Open Journal of
Clinical & Medical
Case Reports

Volume 8 (2022)
Issue 12

Case Report

ISSN: 2379-1039

Delayed chronic urticaria after the mRNA-1273 Sars-CoV-2 moderna booster dose

***Corresponding Author: Paige Finkelstein**
Columbia University, USA.
Email: pfinkelstein23@gsb.columbia.edu

Abstract

The Covid-19 pandemic accelerated research, testing, and distribution of a novel mRNA vaccine class. While availability of the vaccine has undeniably saved millions of lives, the post market surveillance period is a critical time to shed light on potential adverse side effects. Here we present the case of a 29-year-old female with no previous immunological or allergic history who presented with a delayed urticarial rash 10 days after receiving the vaccine booster dose, despite no cutaneous reactions after either the first two full vaccine doses. Between her second vaccine dose and booster dose, she did develop Covid-19 infection. While urticarial rashes have been noted between the full first and second doses, delayed dermatologic side effects from just the booster (half) dose have not yet been reported. Additionally, the combination of vaccine inoculation and prior covid infection relative to the subsequent development of cutaneous sequelae has not yet been fully explored.

Keywords

Delayed hypersensitivity; Covid-19; Corona virus; Booster; Urticarial; Case report.

Introduction

The corona virus pandemic presented the medical community with a series of unprecedented public health challenges; to this day we continue to learn more about the pathology and prognosis of Covid-19 infection. Upon overwhelming public concern, a novel class of mRNA vaccines was developed, tested, and brought to market in record time. While the Moderna mRNA SARS-CoV-2 vaccine was awarded full FDA approval in January 2022, we are now in the post market surveillance period and providers should be encouraged to report additional adverse reactions linked to vaccine administration. Here we describe the development of chronic urticaria and other cutaneous manifestations in 29-year-old female 10 days subsequent to the booster dose administration of the Moderna mRNA SARS-CoV-2 vaccine.

Case Presentation

A 29-year-old female presented to clinic with a chief complaint of a two-week history of generalized urticaria (Figure 1), edema, erythromelalgia of the hands and feet (Figure 2), an eczematous plaque (Figure 3), and dermatographia; she complained of pruritus of the oropharyngeal cavity as well.

She denied any history of environmental or food allergies and denied any new lifestyle changes or contact with new chemical agents. Upon further questioning, it was revealed that the patient had been vaccinated with the booster dose of Moderna mRNA SARS-CoV-2 vaccine exactly ten days prior to the onset of the symptoms.

The patient had a total of three exposures to the Moderna vaccine, in accordance with the CDC recommendations. She received the first dose of the Moderna mRNA SARS-CoV-2 vaccine on March 10, 2021 and reported having only arm pain for several days following inoculation. She received the second dose on April 07, 2021, and subsequently suffered significantly more side effects including fever, chills, nausea, and fatigue. These symptoms began 8 hours after exposure and lasted for 3-4 days. The patient afterwards made a full recovery.

Despite vaccination, the patient was diagnosed with Covid-19 on December 19, 2021. She experienced symptoms significant for congestion, fatigue, myalgia, ageusia, and fever up to 104°F. She was treated with supportive care and made a full recovery after 10 days.

The patient received a booster dose of the Moderna vaccine on January 31, 2022. This booster dose was half the dose of the original Moderna dose. She reported symptoms of fever, myalgia, and fatigue in the acute period, which began about 12 hours after inoculation and lasted for about 24 hours. The patient developed urticaria 10 days after the booster dose.

The patient tried over-the-counter medications including topical hydrocortisone, cetirizine, and diphenhydramine, as well as prescription hydroxyzine. Over the counter medication was unable to provide any relief, and the patient complained that hydroxyzine was too sedating.

Upon arrival to the clinic, her vitals were within normal limits and there was clear evidence of urticaria/dermatographia present. Her history was reported as above, and she was diagnosed with vaccine induced chronic urticaria. No further workup was warranted at this time and neither history nor signs or symptoms were consistent with an acute allergic reaction.

The patient was started on fexofenadine 180 mg BID and famotidine 40 mg QD. She had immediate relief of symptoms within 1 hour of starting treatment. We attempted treatment for one week before stopping the medication to see how she would fare. However, about 24 hours after stopping treatment, generalized urticaria returned. She followed up in clinic again where the decision was made to continue treatment for another 6-10 weeks. On treatment, the patient's symptoms were well controlled for now, but she does suffer from fatigue as a side of effect of the anti-histamine medication. Thus, alternative long-term treat-

ment plans such as proceeding to the use of anti-immunoglobulin E antibody omalizumab (Xolair) have been discussed if needed.

