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Lichen spinulosus: insights into treatment

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To the Editor:

Lichen spinulosus (LS) is a rare and benign skin disorder clinically characterized by follicular keratotic papules. The condition predominantly affects children and adolescents [1-3]. Papules are 1-3mm and skin-colored with thorny and hair-like spines that cluster into symmetrical plaques. These lesions may be asymptomatic, inflamed, or pruritic [4]. Affected areas include acral surfaces, trunk, neck, buttocks, abdomen, hips, knees, and extensor arms. Generalized LS is uncommon [1,2,5].

The pathogenesis of LS is unclear but similar to other lichenoid disorders, it is likely multifactorial, including genetic predisposition, trauma, medication, immunodeficiencies, and vaccines. Lichen spinulosus has been associated with diphtheria toxin, thallium, gold, lithium, arsphenamine, Crohn disease, Hodgkin disease, alcoholism, and human immunodeficiency virus (HIV), [1,6,7]. HIV typically leads to a more generalized distribution of LS and is linked to type VI pityriasis rubra pilaris [5].

As a member of the follicular keratotic disorders, lichen spinulosus closely resembles keratosis pilaris and is difficult to diagnose at first glance. Removal of the characteristic thorn-like spines leave funnel-like orifices in the papule, unlike keratosis pilaris [1,4].

The majority of LS patients are asymptomatic. Clinical time course varies and may result in self-

resolution or persistence for decades. Patients are commonly bothered by the pruritus and cosmetic appearance of LS. Various treatments have been used, including salicylic acid, topical corticosteroids, topical retinoids, and ammonium lactate. However, there is no standardized treatment for LS. We performed a literature review on the treatment of LS to aid clinicians in managing this uncommon condition.

The PubMed database was searched using a combination of keywords in batch phrases: lichen, spinulosus, and treatment ([Table 1](#)). The term "lichen spinulosus" yielded 64 search results, whereas "lichen spinulosus treatment" yielded 17 results. Each search result was reviewed for pertinent information. Citations of the papers used in this review were examined as well. The PubMed database was subsequently searched for information on treatments using the keywords: ammonium lactate, corticosteroids, salicylic acid, retinoids, urea, and vitamin D analogues ([Table 1](#)).

Various treatments have been reported for LS. The largest prospective case series to date examined 35 patients (21 female, 14 male) diagnosed with LS. Localized plaques distributed symmetrically were the most common presentation. However, two patients had generalized LS. Mild-to-moderate pruritic lesions were noted in 38% of patients (N=13). Salicylic acid 6% gel twice daily under occlusion was more efficacious at clearing lesions by 8 weeks than triamcinolone 0.1% cream twice daily, although consistent follow-up examinations did not occur.

Other reported modalities included emollients, medium-to-high potency topical steroids, topical

retinoids, and topical vitamin D ([Table 1](#)) with varying degrees of success.

Currently, LS treatment lacks standardization and formal recommendations, owing to the rarity of the condition, spontaneous resolution in many cases, and the lack of consistently effective treatments. Patients with LS typically present with localized lesions [3-5,8-10]. Generalized LS is less common, except in instances of immunosuppression such as HIV. Localized LS was classified as occurring on the extensor/flexor or acral extremities solely, whereas generalized LS was classified as LS occurring on the extensor/flexor or acral extremities in addition to another body site such as the trunk. Of 46 case presentations cited herein, 89% of cases were localized LS and 10.9% were generalized [2-11].

Salicylic acid, urea, and ammonium lactate can be effective for this condition. Treatment with salicylic acid 6% resulted in almost complete clearing of lesions [4,9,10,11]. However, topical salicylic acid can result in salicylism in pediatric patients and can be severely desiccating and irritating [5]. Ammonium lactate, though effective during use, was associated with lesion recurrence after discontinuing treatment [2]. Ammonium lactate is usually well tolerated but stinging can occur and limit treatment duration [12,13]. Urea can be used for longer durations with its minimal side effect profile, but burning, itching, and stinging sensations can occur [14].

Retinoids can also be beneficial in LS. Decreased follicular keratinization and cutaneous turnover facilitates an overall decrease in papule size and increased penetration of moisturizers. Skin irritation and photosensitivity are limiting side effects with tretinoin. Adapalene gel is a third-generation topical retinoid and is less drying and more tolerable for those with sensitive phototypes [5,7].

