone as the rash appeared to be inactive.

Six months later, the patient presented with a recurrence of his LPP that now included papulovesicles on the face and neck as well as his typical lichenoid lesions on the distal extremities (Fig 2). Given his preference for a non-steroidal treatment, he was started on dupilumab with a loading dose of 600 mg and then 300 mg every other week. Four weeks later, complete clearance of the face was observed with some remaining papules on the arms, neck, and legs. After 15 weeks on dupilumab, patient was completely clear (Fig 3, *A* and *B*).

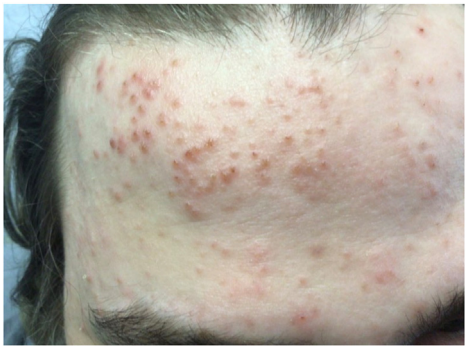

Fig 2. New papulovesicular eruption on the face.

Patient self-discontinued dupilumab and has remained clear for 4 months now since his last dose of dupilumab.

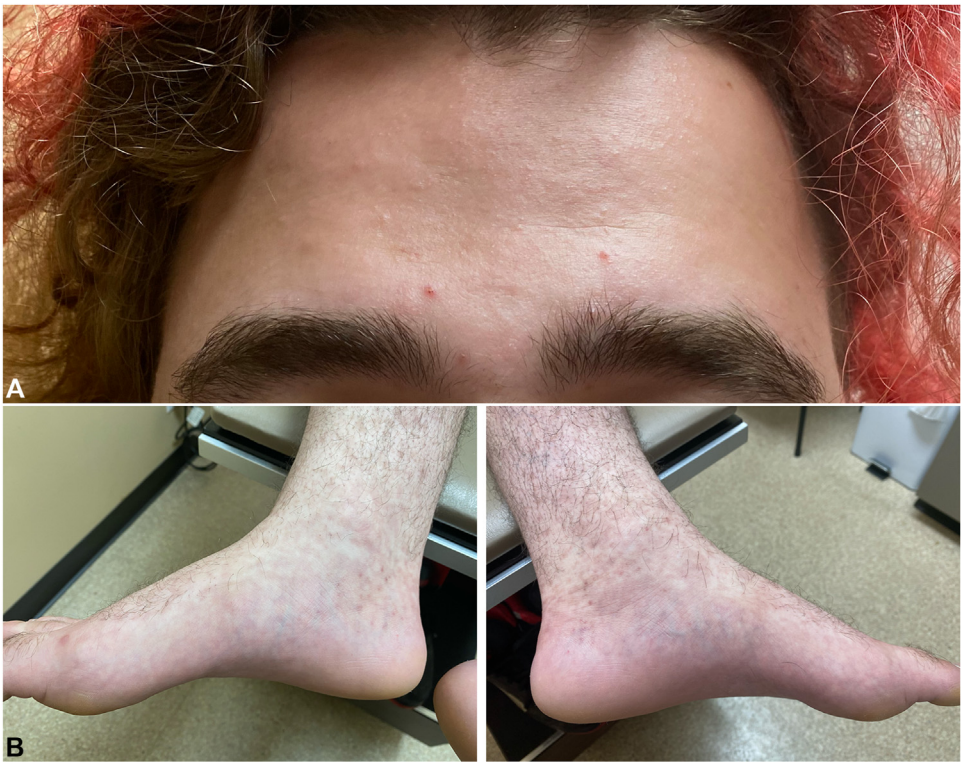

Fig 3. A, Face completely clear after 15 weeks of dupilumab; (**B**) feet completely clear after 15 weeks of dupilumab.

DISCUSSION

LPP is a rare autoimmune condition with an estimated prevalence of 1 per 1,000,000 patients.[1] Current recommended treatments include topical and systemic corticosteroids, dapsone, and acitretin, but an optimized therapy algorithm is yet to be established. The use of biologics as a form of treatment for LPP has yet to be explored in the literature until recently.

Dupilumab targets the alpha subunit of the IL-4 receptor, thus downregulating the inflammatory effects of the IL-4 and IL-13 cytokine pathways.[2] Notably, several cases of BP, a close relative of LPP, were reported to be successfully treated with dupilumab.[5] It is theorized that dupilumab improved these cases of BP through the downregulation of IL-4, IL-13, IgE, and eosinophils, although it is hard to say if these same mechanisms are at play with LPP without further investigation of this disease's pathogenesis.

To our knowledge, this is the first reported case of LPP being successfully treated with dupilumab. While this is a single case report, we have demonstrated convincingly that dupilumab as monotherapy was able to successfully treat this patient's LPP. Because this is a single case report, further studies are warranted to substantiate our findings, including what the optimal duration of treatment is since LPP tends to have a less protracted course than BP. Given that LPP has traditionally been treated with broadly acting immunosuppressants, more targeted therapies such as dupilumab will be a welcome addition to our armamentarium.

Conflicts of interest

None disclosed.

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