Abstract
Patients seek treatment of inflammatory linear verrucous epidermal nevus (ILVEN) for symptomatic relief of pruritus and cosmesis. Most treatment options provide only temporary relief or carry risks of scarring. We present the case of a 56-year-old male who developed a pruritic papular plaque following the lines of Blaschko, consistent with ILVEN clinically and histologically. The patient was refractory to topical treatment, so other options were explored. Due to the excimer 308-nm laser's anti-inflammatory capabilities and effective treatment of psoriasis, we proposed the possibility of the excimer laser as a new treatment option for ILVEN. Our patient showed significant improvement in pruritus and cosmesis with concurrent use of excimer laser twice a week for 52 weeks and topical therapy. The excimer laser showed promising results without side effects or scarring, making it an encouraging treatment option that should be researched further.

Introduction
Inflammatory linear verrucous epidermal nevus (ILVEN) is a rare type of epidermal nevus, accounting for only 5% of all epidermal-nevus cases. It is associated with pruritus, erythema and scaling with papules that follow the lines of Blaschko. ILVEN is usually located unilaterally on a limb and is predominant in females. It normally presents at a young age, though there have been rare reports of adult-onset ILVEN.1,2 Patients seek treatment for cosmetic disfigurement and severe pruritus. There are various treatment options, but most are considered temporary fixes; very few to none have achieved lasting cures. ILVEN is characteristically refractory to treatment.

The excimer 308-nm laser is a narrow-band UVB (NB-UVB) laser developed in 1997 for the treatment of psoriasis.3 The targeted treatment allowed for use of a higher concentration of light without affecting surrounding normal skin, resulting in quicker clearance of psoriasis plaques. It has been particularly effective in difficult-to-treat areas such as the knees, elbows, scalp, palms and soles.4 ILVEN and psoriasis have clinical and histopathologic similarities, which led us to believe that the excimer 308-nm laser could be an effective treatment option for ILVEN. As far as we know, there have been no prior ILVEN treatments attempted with the excimer 308-nm laser.

Case Report
We present the case of a Fitzpatrick 4, 56-year-old male who presented to the clinic with complaints of a very pruritic rash on his right leg present for about a year. Prior to presenting to the office, the patient had tried various topical treatments, including steroids and calcipotriene, with no improvement. He had no significant past medical, surgical or family history.

Upon physical exam, the right leg showed a grey, papular plaque on the dorsum of the second toe extending up the posterior and lateral aspect of the leg to the buttocks (Figure 1). No similar lesions were present elsewhere.

A 3-mm punch biopsy was obtained, which showed ILVEN's classic alternating orthokeratosis overlying...
hypergranulosis with parakeratosis (Figure 2). Due to the definitive histological findings and the clinical presentation, the patient was diagnosed with a rare case of adult-onset ILVEN.

The patient was initially prescribed halobetasol ointment and calcipotriene cream, which he used for about eight months. The topicals helped with the itch but did not improve the cosmetic appearance of the lesion. The option of trying a course of treatment with the excimer laser was discussed, and it was decided that the patient would be treated twice a week with an increase in energy with every treatment. The patient started seeing dramatic improvement in pruritic symptoms and the appearance of the lesion after 20 weeks (Figure 3).

The patient continued to receive excimer laser treatment twice weekly for a total of 52 weeks. After 52 weeks, he continued only topical therapy and monitored for recurrence. The patient continued to exhibit remission of lesions and pruritus several weeks post-excimer treatment.

Discussion

ILVEN is notoriously refractory to treatment. Several treatment options have been explored, but very few have produced adequate results without recurrence. Many cases have attempted treatment with topical steroids, but most of the time this only achieved temporary relief of pruritus. There are a few reported cases of large ILVEN lesions not responsive to other forms of treatment being treated with full-thickness excision and skin grafting with successful long-term remission. But with every large surgical procedure comes the risk of disfiguring scarring.

Phototherapy has been around since the time of the ancient Egyptians and is used to treat vitiligo, alopecia, eczema and psoriasis. Despite further advancements in treatment, phototherapy continues to be a mainstay treatment for psoriasis. Studies have shown that through a complex mechanism, UV light can promote immunosuppression and alter cytokines to reduce inflammation in psoriasis through various possible pathways. Phototherapy alters the immune response by suppressing the proinflammatory Th1/Th17 pathway, which decreases the systemic release of IFN-γ, IL-8, IL-12, IL-17, IL-20, IL-22 and IL-23 and causes a switch toward the counter-regulatory Th2 pathway. Phototherapy increases FOXp3-positive Treg cells in psoriatic skin, which ultimately causes a local reduction in inflammatory Th1/Th17 cytokines.

ILVEN and psoriasis have clinical and histopathologic similarities. Clinically, both lesions have psoriasiform and inflammatory changes. Histopathologically, both lesions have psoriasiform...
hyperplasia of the epidermis.11,12 Due to these similarities, many believe that psoriasis and ILVEN have a common pathogenesis.13 There is evidence that ILVEN upregulates TNF-α, IL-1, IL-6 and intercellular adhesion molecule-1, similar to psoriasis.14 Previous studies have looked at the clinical and histological similarities between the two disease processes and hypothesized that the same treatment used on psoriasis could also work on ILVEN.15,16 The proposed theory was that ILVEN might be a phenotypic variant of psoriasis, with a postzygotic loss of gene mutation leading to the production of a linear area of skin with the pruritic plaques of ILVEN.15,16,17 The use of etanercept in ILVEN produced favorable results in symptoms and appearance, so the use of other psoriasis therapies for ILVEN was proposed.13 The use of lasers as a possible treatment option is a fairly new concept. There are several reports of using CO2 lasers to treat ILVEN, but results are mixed.16-19 The decision to pursue treatment with the excimer 308-nm laser was due to its anti-inflammatory properties and effectiveness in treating psoriasis.20 Fifty-two weeks of treatment with the excimer laser produced very promising results achieved with minimal risk of adverse side effects and no scarring.

Conclusion
We report a rare case of adult-onset ILVEN that was not improving with common topical treatment options, so alternative treatment options were pursued. After twice-weekly treatment with the excimer laser for 52 weeks and concurrent, twice-daily use of halobetasol ointment and calcipotriene cream, the patient demonstrated significant improvement in the appearance and pruritic symptoms of an ILVEN lesion located on his right lower extremity. The excimer laser is a very encouraging treatment option because it is minimally invasive with few to no adverse effects. As this is a novel form of therapy to treat ILVEN, more research should be pursued to confirm our findings.

References

EXCIMER LASER FOR THE TREATMENT OF INFLAMMATORY LINEAR VERRUCOUS EPIDERMAL NEVUS (ILVEN): A NOVEL THERAPY