Vitamin D analogs, like tacalcitol, calcipotriol, and calcitriol, inhibit keratinocyte proliferation in culture, while regulating epidermal differentiation through cell growth and other mechanisms. These agents are often used to treat LS due to their favorable safety profile and antihyperkeratotic ability. Increased burning, stinging, and itching have been reported upon discontinuation of topical vitamin D analogues [8].

A variety of a topical agents can be used to treat LS. Each treatment contains its own set of advantages or disadvantages. Although LS is frequently localized, generalized LS poses a greater challenge for topical treatment. Oral retinoids such as isotretinoin or acitretin may prove beneficial in these instances. Lichen spinulosus can be difficult, persistent, and refractory to treatment. Cases of LS may be transient, but can last years as well [3,7,9,11]. In cases of symptomatic or persistent LS, single or combination therapy can be employed for treatment and are dependent on clinical response and patient preference.

As LS commonly self-resolves, treatment for persistent or generalized LS is difficult and unstandardized. Various agents have been trialed in the literature with variable efficacy. Clinician and patient preference should guide treatment for this condition. A physician's toolbox includes corticosteroids, emollients, keratolytic agents, retinoids, and vitamin D analogues. Combination treatment may be most beneficial and length of treatment will depend on clinical response.

Potential conflicts of interest

The authors declare no conflicts of interest.

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Table 1. Summary of published treatment modalities for lichen spinulosus.

References	Study type	Number of patients	Treatment	Outcome
Aghighi et al. [6]	Case report	1	Vitamin A 10,000U daily for 2 months, then added 20% urea cream BID	Vitamin A for 2 months showed no improvement. Then urea 20% cream was added and showed no improvement to lesions
Boyd et al. [11]	Case report	1	Ammonium lactate 12% lotion and clobetasol propionate 0.05% cream BID	Significant improvement of lesions after 10 days
Friedman et al. [4]	Case series	35	Either triamcinolone 0.1% cream BID or salicylic acid 6% gel BID. TAC was added for pruritic (N=13) or inflammatory lesions (number not stated)	Salicylic acid 6% gel showed almost complete clearance in 8 weeks. Follow-up examinations were not possible in this study since patients came from seven different port cities in the Philippines and the time spent in each city was limited
Forman et al. [5]	Case report	1	Urea 10% lotion QHS for 6 weeks switched to topical tretinoin 0.04% gel QHS. Hydroactive adhesive pads for morning use	Urea 10% lotion showed no improvement after 6 weeks. Switched to tretinoin: almost complete clearance of lesions after 8 weeks. Therapy was continued for prevention
Kabashima et al. [3]	Case report	1	Vitamin supplementation based on deficiencies. Abstention from alcohol	Improvement of LS eruption within 1 week. Patient was malnourished from alcoholism
Kim et al. [8]	Case report	2	Topical tacalcitol 2.087 µg/g cream BID	Improvement after 2 weeks of treatment. After 4 weeks, almost complete resolution. No recurrence for at least 5 months
Maiocco and Miller [9]	Case series	2	Patient 1: Tretinoin 0.1% cream QHS and fluorinated corticosteroid ointment under occlusion for 3 weeks. Then salicylic acid 6% under occlusion twice weekly Patient 2: Salicylic acid under occlusion QHS 6% twice weekly	Patient 1: Tretinoin 0.1% cream and fluorinated corticosteroid ointment were ineffective. Salicylic acid 6% was effective, until discontinued for causing burning sensation Patient 2: Significant improvement in 2 weeks with long-term control
Tuyp et al. [10]	Case report	1	Betamethasone valerate 0.1% cream BID. Switched to salicylic acid 6%, 60% propylene glycol, and 20% ethanol	Reduction of pruritus, but not lesions with steroid. Salicylic preparation resulted in near complete clearance in 8 weeks
Uehara et al. [7]	Case report	1	Topical adapalene 0.1% gel QHS	Significant improvement after 6 weeks, but with residual follicular pigmentation. Lesions remained controlled for 6 months of follow-up
Venkatesh et al. [2]	Case report	1	Ammonium lactate 12% lotion once daily	Complete resolution of LS at 6-month follow-up

BID, twice daily; LS, lichen spinulosus; QHS, at bedtime; TAC, triamcinolone