Early-Onset Cutaneous Pseudolymphoma Secondary to Influenza Vaccination in Skin of Color

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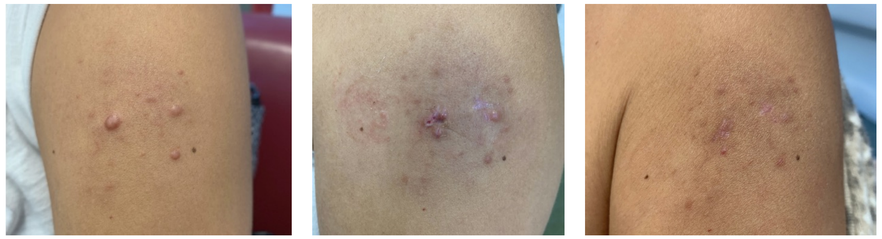
INTRODUCTION

- Cutaneous lymphoid hyperplasia, also known as pseudolymphoma, is a group of benign skin conditions which histologically resembles malignant lymphoma.[1] It has been well-described to be related to arthropod bites,[2] viral infections,[3] tattoos,[4] allergy desensitizing injections,[5] and certain vaccine inoculations.[6] Two cases of pseudolymphoma due to influenza vaccination have been reported in Caucasian women.[7] Herein, the authors present and describe the clinical, histopathologic, and immunohistochemical findings of a case of early-onset cutaneous pseudolymphoma secondary to influenza inoculation in a Mexican female with Fitzpatrick skin type IV.

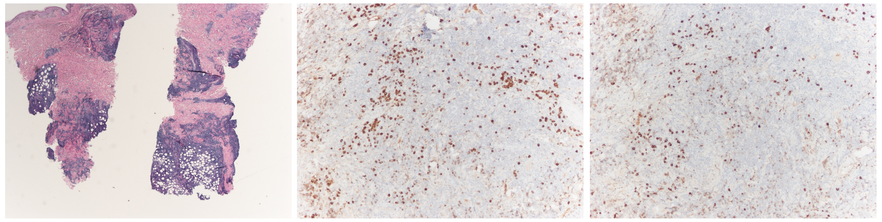
CASE REPORT

- A 38-year-old healthy Mexican woman presented to an outpatient dermatology clinic with multiple, erythematous papules on a dusky patch, at the site of a left deltoid intramuscular influenza vaccine injection.
- The localized eruption developed one day after the injection and remained unchanged over the next two months. She reported a mild, persistent burning sensation of the eruption but denied ever experiencing itchiness, fever, myalgia, or malaise. She denied a prior history of adverse cutaneous reactions to inoculations and has no known drug allergies. On exam, there was a 4 x 3 cm dusky patch at the injection site studded with multiple agminated, deep-seated, flesh-colored to erythematous, 1-5 mm papules **(Figure 1a)**. The area was mildly tender to palpation.
- The clinical differential diagnosis at the time included: atypical mycobacterial infection, panniculitis, or granulomatous reaction.
- At the initial visit, a 4 mm punch biopsy was performed for dermatopathologic assessment. One month later, a 4 mm double-trephine punch biopsy was performed for T-cell and B-cell gene rearrangement studies. Two milliliters of intralesional triamcinolone acetonide (5 mg/mL) solution was injected at the same visit. Upon two-week follow-up after the double-trephine punch biopsy, both biopsy scars were healing well, and the papules were smaller and less erythematous, but the patch appeared darker brown **(Figure 1b)**.
- At the final visit one month later, the overlying papules shrunk to near resolution, the hyperpigmented patch appeared lighter, and there was no notable erythema **(Figure 1c)**. Our patient expressed satisfaction with the noticeable improvement of the eruption and was reassured of the benign nature of the condition as well as potential risk of recurrence.

FIGURES



Clinical photographs from the initial visit **(figure 1a, left)**, two-week follow-up visit after double-trephine punch biopsy and ILTAC injection **(figure 1b, center)**, and final follow-up visit 11 weeks after the initial visit **(Figure 1c, right)**.



Histopathology images of the biopsy specimen with hematoxylin & eosin stain, 2x **(Figure 2a, left)**, kappa stain, 10x **(Figure 2b, center)**, and lambda stain, 10x **(Figure 2c, right)**.

HISTOPATHOLOGY & IMMUNOHISTOCHEMISTRY

- Histopathologic evaluation revealed a superficial and deep nodular and diffuse dermal lymphocytic infiltrate of predominantly small B-cells and small T-cells with a few small germinal centers and sparse plasma cells, extending into the upper subcutis **(Figure 2a)**.
- With immunohistochemistry, 60% of the infiltrate was composed of predominantly small CD20+, Pax5+ B-cells, and 40% small CD3+ T-cells. The majority of the T-cells were CD4+. The infiltrate was negative with CD23, CD30, CD56, Bcl-6, and cyclin D1.
- CD21 stain highlighted remnants of small non-infiltrated germinal centers and dendritic cell meshworks. Bcl-2 reacted with T-cells and some small B-cells. There were rare plasma cells with a slight predominance of kappa over lambda. Kappa and lambda stains highlighted the polyclonal plasma cells **(Figures 2b, 2c)**.
- Acid-fast and Fite stains were negative for mycobacteria.
- B-cell and T-cell gene rearrangement studies were negative for monoclonality.

DISCUSSION

- Cutaneous pseudolymphoma is an uncommon dermatological condition that is most often associated with arthropod bites. Few case reports and case series have identified cutaneous pseudolymphoma as a rare adverse event secondary to vaccine injections. The clinical presentation of cutaneous pseudolymphoma can vary greatly among patients and few clinical images are available in the literature. It is often overlooked among the differential diagnosis when patients initially present with these eruptions and a history of vaccine injection.
- To our knowledge, this is the first described case of cutaneous pseudolymphoma secondary to influenza vaccination in skin of color. At the two-week follow-up after treating with intralesional triamcinolone acetonide injections, our patient was particularly frustrated with the persistent darkening of the eruption. Concurrently shrinking papules further indicated that the darkening of the dusky patch most likely was attributed to post-inflammatory hyperpigmentation, a sequela of the healing process which is especially common in skin of color.
- Given the ongoing global vaccination effort against COVID-19, the authors seek to bring awareness to and describe one of the rare cutaneous adverse events of vaccine injections, which follows a benign course, contrary to its namesake. Therefore, the general public should not be dissuaded from obtaining the COVID-19 vaccine.
- The pathogenesis of cutaneous pseudolymphoma is not fully understood but it is known to respond well to corticosteroid injection, local radiotherapy, and excision.[6,7] Long-term, close follow-up is recommended for patients with a history of cutaneous pseudolymphoma as it has been documented to recur spontaneously and from future inoculations.[7,8]

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