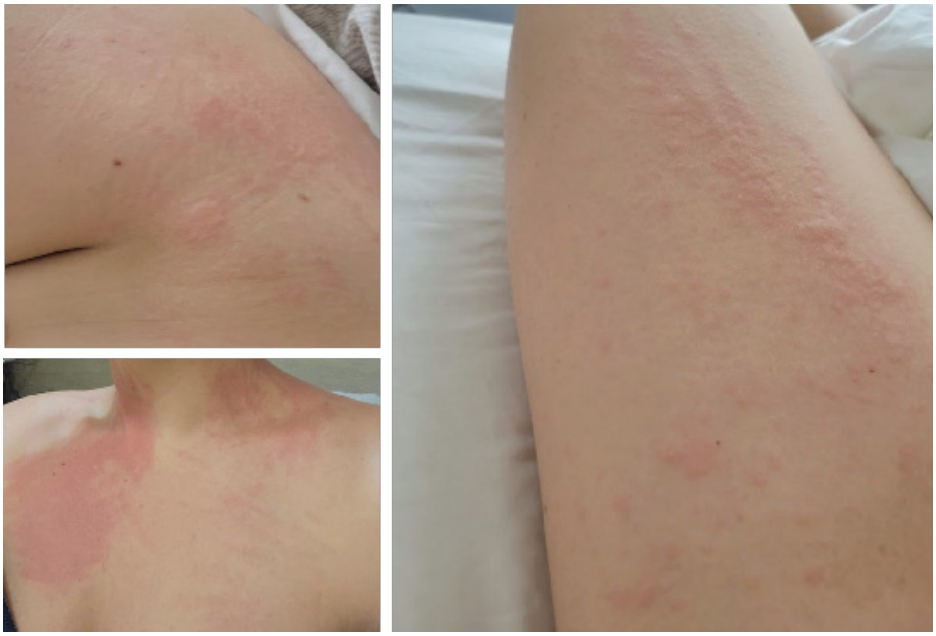

Figure 1: Diffuse urticarial rash on the patient's right hip (top left), chest and neck (bottom left) and left leg (right) which developed 10 days after inoculation with mRNA-1273 SARS-CoV-2 Moderna vaccine booster. The patient previously had no cutaneous reaction to either the first of second full doses of the Moderna vaccine but did have a Covid-19 infection between second dose and booster dose.

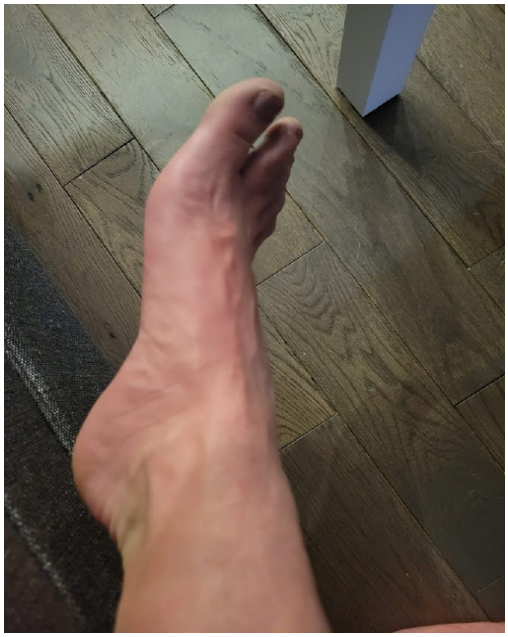

Figure 2: Erythromelalgia of the patient's right foot which developed concurrently with the urticarial reaction.

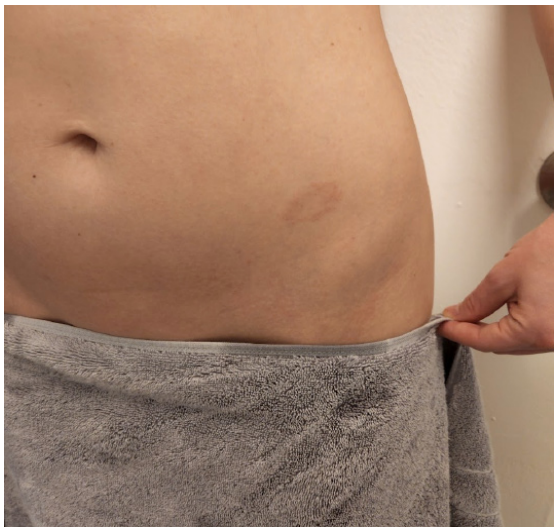

Figure 3: An eczematous plaque on the patient's torso which developed concurrently with the urticarial reaction.

