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# Vulvar Aphthous Ulcer Following Pfizer-BioNTech COVID-19 Vaccine – A Case Report



Abigail Drucker, MD\*, Kellianne Corrao, MD, Mallory Gandy, MD

University of Nebraska Medical Center, Children's Hospital and Medical Center, Omaha, Nebraska

## ABSTRACT

**Background:** In this case report, we describe a potential association between the Pfizer-BioNTech COVID-19 vaccine and development of a vulvar aphthous ulcer in a virginal 14-year-old girl.

**Case:** A 14-year-old patient reported vulvar pain and visible lesion. Exam findings were consistent with vulvar aphthous ulcers. Two days prior to the onset of her symptoms she received her second Pfizer-BioNTech COVID-19 vaccine. The evening of vaccine administration, she experienced several hours duration of fatigue, muscle aching and insomnia but had otherwise been recently healthy and testing for common viral associations of vulvar ulcers was negative.

**Summary and Conclusion:** Vaccination, in general, has been associated with mucosal side-effects and oral ulceration has been reported in subjects who received Pfizer-BioNTech COVID-19 vaccine. It is reasonable to hypothesize that vulvar ulceration may be caused by a similar mechanism and should be considered a rare side effect of this vaccine.

**Keywords:** Vulvar ulcer, Pfizer vaccine, COVID-19 vaccine, Aphthous ulcer, COVID-19

## Introduction

Vaccination against SARS-CoV-2 is a vital tool for ending the current pandemic. With the advent of novel vaccines and widespread administration, information on efficacy and adverse effect profiles continues to grow. Additionally, the circulation of misinformation about vaccine safety, particularly gynecologic adverse effects, appears to be growing in parallel. Patients who are concerned about the possible adverse effects of a novel vaccine might be unwilling to take it. It is imperative that the medical community reports all manifestations of possible adverse effects from the vaccines. Although it is unclear if adverse effect reporting will increase vaccine uptake, explanation of adverse effects might be useful to assure the public that they are understandable, rare, and self-limited.

## Case

A 14-year-old girl with no history of prior sexual activity complained of new-onset burning pain at the vaginal introitus. Upon onset of pain, her mother helped to examine the patient at home and noted 3 distinct lesions with yellow covering and surrounding erythema. Over the course of the next 3 days, the patient's symptoms worsened so that she reported not being able to sit down or walk without exquisite pain. An appointment was made in the gynecology clinic for consultation, and, upon exam, the patient was

noted to have 3 shallow-based ulcerations on the inferior, medial edges of the labia minora. The ulcers were purple-pink in color with a sloughing yellow roof at the core and surrounding edema. The largest lesion, on the right side, was noted to be approximately 12 mm in maximum diameter. No vesicles and no other vulvar or perianal skin changes were noted. Oral and pharyngeal exams were normal. No cervical or inguinal lymphadenopathy was noted. The patient did not have a known history of SARS-CoV-2 viral infection.

Two days prior to onset of vulvar pain symptoms, the patient had received her second dose of the Pfizer-BioNTech COVID-19 vaccine. Although she did not experience any adverse effects following her first vaccination, her mother indicated that approximately 12 hours after the second vaccination, the patient experienced transient but severe symptoms of fatigue, body aches, and insomnia, such that her mother sat up with her in bed all night. By the next morning, her symptoms had resolved, and she went to school feeling well. She reported no known sick contacts and, other than her symptoms following vaccination, had been well, with no complaints of recent fever or upper respiratory tract infection. Her medical history was significant for heavy menstrual bleeding and Type I von Willebrand disease, for which she used extended cycle combination oral contraceptives. She did not have a personal or family history to suggest inflammatory bowel disease or autoimmune disease. She had no history of prior vulvar lesions nor oral ulceration. Results of a complete blood count were within normal parameters. There were no vesicles or fluid for direct viral HSV testing, but type-specific serum antibody testing was done and negative. Given proximity in time to her second Pfizer-BioNTech COVID-19 vaccine, test-

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\* Address correspondence to: Abigail Drucker, MD, 111 N 84th St Omaha, NE 68111, Tel.: 4402-955-4001.

