

Lichen planus eruption following annual influenza vaccination



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INTRODUCTION

With a prevalence of 1% of the global population,¹ lichen planus (LP) is a chronic inflammatory disorder, which can involve the skin and mucous membranes. Most often, this cell-mediated immune response is idiopathic, and its etiology is poorly understood. LP has been reported to be significantly associated with other autoimmune diseases along with hepatitis C and human immunodeficiency virus (HIV) infections.² Additionally, the ingestion of medications such as thiazide diuretics, gold, antimalarial agents, and others have been associated with LP.³ In more rare cases, vaccines including hepatitis B, tetanus–diphtheria–acellular pertussis (Tdap), and others, including rabies, have also been implicated in the precipitation of LP.^{1,4,5} New onset of LP has also been infrequently described after influenza vaccination.⁶ Herein, we present a relatively rare case of cutaneous LP after annual influenza vaccination associated with dermoscopy images of the lesions.

CASE REPORT

A 58-year-old Caucasian man with no significant past medical history presented to dermatology with recent onset of a pruritic rash on his trunk and extremities. The patient denied new medications, products, or recent changes in health. Of note, he did receive an intramuscular influenza vaccine (Afluria Quadrivalent 2020-2021, Seqirus) 14 days prior to his skin eruption. He had received the influenza vaccine in the years before; however, this was the first time he experienced an adverse reaction following injection. On examination, the rash consisted of scattered multiple red scaly papules and plaques on the back and flexor area of the forearms (Fig 1, A and B). There was no nail involvement or mucosal change.

Abbreviation used:

LP: lichen planus

He had no erythema or rash at the injection site. Polarized dermoscopy of the lesions revealed features of vessels as red dots and thick shiny white intersecting lines (Fig 2). The shiny white structures were annular, pearly-white areas with a pink background coloration consistent with Wickham striae. A skin biopsy revealed compact hyperkeratosis, wedge-shaped hypergranulosis, and a diffuse lichenoid lymphocytic infiltrate in the upper dermis associated with basilar vacuolar alteration consistent with LP (Fig 3). The absence of parakeratosis and the lack of eosinophils in the lichenoid infiltrate prohibited establishing the diagnosis of an LP-like drug eruption. The patient was treated with a medium-potency topical corticosteroid for several weeks, and his rash continued to fade. Clinicopathologic correlation led to a diagnosis of LP, which was likely secondary to influenza vaccination.

DISCUSSION

Clinically, LP presents as an inflammatory skin disorder consisting of pruritic, polygonal, purple, flat-topped papules and plaques. The dermoscopy image in Fig 2 demonstrates the classic findings in this condition. Development of LP has generally been associated with medications, including thiazide diuretics, beta blockers, nonsteroidal anti-inflammatory drugs, gold, antimalarial agents, penicillamine, quinidine, and angiotensin-converting enzyme inhibitors in addition to infections such as HIV and hepatitis C.^{2,3} It has also been associated with other autoimmune disorders, including

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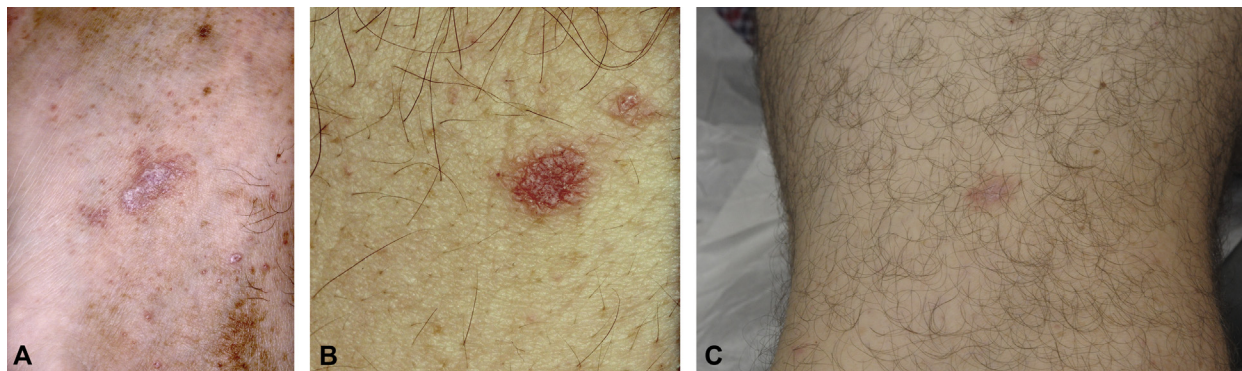


Fig 1. **A**, Clinical lesions. An erythematous scaly plaque on the flexor portion of the forearm. **B**, Another clinical lesion, higher magnification: A well-demarcated pink to purple plaque on the lower portion of the back. **C**, On the medial aspect of the back, a well-demarcated pink to purple plaque was observed, and a smaller pink plaque was observed on the lower portion of the back.

