# Cutting-edge insights: line-field confocal optical coherence tomography and 5% cyclosporine for early lichen sclerosus treatment

Caterina Mariarosaria Giorgio,[1] Vittorio Tancredi,[1] Gaetano Licata,[2] Elvira Moscarella,[1] Giuseppe Argenziano,[1] Elisabetta Fulgione,[1] Graziella Babino,[3] Paolino Franzese,[1] Eugenia Veronica Di Brizzi[1]

[1]Dermatology Unit, University of Campania, Naples; [2]Dermatology Unit, San Antonio Abate Hospital, Trapani; [3]Dermatology Unit, Department of Health Sciences, University of Basilicata, Potenza, Italy

Dear Editor,

Atrophic lichen sclerosus (ALS) is a chronic inflammatory dermatosis with significant morbidity, primarily affecting the genital area. The disease is often misdiagnosed or underdiagnosed, resulting in delayed treatment and progression to atrophic stages and permanent scars.[1] While corticosteroids remain the first-line treatment, their long-term use may lead to adverse effects such as skin atrophy, prompting the need for alternative therapies.[2] Cyclosporine, a calcineurin inhibitor, has shown efficacy in managing immune-mediated skin diseases and is delivered effectively through the Pentravan® (Fagron NV, Nazareth, Belgium) vehicle.[3] This study investigates the clinical and structural outcomes of 5% cyclosporine in Pentravan® cream in early-stage ALS. Treatment outcome has been evaluated not only clinically but also by line-field confocal optical coherence tomography (LC-OCT), a relatively noninvasive imaging method that allows histology-like skin visualization in longitudinal and horizontal sections and 3D reconstructions.[4] This case series included 23 patients (14 female, 9 male; age range 41-69 years) diagnosed with early-stage disease. All patients underwent histological confirmation of their diagnosis, which revealed epidermal thinning, initial dermal sclerosis, and inflammatory infiltrates. Inclusion criteria required no prior use of corticosteroids or calcineurin inhibitors for at least 30 days before treatment. Patients applied 5% cyclosporine in Pentravan® cream daily for eight weeks. The primary outcomes were symptom resolution, including itching, burning, and pain, supported by LC-OCT findings; only 2 patients provided consent for a new biopsy. LC-OCT imaging provided high-resolution visualization of the epidermis and dermis at baseline (T0) and post-treatment (T8). Histological and LC-OCT findings at baseline (T0) confirmed the presence of features of ALS, including epidermal thinning, reflecting the atrophic changes typical of the disease, and hyperkeratosis, which appears as a hyperreflective superficial band corresponding to the thickened stratum corneum. The dermo-epidermal junction often appears less defined or completely obliterated due to structural and inflammatory alterations. In the dermis, increased reflectivity of the papillary and superficial dermis is observed, corresponding to sclerosis and dense collagen deposition. In active cases, a hyperreflective area in the superficial dermis may be visible, indicating the presence of inflammatory infiltrates (Figure 1a). Clinically, 17 patients presented with erythema and erosions, while 6 exhibited early atrophy. After eight weeks of treatment, 18 patients (78.26%) achieved complete symptom resolution, characterized by the disappearance of erythema, erosions, and itching (Figure 1 c,d). Five patients (21.74%) demonstrated partial improvement, with residual symptoms such as mild itching and discomfort. LC-OCT findings at T8 revealed normalization of the dermal-epidermal junction in 19 patients (82.61%) (Figure 1b). In the five patients with partial improvement, LC-OCT imaging identified persistent focal inflammatory activity and incomplete structural recovery. Two patients (8.70%) discontinued treatment due to localized burning sensations, but no systemic adverse effects were reported. The high tolerability of the cream was consistent with its targeted topical delivery, which minimizes systemic exposure.[3] The results of this case series demonstrate the potential of 5% cyclosporine in Pentravan® cream as an effective alternative therapy for early-stage LSA. The integration of LC-OCT imaging provided a non-invasive, dynamic tool to monitor treatment progress, revealing structural improvements aligned with clinical outcomes. These findings are particularly relevant for early-stage ALS, where timely intervention can prevent progression to irreversible atrophic and cicatricial changes.[1] As the majority of patients did not provide consent for a post-treatment biopsy with histological examination, LC-OCT proved useful in evaluating the response to treatment. This approach sets a new standard for evaluating topical therapies in

