Recurrent giant cellulitis-like Sweet syndrome induced by SARS-CoV-2 Pfizer-BioNTech mRNA vaccine

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Abstract

Primary and booster vaccines for SARS-CoV-2 are the most effective methods of preventing infection and are generally considered safe. However, many cutaneous adverse events have been reported following vaccination. To date, there have been seven reported cases of Sweet syndrome occurring after the first dose of the SARS-CoV-2 vaccine. We describe a rare case of atypical giant-cellulitis like Sweet syndrome reemerging after receiving the SARS-CoV-2 booster vaccine.

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Introduction

Sweet syndrome, or acute febrile neutrophilic dermatosis, is an inflammatory disorder that presents as numerous painful, erythematous, edematous, and well-demarcated plaques. These lesions can occur on any part of the body but typically favor the head, neck, and extremities. Extracutaneous manifestations include fever, malaise, and myalgias, with laboratory evaluation revealing a neutrophilic leukocytosis, an elevated erythrocyte sedimentation rate, and a positive C-reactive protein.[1] Sweet syndrome has a female preponderance, and the average age of onset is between 47 and 57 years.[2] The diagnosis of Sweet syndrome is based on a combination of clinical and histopathologic findings. Dense collections of dermal neutrophils without leukocytoclastic vasculitis are commonly seen upon a skin biopsy. Minor diagnostic criteria include fever, associated abnormal laboratory values, and a response to corticosteroids. The pathogenesis of Sweet syndrome is unknown but can be associated with inflammatory bowel disease, hematologic malignancy, pregnancy, or vaccinations.[1,2]

Vaccination against SARS-CoV2 is both safe and effective for mitigating infection. With over 250 million people in the United States having received at least one dose of the vaccine, there is an increasing incidence of side effects being reported. Cutaneous adverse events, particularly injection site reactions, are among the most common and are typically mild to moderate in severity. In rare instances, Sweet syndrome has been reported following the SARS-CoV2 vaccination. Herein, we report a case of recurrent Sweet syndrome triggered by a SARS-CoV2 booster vaccine.

Case Report

A woman in her seventies with a history of Sweet syndrome presented to our outpatient dermatology clinic with a painful rash isolated to her right lower extremity. The patient had received her third SARS-CoV2 Pfizer-BioNTech mRNA vaccine two days before the appearance of her rash. Skin examination revealed a large erythematous and indurated plaque, measuring 50 cm in diameter, extending from the gluteal area to her thigh (Figure 1). Review of systems was positive for a self-reported low-grade fever of 100.5'C. Past medical history was pertinent for a morphologically similar rash associated with recurrent fever in the same location seven years prior. A trial of oral broad-spectrum antibiotics did not lead to any symptomatic improvement. Then, a skin biopsy was performed and showed a superficial and mid-dermal perivascular and interstitial inflammatory infiltrate consisting of numerous neutrophils with papillary dermal edema present. The diagnosis of atypical giant cellulitis-like Sweet syndrome was established in the context of the clinical presentation and histopathology findings. The patient responded well to dapsone after failing to significantly improve with colchicine, oral corti-

costeroids, and intramuscular kenalog. The patient's Sweet syndrome had been in remission until this new episode following her SARS-CoV-2 booster vaccine. Given the patient's history of biopsy-proven Sweet syndrome and her cutaneous examination, she was diagnosed with recurrent giant cellulitis-like Sweet syndrome, most likely induced by the SARS-CoV-2 booster vaccine. An intramuscular kenalog injection was administered. Resolution of the rash occurred within one week, with some residual mild post-inflammatory hyperpigmentation (Figure 2).

Discussion

Vaccines are biological preparations containing adjuvants that provide acquired active immunity to a particular infectious disease. Various mechanisms have been proposed to explain the cutaneous reactions that can occur following vaccination. These include enhanced innate immune system responses through T-cell activation, which may be related to the vaccine compound itself or its adjuvants. We hypothesize that in our case, the patient may have developed a fever after receiving the booster vaccine due to the enhanced antibody response, triggering the recurrence of Sweet syndrome. The pathogenic role of the vaccine in this recurrence is strongly supported by the short latency period between vaccination and symptom onset.

