

Inflammatory Linear Verrucous Epidermal Nevus Responsive to 308-nm Excimer Laser Treatment

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Inflammatory Linear Verrucous Epidermal Nevus Responsive to 308-nm Excimer Laser Treatment

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Case Presentation:

Patient: 20 year-old Caucasian female.

History of Present Illness: The patient complains of itchy, dry, pink lesions on her right leg since she was 2 weeks old. Symptoms have improved slightly with topical treatments, but she believes the lesions appear unchanged. She was treated with a short course of oral doxycycline following a positive bacterial wound culture of the right leg, however experienced no improvement clinically. The superior right leg plaque was treated with the super pulsed CO2 laser and the inferior right leg plaque was treated with the fractional CO2 laser with minimal improvement. A trial of UVB excimer laser with ten treatments to the right lower leg was then used on the lesions and produced significant clinical results.

Medical/ Surgical History: Acne

Family History: Diabetes, coronary artery disease, negative for psoriasis

Social History: Single, college student, denies tobacco use

Current Medications: Benzoyl peroxide 5% facial wash, adapalene/benzoyl peroxide topical 0.3%/2.5% gel, norethindrone/ethinyl estradiol 1.5mg/30mcg

Previous Medications: Fluoruracil 5%, doxycycline, clobetasol propionate 0.05% cream

Physical Examination: The patient had a few oval discrete hyperkeratotic scaly pink plaques on the right lateral leg with a hyperkeratotic linear pink plaque extending from the popliteal fossa to the posterior thigh. Her nails, scalp, and extensor extremities are clear.

Laboratory Data: (2/5/13) Bacterial culture right leg: 3+ staph aureus

Biopsy: *Advanced Dermatology Associates, LTD (AD13-01367, 2/5/2013)* Right popliteal fossa: "Psoriasiform dermatitis. There is marked uneven psoriasiform hyperplasia with a slightly verruciform surface, broad zones of superficial pallor, parakeratosis with conspicuous colonies of bacteria, a single incipient subcorneal spongiform pustule, spongiosis, focal hypergranulosis, vascular ectasias and vertical collagen streaking in dermal papillae, and a superficial perivascular and interstitial infiltrate of lymphocytes and plasma cells. A PAS is negative for fungus."

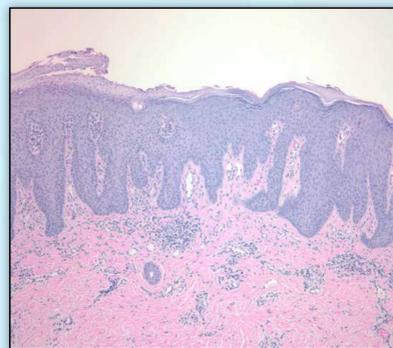


Figure 1 (10x): Uneven psoriasiform hyperplasia with a slightly verruciform surface, broad zones of superficial pallor, parakeratosis, focal hypergranulosis, vascular ectasias and superficial perivascular and interstitial infiltrate of lymphocytes and plasma cells.



Figure 2: Pretreatment clinical appearance of lesion demonstrating discrete hyperkeratotic scaly pink plaques on the right lateral leg.



Figure 3: Posttreatment with excimer laser demonstrating improvement in hyperkeratotic scale and mild improvement in erythema.

Discussion:

Inflammatory linear verrucous epidermal nevus (ILVEN) was first described by Altman and Mehregan in 1971 as a rare linear and pruritic psoriasiform plaque that most commonly presents during childhood. Epidermal nevi may derive from keratinocytic, follicular, sebaceous, apocrine, or eccrine origin. ILVEN is classified under the keratinocytic type and represents approximately 6% of all epidermal nevi. ILVEN can be a single lesion or multiple unilateral, erythematous, and verrucous plaques along the lines of Blaschko. There is a predilection for the lower extremities with girls being four times more commonly affected than boys. Cases are predominately sporadic, although rare familial cases have been reported.

The pathogenesis is largely unknown, however it is believed to represent a clonal dysregulation of keratinocytes exhibiting genetic mosaicism. Compared to lesions of psoriasis, ILVEN exhibits less Ki-67 positive keratinocyte nuclei and more cytokeratin 10 (CK10) positive cells. Ki-67 is a proliferative marker and CK10 is an epidermal differentiation marker. ILVEN demonstrates less CD4+, CD8+, CD45RO+, CD2+, CD25+, CD94+, and CD161+ cells within the dermis and epidermis than psoriasis.

The histopathology of ILVEN reveals epidermal rete elongation, similar to psoriasis, with columns of alternating orthokeratosis overlying hypergranulosis and parakeratosis overlying agranulosis. Focal areas of spongiosis may be present. Within the upper dermis there is commonly a mild perivascular lymphohistiocytic inflammatory infiltrate.

ILVEN has been historically refractive to treatment. First line therapies include topical agents such as corticosteroids, calcipotriol, retinoids, and 5-fluorouracil. Other treatments include intralesional corticosteroids, cryotherapy, electrodesiccation and curettage, and surgical excision. Several cases report promising results with pulsed dye laser (585 nm) and ablative CO2 laser (10,600 nm, fractional and super pulsed), however these were unsuccessful in our case.

Excimer laser has not been published in the literature for treatment of ILVEN, though many studies have demonstrated the usefulness of excimer in psoriasis. We propose that secondary to the shared histopathology between ILVEN and psoriasis, excimer laser would be successful in the treatment of ILVEN lesions. The 308 nm excimer laser penetrates the epidermal cells and fibroblasts inducing T-cell apoptosis making it an effective treatment modality for inflammatory conditions. Currently, our patient has undergone ten sessions of UVB excimer laser treatment with significant improvement in lesions. Treatment has been well tolerated with no reported side effects.

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