Correspondence: Eugenia Veronica Di Brizzi, MD, Dermatology Unit, University of Campania, via Pansini 5, 80131 Naples, Italy.
E-mail: eugeniaveronica.dibrizzi@gmail.com

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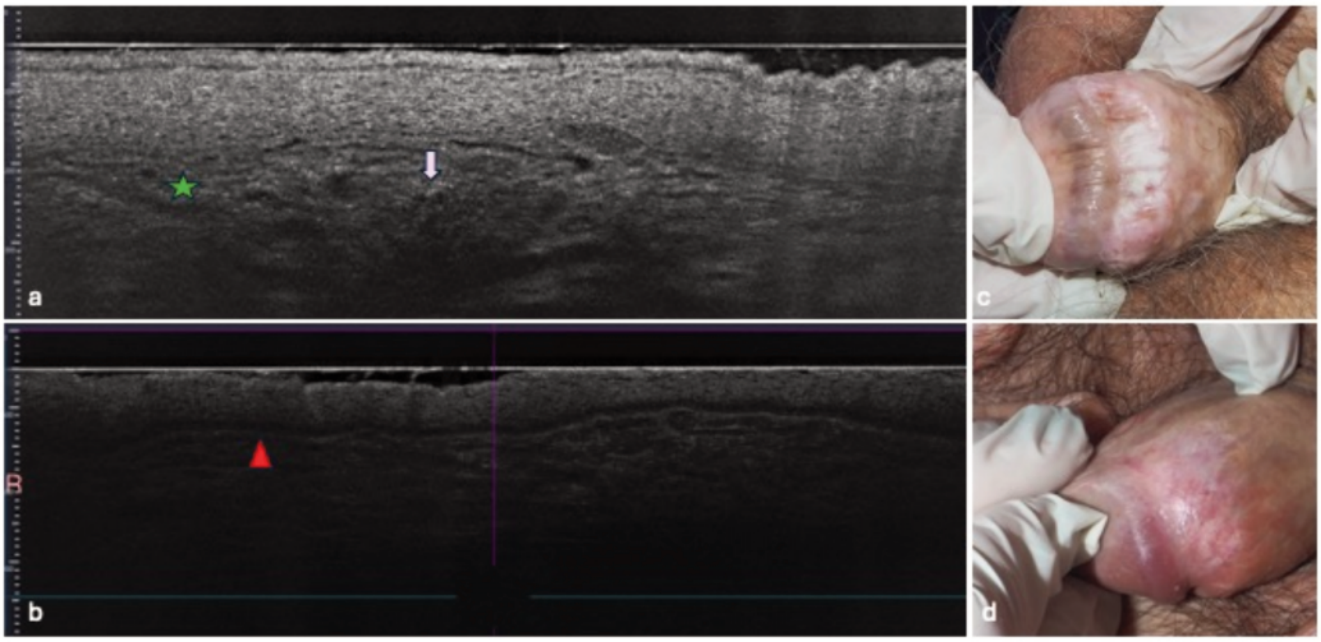


**Figure 1.** LC-OCT before (**a**) and after (**b**) 12 weeks of treatment with 5% cyclosporine in Pentravan® cream. Active lesions show disarrangement of the dermal-epidermal junction (DEJ), which is not clearly outlined (green star) (**a**). Multiple bright dots (pink arrow) correlated with inflammation, and melanophages are also observed. Resolution is characterized by a continuous, flattened DEJ (red triangle) with no clearly visible inflammatory infiltrate (**b**). Image of a patient with lichen sclerosus before (**c**) and after (**d**) 12 weeks of treatment with 5% cyclosporine in Pentravan® cream; complete clearance of symptoms, including resolution of erythema, erosions, and bruising (**d**).

dermatology and highlights the importance of combining clinical, histological, and imaging data for comprehensive patient care. Future studies should focus on long-term efficacy and comparative effectiveness against standard treatments to further establish its role in managing ALS.

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