Discoid Lupus Erythematosus Following Herpes Zoster

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PRACTICE **POINTS**

- Discoid lupus erythematosus (DLE) most commonly presents as scaling and crusted plaques in sun-exposed areas of the face and arms. It also may present in skin traumatized by tattoos, scratches, scars, prolonged heat exposure, and herpes zoster (HZ).
- Patients with a history of DLE who subsequently develop HZ should be followed closely for the development of DLE in HZ-affected dermatomes.
- Following resolution of HZ, topical corticosteroids may have a role in prevention of DLE in HZ-affected dermatomes.

The isomorphic response is the appearance of new lesions from a preexisting skin condition at a site of trauma. Discoid lupus erythematosus (DLE) may develop on traumatized skin and also may arise at sites of a prior cutaneous eruption. We report the case of a 20-year-old woman with a history of systemic lupus erythematosus (SLE) and DLE who developed a painful, multidermatomal, vesicular rash on the left breast and back consistent with herpes zoster (HZ) during treatment with systemic immunosuppression. Four months after the HZ resolved, the patient developed new-onset DLE lesions within the prior HZ-affected dermatomes. Our case is one of few reports of an isomorphic response in an immunosuppressed young woman with a history of SLE and DLE. When HZ presents in this patient population, close monitoring of the HZ-affected sites for any evidence of DLE is recommended. Topical corticosteroids should be applied to the involved areas at the earliest appearance of such lesions to further prevent potentially scarring DLE lesions.

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Cutaneous manifestations of systemic lupus erythematosus (SLE) can be classified as lupus-specific or lupus-nonspecific skin lesions. Lupus-specific lesions commonly are photodistributed, with involvement of the malar region, arms, and trunk. The development of discoid lupus erythematosus (DLE) in areas of trauma, including sun-exposed skin, is not uncommon and may be associated with an isomorphic response. We present a rare case of an isomorphic response following herpes zoster (HZ) in a young woman undergoing treatment with immunosuppressive agents for SLE and DLE. Potential prophylactic therapy also is discussed.

Case Report

A 19-year-old woman initially presented to an outside dermatologist for evaluation of new-onset scarring alopecia, crusted erythematous plaques on the face and arms, and arthralgia. A punch biopsy of a lesion on the left arm demonstrated a lichenoid and perivascular lymphocytic infiltrate with scattered necrotic keratinocytes, perifollicular inflammation, and focally thickened basement membrane at the dermoepidermal junction consistent with discoid lupus erythematosus (DLE). A laboratory workup for SLE revealed 1:1280 antinuclear antibodies (reference range, negative <1:80) with elevated titers of double-stranded DNA, Smith, ribonucleoprotein, Sjögren syndrome A, and Sjögren syndrome B autoantibodies with low complement levels. Based on these findings, a diagnosis of SLE and DLE was made.

At that time, the patient was started on hydroxychloroquine 200 mg twice daily for SLE. Four days later she developed swelling in both hands and feet, and hydroxychloroquine was stopped due to a presumed adverse reaction; however,

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her symptoms subsequently were determined to be polyarthritis secondary to a lupus flare. Prednisone 10 mg once daily was then initiated. The patient was encouraged to restart hydroxychloroquine, but she declined.

Over the next 13 months, the patient developed severe photosensitivity, oral ulcers, Raynaud phenomenon, anemia, and nephrotic-range proteinuria. She ultimately was diagnosed by the nephrology department at our institution with mixed diffuse proliferative and membranous glomerulonephritis. Induction therapy with oral mycophenolate mofetil 1000 mg twice daily and prednisone 60 mg once daily was started, followed by the addition of tacrolimus 1 mg twice daily. Despite immunosuppressive therapy, she continued to develop new discoid lesions on the face, chest, and arms. The disease course also was complicated by a pulmonary embolism and deep venous thrombosis, for which the hematology department initiated treatment with warfarin for anticoagulation. Anticardiolipin antibodies were negative at presentation and again 12 weeks later.

After 4 weeks of treatment with mycophenolate mofetil, prednisone, and tacrolimus, the patient developed a painful vesicular rash on the left breast with extension over the left axilla and scapula in a T3 to T4 dermatomal distribution. A clinical diagnosis of HZ was made, and she was started on intravenous acyclovir 10 mg/kg in dextrose 5% every 8 hours for 4 days followed by oral valacyclovir 1000 mg every 8 hours for 14 days, which led to resolution of the eruption.

