

Lichen striatus post-COVID–19 vaccination



Morgan E. Belina, BS,^a Melissa M. Sarver, BS,^a Rami Al-Rohil, MD, MBBS,^b and Amber Fresco, MD^c
Durham, North Carolina

Key words: COVID; cutaneous eruption; lichen striatus; vaccine.

INTRODUCTION

Reports of cutaneous reactions to COVID-19 vaccination are increasing as the scope of vaccination expands, and more data are available for study. For example, a recent review of 414 registry patients with dermatologic reactions following mRNA COVID-19 vaccination demonstrated that cutaneous eruptions often occurred in individuals without a dermatologic history and typically arose in the vaccinated arm within days.¹ The same study also reported a female predominance of 90% in cutaneous reactions to COVID-19 vaccination. Adding to this body of evidence, we, herein, describe an eruption of lichen striatus occurring several days after COVID-19 vaccination in a middle-aged woman. Of note, there is 1 recently reported case of lichen planus that developed 48 hours following the receipt of the Pfizer vaccine in a patient with a history of successfully treated lichen planus.² Our case, however, to our knowledge, is the first reported instance of lichen striatus following COVID-19 vaccination, with more profound implications on the pathogenesis of this dermatologic condition.

CASE REPORT

A 42-year-old woman presented to an outpatient dermatology clinic for a persistent eruption of 2 months' duration that developed 3 days after her second dose of the Pfizer COVID-19 vaccine. She had no personal or family history of atopy, psoriasis, or other inflammatory skin conditions. She received the second vaccination dose in her right deltoid. The pruritic rash began on her right wrist and spread proximally up her arm, extending to the upper portion of the anterior aspect of the chest.



Fig 1. Persistent eruption that developed 3 days after Pfizer COVID-19 vaccination. Clinical examination revealed pinpoint, flat-topped, erythematous papules in a blaschkoid distribution extending from the volar aspect of the right wrist to the anterior aspect of the right shoulder or chest.

Examination revealed pinpoint, flat-topped, erythematous papules in a blaschkoid distribution extending from the volar aspect of the right wrist to the anterior aspect of the right shoulder and chest.

From the Duke University School of Medicine, Durham,^a Department of Pathology,^b and Department of Dermatology, Duke University Medical Center, Durham.^c

Authors Belina and Sarver contributed equally to this article.

Funding sources: None.

IRB approval status: Not applicable.

Correspondence to: Amber Fresco, MD, Department of Dermatology, Duke University Medical Center, Durham, NC 27710. E-mail: amber.ingram@duke.edu.

JAAD Case Reports 2021;16:16-8.
 2352-5126

© 2021 by the American Academy of Dermatology, Inc. Published by Elsevier, Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