Discussion

In alignment with the symptoms the patient reported, urticaria is a condition that involves both skin and mucosal tissues and is characterized by wheals and/or angioedema. While Covid-19 presents with a wide array of symptoms, cutaneous manifestations such as urticaria have been well described in

association with SARS-CoV-2 infection [1]. Furthermore, urticaria has been reported after receiving the first and/or second doses of both the Moderna and Pfizer vaccines [2,3]. Delayed urticaria (>24 hours after vaccination) was seen in 4.8% of patients getting the first dose of the Moderna vaccine and 4.9% of patients receiving the second dose [3]. However, what has not been previously described are patients experiencing dermatologic effects after receiving a third, booster (half) dose of the Moderna vaccine, especially after having experienced no previous cutaneous symptoms from the prior two (full) doses.

While vaccines do not prevent Covid-19 infection, they help thwart serious disease leading to hospitalization and/or death. The Moderna and Pfizer vaccines work by allowing our cells to produce the foreign binding protein of SARS-CoV-2, which promotes a T-cell and B-cell mediated immune response. Concurrently, autoimmune processes are the main suggested mechanism of chronic urticaria via autoantibodies that are directed against mast cells and subsequently trigger their activation and degranulation [4]. The immune response triggered by SARS- CoV-2 vaccine is in accordance with this theory. However, why some patients develop urticaria after a different number of vaccine exposures or after prior Covid-19 infection has yet to be explained. One case series describes urticarial reactions after vaccination in a cohort of patients, of which half specifically had prior COVID-19 infection. This suggests that a memory T-cell response to a component of both the Covid-19 virus and the mRNA vaccine is a likely culprit [5].

Given the accelerated timeline of vaccine development, questions about the benefits of immunity versus risk of adverse events still linger in the medical community. The Centers for Disease Control and Prevention have noted that acute pruritus, urticaria, flushing, and angioedema occurring within the first 4 hours of injection are defined as immediate hypersensitivity reactions and are thus potential contraindications for additional doses [6]. However, for patients who have experienced any other adverse events linked to the corona virus vaccine, how to proceed with further SARS-CoV-2 vaccination should be discussed with their healthcare providers. Additionally, future research is needed to help providers tease out candidates who are at high risk of adverse events from the SARS-CoV-2 vaccination so that additional precautions can be put in place as needed.

Acknowledgements: Thank you to Mara Shapero, MD, MPH

References

1. Algaadi SA, Salim C, Algaadi A. Urticaria and COVID-19: A review. Dermatologic Therapy. 2020.

2. Magro C, Crowson AN, Franks L, Schaffer PR, Whelan P, Nuovo G. The histologic and molecular correlates of COVID-19 vaccine-induced changes in the skin. Clinics in Dermatology. 2021; 39: 966–84.

3. McMahon DE, Amerson E, Rosenbach M, Lipoff JB, Moustafa D, Tyagi A, et al. Cutaneous reactions reported after Moderna and Pfizer COVID-19 vaccination: A registry-based study of 414 cases. J Am Acad Dermatol [Internet]. 2021; 85: 46–55.

4. Alflen C, Birch K, Shilian R, Wu SS, Hostoffer R. Two Cases of Well Controlled Chronic Spontaneous Urticaria Triggered by the Moderna COVID-19 Vaccine. Allergy Rhinol (Providence). 2021; 12: 21526567211026270.

5. Pitlick MM, Joshi AY, Gonzalez-Estrada A, Chiarella SE. Delayed systemic urticarial reactions following mRNA COVID-19 vaccination. Allergy and Asthma Proceedings [Internet]. 2022; 43: 40.

6. Interim Clinical Considerations for Use of COVID-19 Vaccines | CDC. 2022.

Manuscript Information: Received: July 17, 2022; Accepted: August 15, 2022; Published: August 19, 2022

Authors Information: Paige Finkelstein
Columbia University, USA.

Citation: Finkelstein P. Delayed chronic urticaria after the mRNA-1273 Sars-CoV-2 moderna booster dose. Open J Clin Med Case Rep. 2022; 1890.

About the Journal: Open Journal of Clinical and Medical Case Reports is an international, open access, peer reviewed Journal focusing exclusively on case reports covering all areas of clinical & medical sciences.
Visit the journal website at www.jclinmedcasereports.com
For reprints and other information, contact info@jclinmedcasereports.com