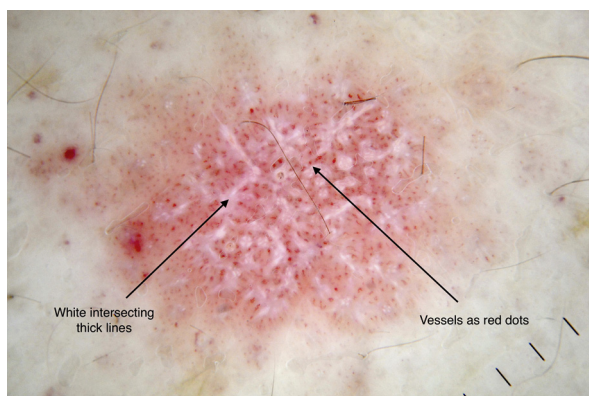


Fig 2. Dermoscopic image of the lesion depicted in [Fig 1, B](#). Polarized dermoscopy of the lesion on the back revealed features of vessels as *red dots* and thick shiny *white intersecting lines*. The shiny white structures were annular, pearly-white areas with a pink background coloration consistent with Wickham striae.

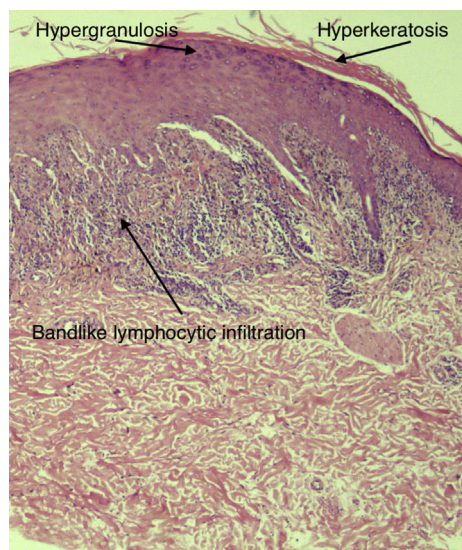


Fig 3. Histopathology of a skin lesion. A punch biopsy revealed compact hyperkeratosis, wedge-shaped hypergranulosis, and a diffuse lichenoid lymphocytic infiltrate in the upper dermis associated with basilar vacuolar alteration consistent with lichen planus. *LP*, Lichen planus.

systemic lupus erythematosus, Sjögren's syndrome, morphea, dermatomyositis, vitiligo, alopecia areata, ulcerative colitis, lichen sclerosus, and myasthenia gravis.⁷ The etiology of this condition is poorly understood, but a T-cell-mediated immune response against basal keratinocytes may be involved.¹ The mechanism of vaccine-induced LP is also unclear, but it has been proposed that an autoimmune reaction occurs against epitopes on basal keratinocytes that cross-react with exogenous antigens present in vaccines.⁴ The histopathology of LP is also indicative of an immunologic phenomenon given the lymphocytic infiltrate and vacuolar changes seen at the dermal-epidermal junction. However, the specific component in the vaccine initiating this immune alteration is currently unknown.

It is estimated that approximately 175 million doses of influenza vaccine will be administered this year.⁸ The most common adverse cutaneous effects of vaccinations are localized injection site reactions.¹ Uncommonly, other skin conditions have developed following influenza vaccine injection, such as toxic epidermal necrolysis, Sweet syndrome, erythema nodosum, Gianotti-Crosti, vasculitis, bullous pemphigoid, pemphigus, and, as in our case, LP.⁶ Lichen planus rarely occurs after influenza vaccination. To our knowledge, only 6 other cases of LP have been reported in the literature after receiving an influenza vaccine. A study by Lai and Yew⁹ utilized the Vaccine

Adverse Event Reporting System national database in the United States from July 1990 to November 2014 and found a total of 33 vaccinations with an adverse event of LP or lichenoid drug eruption. Of those, hepatitis B, influenza, and herpes zoster vaccines were the 3 most commonly associated vaccines with an incidence of 8, 6, and 5 cases respectively.⁹ Other cases of LP have also been reported after Tdap and rabies vaccine administration.^{1,4,5} Previous reports also stated that the median time elapsed before developing these skin eruptions was 14 days, highlighting the importance of obtaining vaccination history in patients presenting with new onset of these conditions.^{6,9} Importantly, LP can develop regardless of vaccination history as evidenced by a reported case of linear LP, a rare variant of LP, occurring in an otherwise healthy man after he had received 14 previous influenza vaccines.¹⁰ Given the ongoing Covid-19 pandemic and the vaccine that will soon be administered to millions of patients in the upcoming months along with the annual influenza vaccine, it is important that clinicians be aware of this potential cutaneous adverse effect. Although rare, it is crucial to identify LP and lichenoid drug eruptions early to ensure better outcomes and patient care.

Conflicts of interest

None declared for Kristin Torre, Jane M. Grant-Kels, and Margaret Oliviero. Conflicts for Harold Rabinovitz include:

3Gen: clinical investigator and speaker; Metoptima: salaried medical advisor.

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