<https://doi.org/10.1016/j.jidcr.2021.07.031>

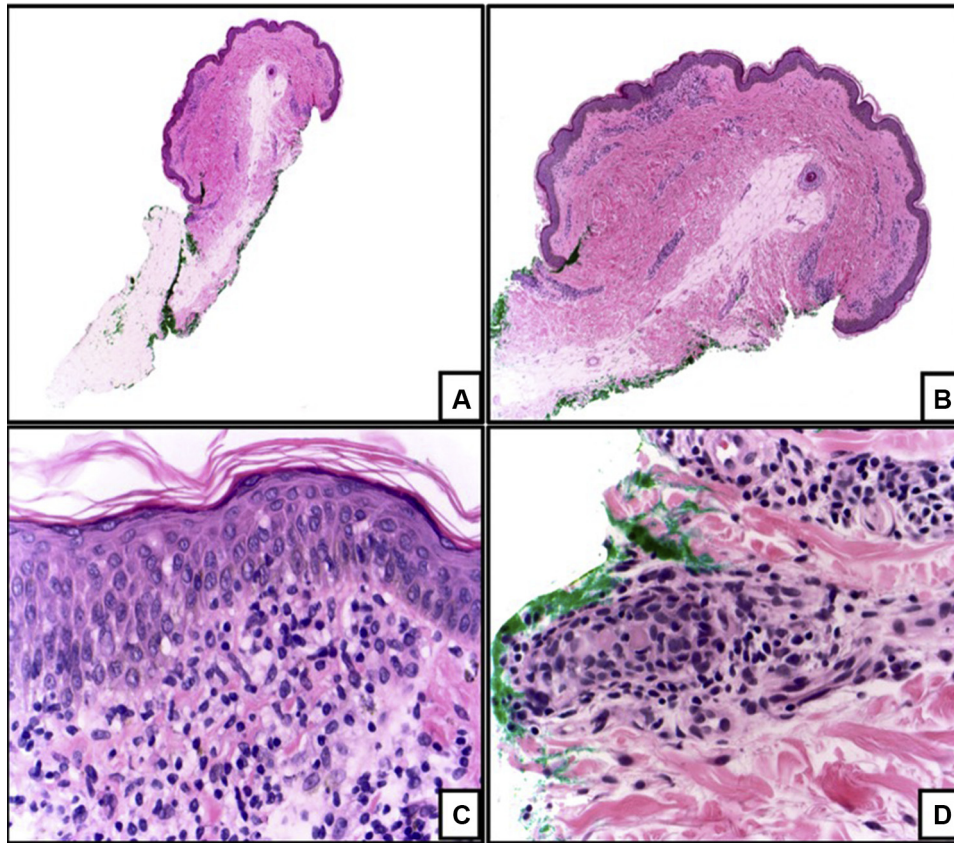


Fig 2. Dermatopathology findings: lichen striatus. **A**, Low-power examination of a punch biopsy of the skin shows a superficial and deep lymphocytic infiltrate. **B**, Closer inspection shows a focal lichenoid, perivascular, and peri-eccrine distribution. **C**, Vacuolar interface changes with isolated dyskeratotic keratinocytes. **D**, Peri-eccrine lymphocytic infiltrate in the deep dermis. (A–D, Hematoxylin-eosin stain; original magnifications: **A**, $\times 2$; **B**, $\times 4$; **C**, $\times 40$; **D**, $\times 40$.)

(Fig 1). The eruption occurred adjacent to the patient's tattoos, which were completed in 2009. Biopsy of a representative lesion revealed lichenoid interface dermatitis with a perivascular and perieccrine-distributed infiltrate of lymphocytes in the superficial and deep dermis, consistent with lichen striatus (Fig 2). The patient was prescribed 0.1% topical tacrolimus and counseled on laser therapy for resultant postinflammatory hyperpigmentation.

DISCUSSION

Lichen striatus is an acquired, often self-limited, inflammatory dermatosis consisting of erythematous papules along the lines of Blaschko. This cutaneous eruption is typically observed in children and only rarely in adults, with lesions primarily seen on the extremities and occasionally on the trunk or scalp.³ The pathogenesis of lichen striatus remains unresolved, although precipitating factors, such as viral infection, skin injury, environmental agents, and

genetic predisposition, have been identified. Immunotyping of the dermal infiltrate of a small group of patients with lichen striatus demonstrated the predominance of CD8⁺ cells compared with that in healthy controls, suggesting a role of effector T cells.⁴

To our knowledge, there exist only 3 reports of lichen striatus in adults induced by vaccination and no previous reports of lichen striatus in response to COVID-19 vaccination: 2 cases in which lichen striatus developed post hepatitis B vaccination and 1 in which lichen striatus developed after vaccination for yellow fever.⁵ Previous studies have postulated that cross-reactivity between shared epitopes on keratinocytes and viral proteins in the vaccines may induce the loss of tolerance to cells of varying genetic lineage along the lines of Blaschko and, thus, result in lichen striatus.⁶ Of note, the yellow fever and hepatitis B vaccines consist of live attenuated virus and recombinant surface protein, respectively. Thus, the development of lichen striatus in response

to immunization with mRNA, as in the case of our patient, adds complexity to our current understanding of lichen striatus and its pathogenesis. As the scope of COVID-19 vaccination expands globally, other cases of vaccine-induced lichen striatus may be expected.

Conflicts of interest

None disclosed.

REFERENCES

1. McMahon DE, Amerson E, Rosenbach M, et al. Cutaneous reactions reported after Moderna and Pfizer COVID-19 vaccination: a registry-based study of 414 cases. *J Am Acad Dermatol*. 2021;85(1):46-55.
2. Hiltun I, Sarriugarte J, Martínez-de-Espronceda I, et al. Lichen planus arising after COVID-19 vaccination. *J Eur Acad Dermatol Venereol*. 2021;35(7):e414-e415.
3. Hofer T. Lichen striatus in adults or 'adult blaschkitis'?. There is no need for a new naming. *Dermatology (Basel, Switzerland)*. 2003;207(1):89-92.
4. Zhou Y, Yu ZZ, Peng J, Yang PP, Li SJ, Fan YM. Lichen striatus versus linear lichen planus: a comparison of clinicopathological features, immunoprofile of infiltrated cells, and epidermal proliferation and differentiation. *Int J Dermatol*. 2016;55(4):e204-e210.
5. Jones J, Marquart JD, Logemann NF, DiBlasi DR. Lichen striatus-like eruption in an adult following hepatitis B vaccination: a case report and review of the literature. *Dermatol Online J*. 2018;24(7):13030/qt1hr764kv.
6. Karouni M, Kurban M, Abbas O. Lichen striatus following yellow fever vaccination in an adult woman. *Clin Exp Dermatol*. 2017;42(7):823-824.