Over the next 4 months, the patient continued to experience pain confined to the same dermatomal area as the HZ, which was consistent with postherpetic neuralgia. Mycophenolate mofetil was discontinued after she developed acute liver toxicity attributed to the drug. Upon discontinuation, the patient developed a new pruritic rash on both arms and the back. Physical examination by the dermatology department at our institution revealed diffuse, scaly, hyperpigmented papules and annular plaques with central pink hypopigmentation on the face, ears, anterior chest, arms, hands, and back. On the left anterior chest and back, the distribution was strikingly unilateral and multidermatomal (Figure 1). Upon further questioning, the patient confirmed that the areas of the new rash coincided with areas previously affected by HZ. Histologic examination of a representative lesion from the left lateral breast revealed hyperkeratosis, follicular plugging, a patchy lichenoid and perivascular mononuclear cell infiltrate, and pigment incontinence (Figure 2A). These histologic features were subtle and were not diagnostic for lupus; however, direct immunofluorescence demonstrated a continuous granular band of IgG and C3 along the dermoepidermal junction, confirming the diagnosis of DLE (Figure 2B). The histologic findings and clinical presentation were consistent with the development of DLE in areas of previous trauma from HZ. The patient continues to follow-up with the rheumatology and nephrology departments but was lost to dermatology follow-up.

Comment

The pathogenesis of DLE is poorly understood but is thought to be multifactorial, involving genetics, sun exposure, and immune dysregulation.[1] Development of DLE lesions in skin traumatized by tattoos, scratches, scars, and prolonged heat exposure has been reported.[2] Clarification of the mechanism(s) underlying these traumatized areas may provide insight into the pathophysiology of DLE.

The isomorphic response, also known as the Köbner phenomenon, is the development of a preexisting skin condition at a site of trauma. This phenomenon has been observed in several dermatologic conditions including psoriasis, lichen planus, systemic sclerosis, dermatomyositis, sarcoidosis, vitiligo, and DLE.[3] Koebnerization may result from trauma to the skin caused by scratches, sun exposure, radiography, prolonged heat and cold exposure, pressure, tattoos, scars, and inflammatory dermatoses.[2,4] Ueki[4] suggested that localized trauma to the skin stimulates an immune response that makes the traumatized site a target for a preexisting skin condition. Inflammatory mediators such as IL-1, tumor necrosis factor α, IL-6, and interferon γ have been implicated in the pathophysiology of the isomorphic response.[4]

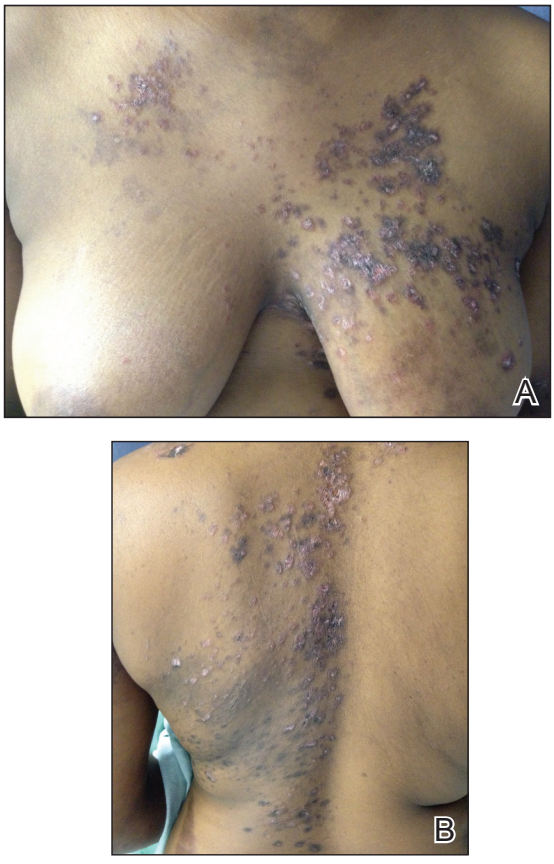

FIGURE 1. Discoid lupus erythematosus following herpes zoster presenting as scaly, hyperpigmented papules and annular plaques with central pink hypopigmentation on the left breast (A) and back in a unilateral, multidermatomal distribution (B).