E-mail address: [adrucker@childrensomaha.org](mailto:adrucker@childrensomaha.org) (Abigail Drucker).

ing for active SARS-CoV-2 infection was done and negative. Serum Epstein-Barr antibody titers were obtained and negative. She was additionally found to be CMV antibody negative.

Based on her clinical presentation, the patient was diagnosed with vulvar aphthous ulcers. She was advised on skin care and sitz baths and prescribed topical lidocaine for pain control. She seemed to follow the natural history of aphthous ulcer course and, upon follow-up via phone call 10 days later, she reported resolution of her pain and ulcers. Given the short window of time from her reported vaccine reaction to ulceration formation, as well as the absence of other identified ulcer trigger, we postulate that the vulvar ulceration was triggered by her recent Pfizer-BioNTech COVID-19 vaccine. A report was made to the Vaccine Adverse Event Reporting System with the Centers for Disease Control recording this event.

### Summary and Conclusion

Vulvar ulceration in young girls with no history of sexual activity is uncommon and often idiopathic, although diagnostic considerations generally include infectious, inflammatory conditions, and autoimmune conditions.<sup>1</sup> Patients might present with prodromal symptoms such as fatigue, body aches, and fever followed by acute vulvar pain and ulceration.<sup>1,2</sup> The ulcers are typically larger than 1 cm, shallow, well demarcated, and exudative and can be associated with labial swelling and lymphadenopathy.<sup>1-3</sup> Formation of vulvar ulcers has been seen in temporal relationship to infection with several viruses including Epstein-Barr virus and cytomegalovirus.<sup>2</sup> A review of current literature indicates at least 3 cases of vulvar ulcers in association with SARS-CoV-2 infection. An inflammatory response due to cytokine activation from systemic illness is the proposed mechanism of ulcer formation.<sup>3</sup>

Reactions to vaccines are not uncommon, with most being local responses such as pain, swelling, and erythema to the injection site. Systemic reactions including fever and rash occur less frequently, and serious reactions such as anaphylaxis are rare, occurring at a rate of 1 per one million doses of vaccines.<sup>4</sup>

Mucosal changes following vaccinations have been documented in the medical literature. Bleeding gums, oral sores, and ulcers have been reported following vaccines including diphtheria, tetanus, acellular pertussis, and polio.<sup>5</sup> Lichen planus, a chronic inflammatory mucocutaneous disease that can affect oral and genital mucosa, has been linked to the hepatitis B vaccine. It is thought this mucosal change is caused by a T-cell-mediated reaction to an induced antigenic change.<sup>6</sup> Although oral mucosal changes have been documented following vaccinations, our literature search did not identify any studies examining vulvar mucosal reactions specifically following vaccine administration.

Because the Pfizer-BioNTech COVID-19 vaccine is a novel vaccine, studies assessing possible adverse effects are ongoing. Current data suggest that the adverse effect profile of this novel vaccine is similar to that of other vaccines and could include local and systemic reactions such as pain at the injection site, fatigue, fever, headache, and muscle pain. Reactions seem to be more common following the second dose.<sup>7</sup> A large, cross-sectional study of health care workers in the Czech Republic who received the Pfizer-BioNTech COVID-19 vaccine indicated that 13% of participants reported having at least one oral adverse effect following vaccination, blistering and ulceration being 2 of the most common complaints.<sup>8</sup>

The acute appearance of painful genital ulcers, especially in young adolescents, could be a traumatic experience, and efforts should be made to educate patients and families about possible etiologies. Several cases of aphthous ulceration have thus far been reported in conjunction with SARS-CoV-2 infection. Mucosal ulceration is an established adverse effect of some vaccines and has been identified in cohorts receiving the Pfizer-BioNTech COVID-19 vaccine.<sup>8</sup> We believe this case demonstrates a possible novel association between the Pfizer vaccine and development of a vulvar aphthous ulcer in an adolescent patient. Concern for adverse effects, particularly gynecologic, is a topic that is currently circulating widely and is likely limiting community vaccination rates. It is important to identify and explain possible adverse effects to help dispel the hesitancy some patients might feel about receiving a novel vaccine. The formation of self-limited vulvar aphthous ulcers should be considered a rare but not unexplained, self-limited adverse effect of the Pfizer-BioNTech COVID-19 vaccine.

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