There have been seven reported cases of Sweet syndrome following the SARS-CoV-2 vaccine that have been published thus far. Each of these reports occurred in patients following their first doses of the vaccine. Two cases were induced by the Moderna mRNA vaccine, one by the AstraZeneca vaccine-Covishield, and four by the Pfizer-BioNTech mRNA vaccine.[3-8] In all of these patients, it was their first episode of Sweet syndrome. Additionally, there has been one case of a recurrence of Sweet syndrome after receiving the Moderna mRNA vaccine.[9] Our case is unique in that, to the best of our knowledge, this is the first instance of Sweet syndrome recurrence in response to a patient receiving a booster SARS-CoV-2 Pfizer-BioNTech mRNA vaccine. The patient had previously been administered two doses of the same vaccine formulation without any signs of reemergence.

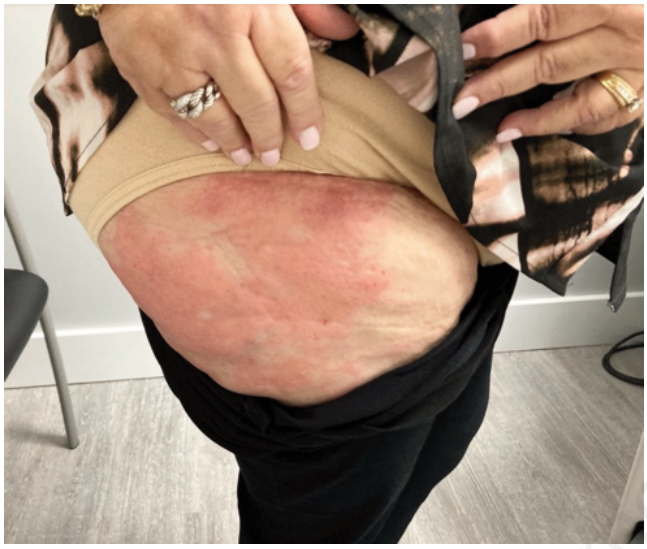

Figure 1. Erythematous indurated rash >50 cm in diameter on the patient's right gluteal area, extending to her thigh.

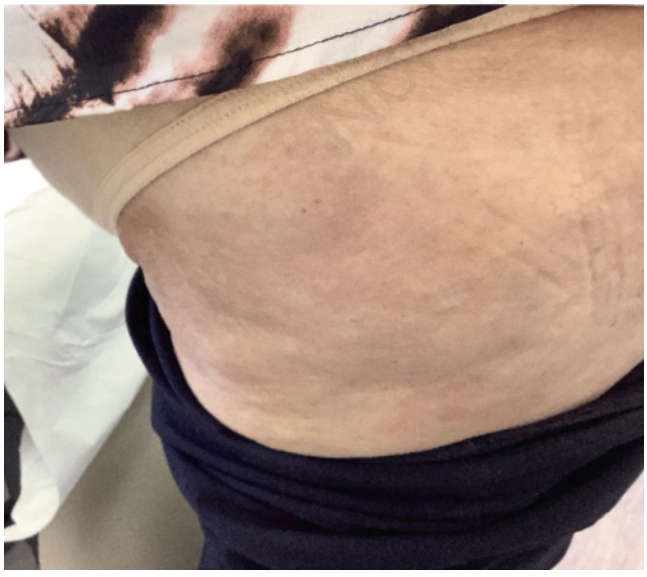

Figure 2. Post-inflammatory hyperpigmentation at the one-week follow-up appointment after receiving intramuscular triamcinolone.

Conclusions

Dermatologists should be aware of the potential for recurrence in patients with a history of Sweet syndrome following vaccination against SARS-CoV-2. Not only may this occur after receiving the initial SARS-CoV-2 vaccine but also from the booster vaccine, despite having no reaction to previous doses.

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