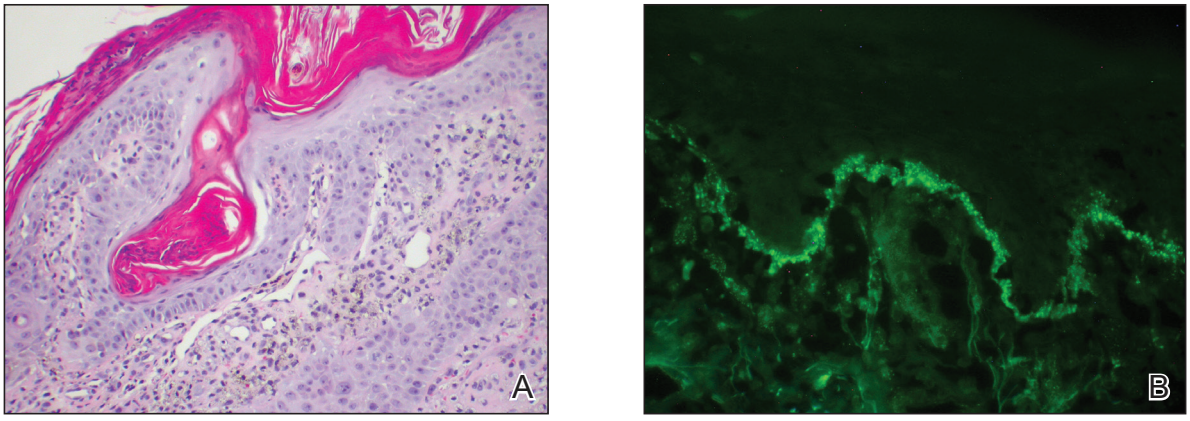

FIGURE 2. Discoid lupus erythematosus following herpes zoster. Subtle hyperkeratosis, follicular plugging, superficial perivascular mononuclear cell infiltrate, and pigment incontinence (A)(H&E, original magnification ×200). A continuous granular band of IgG and C3 was noted along the dermoepidermal junction on direct immunofluorescence (B)(original magnification ×200).

Wolf isotopic response is a similar entity that refers to the development of a novel skin condition at the site of a distinct, previously resolved skin disorder. This phenomenon was described by Wolf et al[5] in 1995, and since then over 170 cases have been reported.[5-7] In most cases the initial skin condition is HZ, although herpes simplex virus has also been implicated. The common resulting skin conditions include granulomatous reactions, malignant tumors, lichen planus, morphea, and infections. The notion that the antecedent skin disease alters the affected site and causes it to be more susceptible to autoimmunity has been proposed as a mechanism for the isotopic response.[7,8] While one might consider our presentation of DLE following HZ to be an isotopic response, we believe this case is best classified as an isomorphic response, as the patient already had an established diagnosis of DLE.

The development of DLE at the site of a previous HZ eruption has been described in 2 other cases of young women with SLE.[9,10] Unique to our case is the development of a multidermatomal eruption, which may be an indication of her degree of immunosuppression, as immunosuppressed patients are more likely to present with multidermatomal reactivation of varicella zoster virus and postherpetic neuralgia.[11] The similarities between our case and the 2 prior reports—including the patients' age, sex, history of SLE, and degree of immunosuppression—are noteworthy in that they may represent a subset of SLE patients who are predisposed to developing koebnerization following HZ. Physicians should be aware of this phenomenon and consider being proactive in preventing long-term damage.

When feasible, physicians should consider administering the HZ vaccine to reduce the course and severity of HZ before prescribing immunosuppressive agents. When HZ presents in young, immunosuppressed women with a history of SLE, we suggest monitoring the affected sites closely for any evidence of DLE. Topical corticosteroids should be applied to involved areas of the face or body at the earliest appearance of such lesions, which may prevent the isomorphic response and its potentially scarring DLE lesions. This will be our therapeutic approach if we encounter a similar clinical situation in the future. Further studies are warranted to assess the efficacy and optimal duration of this approach, which to our knowledge has not been reported in the literature. It may be that aggressive treatment for a few weeks can preclude the further development of DLE lesions; however, DLE lesions may appear in susceptible skin months after the HZ has resolved.

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